


The Influence of Cognitive and Affective Trust on the Utilization of Family Doctor Services: A Chinese Cross-Sectional Survey Based on McAllister's Theory

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Purpose: This study explores the impact of cognitive and affective trust on the utilization of family doctor services based on McAllister's theory. It also analyzes the factors influencing these forms of trust.

Patients and Methods: A cross-sectional study using stratified random sampling gathered data from 325 adult patients registered with family doctors in six community health centers in Wuhan, China. PLS-SEM was employed to examine the relationships among cognitive trust, affective trust, and the utilization of family doctor services. Logistic regression was utilized to identify the factors influencing cognitive and affective trust.

Results: Higher cognitive trust significantly influenced affective trust ($\beta = 0.549$, $p < 0.01$) and was positively associated with service utilization ($\beta = 0.524$, $p < 0.01$). Affective trust also showed a positive association with service utilization ($\beta = 0.481$, $p < 0.01$). Occupation and marital status were found to have a significant impact on both cognitive and affective trust. Specifically, professional and technical workers ($OR = 9.699$, $p = 0.001$; $OR = 2.309$, $p = 0.011$) and non-married individuals ($OR = 7.591$, $p = 0.001$; $OR = 2.737$, $p = 0.002$) demonstrated higher trust levels.

Conclusion: The study reveals the importance of cognitive and affective trust in patient engagement with family doctor services. It suggests that family doctors should enhance their professionalism while also demonstrating emotional care to improve overall healthcare quality. Additionally, attention should be given to the influence of factors such as occupation and marital status on patients' trust in family doctors.

Keywords: doctor-patient trust, family doctor services, primary healthcare, information and communication

Introduction

Family doctor, as the “gatekeeper” of primary healthcare, are doctors who provide comprehensive, continuous, and coordinated medical and health services to individuals and their families, positively affecting residents' health,¹ promoting health equity, increasing access to essential medical services, and enhancing the quality of primary healthcare.² Before these efforts, countries like the US and the UK had implemented similar healthcare service systems. In response, in 2016, the Chinese government expedited the introduction of family doctor contract services.³ This system aims to enhance primary healthcare, ensure universal access to essential medical services, and improve the hierarchical diagnosis and treatment model in China. However, challenges have persisted, particularly patient distrust of family doctors, which has hindered the progress of family doctor contract services. This skepticism is evident in concerns about the technical proficiency, competence of the family physician team, subjective impressions, and communication quality.⁴ Historical experience has shown that patient distrust of family doctors can lead to reduced utilization of basic medical

services and declining resident health. Thus, boosting patient trust in family doctors to increase the use of family doctor services was crucial for expanding the coverage and quality of primary healthcare.⁵

Doctor-patient trust, traditionally seen as mutual belief in doctors and patients during their interactions, centers on the expectation that both parties will not act against each other's interests or well-being.⁶ However, practical situations often leave patients vulnerable due to their limited medical knowledge. Patients lack the resources, expertise, or time to independently verify healthcare providers' prognostications, resulting in trust based on limited rationality and faith in a doctor's technical competence and ethics.⁷ Notably, Family doctors differ from general practitioners in that, to maintain contact with their contracted patients, they may need to establish a unique trust model to encourage patients to return to primary care services.^{8,9} Despite the significance of this distinction, previous research has limited exploration of these differences.

Based on previous research and field investigations, we found that patients' trust in family doctors exhibits distinct characteristics at different stages.¹⁰ Initially, patients quickly assessed the benefits of their interactions with family doctors, forming the foundation of trust.¹⁰ During this phase, trust relied on the cognitive assessment of family doctors' professional competence, service quality, and effectiveness. As communication deepened, an emotional bond developed, transitioning from cognitive trust to affective trust. Affective trust primarily arose from harmonious interactions, leading to a dependency on family doctors.¹¹ This emotional trust was also influenced by the cognitive trust established during the contracting phase.¹² McAllister (1995) described two core trust forms: cognitive trust, based on rational confidence in trustees, considering competencies, responsibilities, reputation, and reliability; and affective trust, focusing on emotions like care, concern, attention, and sympathy.¹² He argued that affective trust is typically built upon the foundation of cognitive trust, and a high level of trust can further strengthen interpersonal relationships and enhance organizational performance. Based on the interaction model between family doctors and patients, this study suggests that McAllister's theory can help us better structure the trust model between patients and family doctors and examine whether trust can facilitate the utilization of family doctor services.

Therefore, this study incorporates McAllister's theory of cognitive and affective trust into the research framework of doctor-patient trust. It examines the factors influencing patients' cognitive and affective trust, analyzes the impact of these two trust models on the utilization of family doctor services, and evaluates the applicability of McAllister's trust theory within the context of doctor-patient relationships. Based on the theory, the hypotheses proposed in this study are as follows:

Hypothesis 1 Cognitive trust positively affects the utilization of family doctor services.

Hypothesis 2 Affective trust positively affects the utilization of family doctor services.

Hypothesis 3 Cognitive trust exerts a positive influence on affective trust.

Materials and Methods

Study Design and Participants

This study was a cross-sectional survey conducted from February to April 2022. We employed a stratified random sampling method to select six community health service centers in Wuhan, representing both central urban areas (Jiang'an District and Hanyang District) and remote districts (Caidian District and Donghu New Technology Development Zone). Within these selected institutions, we randomly interviewed patients, ensuring that they represented various age groups and had established a contractual relationship with a family doctor prior to the start of the study.

Procedure

We used a self-designed scale to collect data for this study. The scale aimed to measure patients' cognitive trust, affective trust, and utilization of family doctor services among those who had signed a contract with a family doctor. Cognitive trust was assessed across three dimensions: the family doctor's professional competence, reliability, and medical ethics. Affective trust was evaluated through three dimensions: empathy, emotional investment, and emotional

attachment. Prior to the survey, we invited professors to participate in an expert panel meeting, using the Delphi method, to improve the quality of the scale. Before the formal survey, a preliminary study was conducted at a community health service center in Wuhan with a sample of 50 individuals to assess the reliability and validity of the scale.

The survey was conducted by graduate students from the School of Medicine and Health Management at Huazhong University of Science and Technology. Before the survey, all researchers underwent standardized training. The team conducted the survey from February to April 2022, randomly interviewing patients at community health service centers and informing participants about the study details, including the research objectives, content, and the benefits and risks of participation. Each participant was expected to complete the survey in approximately 10–15 minutes.

For this study, the sample size was determined using Partial Least Squares Structural Equation Modeling (PLS-SEM), with a minimum sample size requirement of ten times the number of measurement items for each latent variable. The scale included 25 measurement items, and a total of 350 scales were distributed. After data collection, 325 valid scales were returned, yielding a response rate of 92.86%. The final sample size met the requirements for using PLS-SEM analysis.

Measures

McAllister's theory of cognitive and affective trust has been applied in various fields, including organizational studies, interpersonal relationships, and healthcare. In primary care, general practitioners build long-term relationships with their patients, which helps them provide effective care. Patients seek not only treatment for illnesses but also emotional support from their doctors. When their expectations for care quality are met, they tend to prefer doctors with whom they have built strong relationships. Therefore, McAllister's theory may help explain the trust model between family doctors and patients.¹³ To refine our research instruments, we have incorporated additional trust measurement scales, including the Johnson Trust Scale,¹⁴ the Health Care Relationship Trust Scale,¹⁵ and the Physician Trust Index Assessment Scale.¹⁶ The scale development process is detailed in the Supplementary Files. [Supplementary Table 1](#) presents the original scale, while [Supplementary Tables 2](#) to [6](#) outline its revision process using the Delphi method. [Supplementary Table 2](#) summarizes the characteristics of the experts, while [Supplementary Tables 3](#) and [4](#) provide the criteria for their judgments on cognitive and affective trust (Ca) and their familiarity with the consultation content (Cs). [Supplementary Table 5](#) reports the expert authority coefficient (Cr), and [Supplementary Table 6](#) presents the consultation results. The finalized scale is shown in [Supplementary Table 7](#). The reliability and validity analysis of the scale can be found in [Supplementary Tables 8](#) and [9](#).

Ultimately, our scale comprises 25 items designed to measure three latent variables: cognitive trust, affective trust, and utilization of family doctor services. To facilitate a more comprehensive assessment of patient trust in family doctors, both cognitive trust and affective trust are further divided into three dimensions. Each item is rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The explanations of the measurement dimensions covered in our scale can be found in the Measures section of the [Supplementary Files](#).

Cognitive Trust

In this study, cognitive trust was defined as trust resulting from patients' cognitive evaluations of their family doctors. We believe that patients' cognitive trust in family doctors stems from their professional competence,¹⁷ reliability,¹⁸ and medical ethics.^{19,20} Professional competence and reliability were each measured using 3 items, while medical ethics was assessed through 5 items.

Affective Trust

Affective trust was defined as the attention, understanding, emotional engagement, and attachment patients felt toward their family doctors due to the emotional care they received during the diagnostic and therapeutic process. We adopted caring understanding,²¹ emotional engagement,²² and emotional attachment²³ as the criteria to measure patients' emotional trust in family doctors. Each part was measured using 3 distinct items.

The Utilization of Family Doctor Service

In this article, family doctor service utilization was evaluated based on patients' perceptions, encompassing both rational and irrational components. The rational part included patients' intuitive assessments of their family doctors' years of experience, service attitude, and ability to improve patients' health conditions. The irrational component encompassed the personal charisma of the family doctors and the emotional connection patients developed over time.²⁴ This part was measured using 5 items.

Data Analyses

Descriptive statistics were used to analyze the demographic characteristics of the survey population and to assess patients' levels of cognitive and affective trust in their family doctors. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to calculate the influence relationships and path coefficients between the latent variables that constructed the model. In addition, PLS-SEM was used to indicate the percentage of the explanation of the latent variables accounted for by the apparent variables through the coefficient of determination. An ordered logistic regression analysis was used to explore the main factors influencing patients' cognitive and affective trust in their family doctors. We analyzed the data using SPSS 26.0 and Smart-PLS software.

Results

Analysis of the Current Situation

The general profile of the surveyed population is shown in Table 1. The sample included more females than males, with the largest age group being 60–74 years. Most respondents had a junior high school education or less and reported average recent health status. The average levels of cognitive and affective trust in family doctors were 4.268 and 4.179, respectively, on a 5-point scale.

Table 1 Characteristics of the Study Population and the Level of Trust

Sex	N	Mean / %
Male	101	31.1
Female	224	68.9
Age		
44 years old and below	47	14.5
45–59 years	51	15.7
60–74 years	179	50.1
74 years of age or older	48	19.7
Education level		
Junior high school and below	139	42.8
High school or junior college	86	26.5
Post-secondary	48	14.8
Undergraduate and above	52	15.9
Occupation		
Employees of organizations, enterprises and public institutions	40	12.3
Professional and technical staff	76	23.5
General clerical staff	40	12.3
Business/Service Employees	21	6.5

(Continued)

Table 1 (Continued).

Sex	N	Mean / %
Self-employed	13	4
Laborer	110	33.8
Other	25	7.6
Marital status		
Married	282	86.8
Non-married	43	13.2
Type of medical care		
Basic medical insurance for urban employees	158	48.6
Basic medical insurance for urban and rural residents	102	31.4
Other	58	17.8
Chronic disease status		
Yes	183	56.3
No	142	43.7
Recent health status		
Poor	10	3.1
Slightly poor	33	10.2
General	189	58.2
Good	93	28.5
Level of Trust		
Cognitive trust	325	4.268
Affective trust	325	4.179

Association Among the Cognitive Trust, Affective Trust, and The Utilization of Family Doctor Service

Cognitive trust showed a strong positive influence on affective trust ($\beta = 0.549$) and was positively associated with healthcare service utilization ($\beta = 0.481$). Similarly, affective trust positively influenced service utilization ($\beta = 0.524$), affirming the hypothesized relationships (see Table 2). The model's Goodness of Fit (GoF) index exceeded 0.36, indicating a strong fit.

Table 2 Confirmation of Hypothesis

Hypothesis	β	S.E.	P	Yes or No
H1: Cognitive Trust \rightarrow Utilization of family doctor services	0.481	0.615	<0.01	Yes
H2: Affective Trust \rightarrow Utilization of family doctor services	0.524	0.762	<0.01	Yes
H3: Cognitive Trust \rightarrow Affective Trust	0.549	0.653	<0.01	Yes

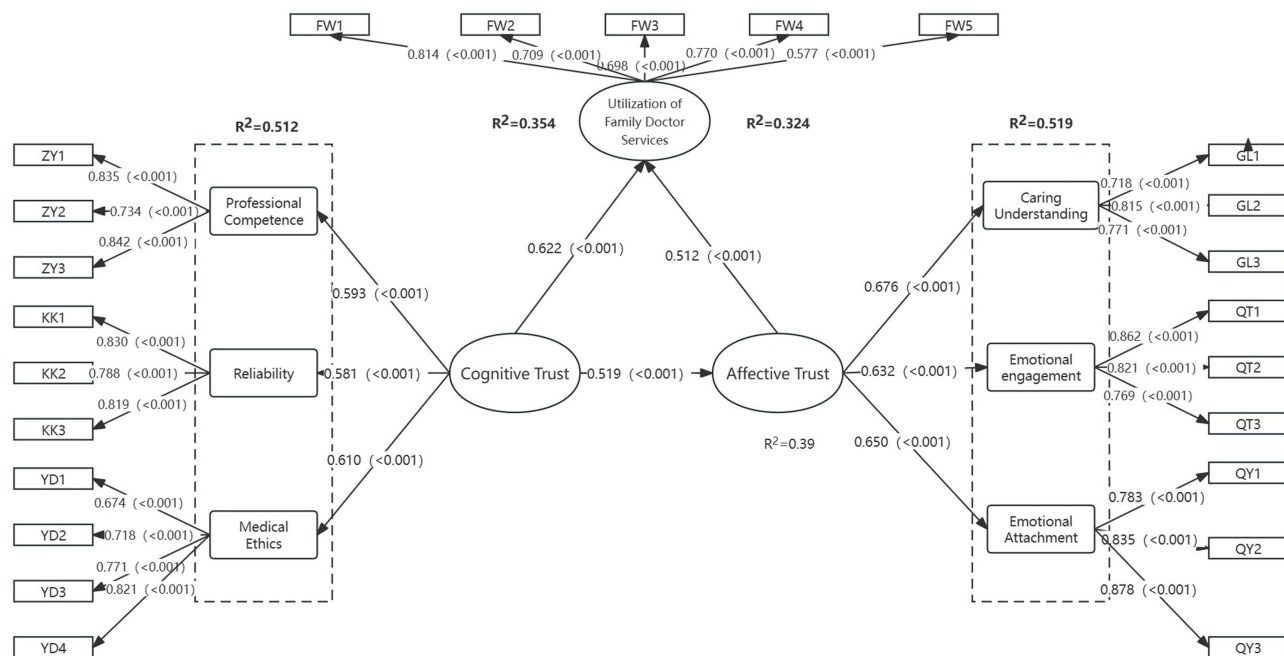


Figure 1 PLS-SEM structural model of cognitive trust, affective trust, and family doctor service utilization. Latent variables (ellipses): cognitive trust (three subdimensions: rounded rectangles), affective trust (three subdimensions: rounded rectangles), and service utilization. Observed indicators (rectangles) and path coefficients (arrows with values) are shown. R^2 values indicate the explained variance of endogenous constructs.

Using Smart PLS with 500 iterations, data for manifest variables were extracted, yielding standardized path coefficients and establishing causal paths within the model. The cognitive trust dimensions (professional competence, reliability, and medical ethics) explained 51.2% of its variance ($R^2=0.512$), while affective trust dimensions (mutual understanding, emotional investment, and affective attachment) accounted for 51.9% of its variance ($R^2=0.519$). Cognitive trust explained 39% of affective trust variance ($R^2=0.39$) and 35.4% of healthcare service utilization variance ($R^2=0.354$). Affective trust explained 32.4% of healthcare service utilization variance ($R^2=0.324$), surpassing the threshold of 30%, confirming satisfactory interpretability in the PLS-SEM model.

Regarding path coefficients, reliability (0.581, $p<0.05$), professional competence (0.593, $p<0.05$), and medical ethics (0.610, $p<0.05$) all positively impacted cognitive trust. Cognitive trust, in turn, had significant positive effects on affective trust (0.519, $p<0.05$) and service utilization (0.622, $p<0.05$). Within affective trust dimensions, mutual understanding (0.676, $p<0.05$), emotional investment (0.632, $p<0.05$), and affective attachment (0.650, $p<0.05$) were significant contributors. Affective trust also positively influenced service utilization (0.512, $p<0.05$). Further details are provided in Figure 1.

Analysis of Influencing Factors

In Table 3, patients' occupation, marital status, and health condition significantly affect cognitive trust in family doctors, professional and technical workers show higher cognitive trust compared to other occupations (OR=9.699, $p=0.001$); non-married individuals have greater cognitive trust than married patients (OR=2.309, $p=0.011$); and poorer health status is associated with lower cognitive trust (OR=0.319, $p=0.001$).

Similarly, occupation and marital status significantly impact affective trust. Professional and technical workers report higher affective trust than other occupations (OR=7.591, $p=0.001$), and non-married individuals exhibit greater affective trust than their married counterparts (OR=2.737, $p=0.002$).

Table 3 Factors Influencing Patients' Cognitive and Affective Trust in Family Doctors

Impact Factor	Cognitive Trust					Affective Trust				
	β	OR	p	OR 95% CI	χ^2	β	OR	p	OR 95% CI	χ^2
Sex										
Male(ref:Female)	-0.118	0.889	0.605	0.568–1.391	0.267	-0.039	0.962	0.863	0.614–1.504	0.030
Age(ref:74 years of age or older)										
44 years old and below	-0.670	0.512	0.200	0.184–1.426	1.642	-0.479	0.619	0.359	0.233–1.723	0.841
45–59 years	-0.403	0.668	0.337	0.294–1.519	0.924	-0.167	0.846	0.690	0.373–1.921	0.159
60–74 years	-0.443	0.642	0.151	0.351–1.175	2.066	-0.557	0.573	0.071	0.313–1.048	3.263
Education level(ref: Junior high school and below)										
High school or junior college	-0.348	0.706	0.447	0.288–1.733	0.577	-0.950	0.387	0.039	0.157–0.952	4.269
Post-secondary	0.169	1.184	0.543	0.687–2.044	0.371	-0.013	0.987	0.964	0.573–1.702	0.002
Undergraduate and above	0.144	1.155	0.726	0.517–2.578	0.123	-0.331	0.718	0.419	0.321–1.603	0.654
Occupation(ref:Laborer)										
Employees of organizations, enterprises and public institutions	1.838	6.284	0.001	2.201–17.921	11.806	1.660	5.259	0.002	1.855–14.924	9.74
Professional and technical workers	2.272	9.699	0.001	3.869–24.313	23.476	2.027	7.591	0.001	3.053–18.878	19.025
General clerical staff	1.927	6.869	0.001	2.583–18.247	14.932	1.220	3.387	0.013	1.293–8.873	6.163
Business/Service Employees	1.332	3.789	0.015	1.297–11.067	5.933	0.952	2.591	0.080	0.893–7.516	3.068
Self-employed	1.493	4.450	0.019	1.279–15.472	5.509	1.496	4.464	0.018	1.285–15.487	5.550
Other	2.321	1.186	0.001	4.067–25.483	24.582	1.550	4.711	0.001	1.916–11.588	11.397
Marital status(ref:Married)										
Non-married	0.837	2.309	0.011	1.214–4.393	6.501	1.007	2.737	0.002	1.436–5.217	9.355
Type of medical care(ref:Basic medical insurance for urban employees)										
Basic medical insurance for urban and rural residents	0.267	1.306	0.713	0.315–5.425	0.135	-0.045	0.956	0.950	0.230–3.967	0.004
Other	0.103	1.108	0.889	0.262–4.679	0.020	0.049	1.050	0.947	0.249–4.433	0.004
Chronic disease status(ref:No Chronic disease)										
Yes	-0.092	0.912	0.733	0.539–1.545	0.116	0.248	1.281	0.356	0.757–2.171	0.854
Recent health status(ref:Good)										
Poor	-1.141	0.319	0.001	0.161–0.636	10.554	-0.393	0.675	0.258	0.343–1.334	1.280
Slightly poor	-0.596	0.551	0.068	0.291–1.045	3.326	-0.367	0.693	0.260	0.366–1.311	1.268
General	-0.105	0.900	0.656	0.569–1.426	0.199	-0.058	0.944	0.805	0.596–1.943	0.061

Discussion

Both cognitive and affective trust are found to positively influence the utilization of family doctor services. Moreover, an increase in cognitive trust also contributes to the development of affective trust toward the doctor. This study also

analyzes the factors influencing patients' cognitive and affective trust in family doctors, showing that patients' occupation and marital status influence affective trust, while cognitive trust is additionally impacted by their health status.

Both cognitive and affective trust have a positive impact on the utilization of family doctor services. Our findings align with McAllister's theory. Previous research has also demonstrated that both cognitive trust and affective trust contribute to increased health service utilization. In the healthcare field, scholars have primarily focused on the role of cognitive trust. Lee suggested that strengthening cognitive trust enhances patients' willingness to continue utilizing healthcare services.²⁵ Similarly, Pang found that cognitive trust contributes to the promotion of patients' psychological health behaviors.²⁶ However, LEE's research suggested that patients' affective trust in doctors also influenced their loyalty to medical services,²⁷ and Konstantinou's study indicated that both cognitive and affective trust play a role in encouraging patients to receive vaccinations.²⁸ Cognitive and affective trust has also been shown to reinforce cooperative behaviors in industries such as finance and information technology.²⁹ For instance, Johnson found that consumers' cognitive trust improves suppliers' sales efficiency and service performance.³⁰ Ramsey observed that affective trust facilitates clients' listening behavior.³¹ Our findings extend and refine the research on cognitive and affective trust by applying it specifically to the context of family doctors.

Our findings align with McAllister's theory, which posits that cognitive trust positively influences affective trust.³² Bormann's study also revealed a positive correlation between cognitive trust and affective trust.³³ When patients choose a family doctor, their primary concern is whether the doctor's professional abilities can meet their health needs.³⁴ According to Maslow's Hierarchy of Needs, once a patient's health needs are fulfilled, their emotional needs become more prominent, prompting a desire to establish an emotional connection with their family doctor.³⁵

Notably, our findings indicate that both occupation and marital status influence patients' cognitive and affective trust in family doctors. Specifically, professional and technical workers and non-married patients exhibited higher levels of trust. This aligns with the findings of Chinese scholar Fei, who identified occupation as a factor influencing patients' trust in family doctors.³⁶ The higher levels of cognitive and affective trust observed among professionals may be attributed to their greater access to social resources and stronger awareness of health management.³⁷ Wong's research yielded similar conclusions.³⁸ However, Zhu's study found that married individuals demonstrated significantly higher trust in primary care physicians, which contrasts with our findings.³⁹ This discrepancy may stem from the fact that non-married individuals often have simpler social relationships,⁴⁰ making them more reliant on professionals to manage their health. Furthermore, their higher social needs may help foster affective trust with family doctors.⁴¹ These findings underscore the importance of considering the influence of marital status on patients' trust in family doctors.

Strengths and Limitations

In terms of research significance, studies primarily focus on the trust relationship between patients and general practitioners,^{42,43} with relatively few investigations into trust in family doctors, and those that do tend to concentrate on the role of patient trust. Research by Chinese scholars has revealed that trust factors contribute to higher family doctor contract rates,⁴⁴ motivate patient participation in primary healthcare services,⁴⁵ and enhance continuity of care.^{46,47} Building on the professional role of family doctors and the existing literature, the innovation of this study lies in analyzing the role of trust factors while deconstructing the types of trust patients place in family doctors. By incorporating McAllister's theory, we differentiate between cognitive trust and affective trust, aiming to expand the theoretical understanding of trust types in family doctor-patient relationships and examine how different trust models influence the utilization of family doctor services.

First, the scope of our study is limited to Wuhan, and therefore, the findings may not be generalizable to broader populations. Future research will aim to expand the study locations to enhance the representativeness of the results for the Chinese population. Second, we employed a stratified random sampling method to ensure that the survey participants were drawn from both central urban districts and remote districts of Wuhan. However, potential biases in the results remain, which should be acknowledged. Third, the survey instrument was developed by integrating McAllister's theory, existing trust scales, and the Delphi method. However, the generalizability of the scale requires further validation. Fourth, we utilized PLS-SEM to examine the relationships between cognitive trust, affective trust, and the utilization of family doctor services. However, this method does not establish causal relationships among these variables. In future research,

we plan to transition from a cross-sectional to a longitudinal study design to further investigate the causal dynamics of trust in family doctors.

Implications for Policy, Practice and Research

The study findings suggest that both cognitive and affective trust are critical factors influencing the promotion of family doctor contract services. Therefore, while enhancing the professional competence of family doctors, it is also essential to focus on the emotional rapport between doctors and patients. One potential approach is to incorporate doctor-patient communication into the evaluation criteria for family doctors, which could provide policy-level support to help family doctors establish stronger trust relationships with their patients. In practice, family doctors should prioritize building positive trust relationships with patients by improving their professional skills, strengthening communication, and offering personalized services. These strategies can enhance patients' sense of trust, thereby increasing the utilization of healthcare services. This study also introduces McAllister's theory to analyze the types of trust in family doctors, representing an innovative application of existing theoretical frameworks.

Conclusion

This study, grounded in McAllister's theory, explores the relationships between these cognitive and affective trust and their impact on the utilization of family doctor services, as well as the factors influencing patients' cognitive and affective trust in family doctors. Both cognitive and affective trust have a positive impact on the utilization of family doctor services. The results indicate that patients' occupation, marital status, and health condition influence their level of trust in family doctors. Based on these results, it is suggested that family doctors focus on improving both their professional skills and communication abilities, which would help foster strong trust relationships with patients and, in turn, improve patient care and service utilization.

Ethics Approval and Consent to Participate

Ethics approval for this study was granted by the Medical Ethics Committee of Tongji Medical College, Huazhong University of Science and Technology.

Consent for Publication

This is not applicable, as participants' personal details were not recorded.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests in this work.

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