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Patients' continued willingness to seek initial treatment at primary care facilities: A study of trust-based driving mechanisms ☆

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ABSTRACT

Background: Initial treatment at primary care facilities can promote rational use of healthcare services and alleviate imbalance between healthcare supply and demand. However, the proportion of Chinese patients seeking medical services primarily at primary healthcare institutions is very low, far below policy expectations. This phenomenon suggests that we need to explore strategies and methods to encourage patients to firstly contact with primary care when they seek medical help. Therefore, it is of great significant to explore the driving mechanisms of patients' willingness to seek initial treatment at primary care facilities.

Objective: To verify the social and psychological mechanisms of patients' continued willingness to seek initial treatment at primary care facilities by empirical research. This study constructed a theoretical model of "Expectation Confirmation–Patient Trust–Continued Willingness to Seek Initial Treatment at Primary Care Facilities" in the context of family doctor contracted services.

Methods: A questionnaire survey was conducted among patients at a community health centre in Chengdu. Independent sample *t*-tests and one-way ANOVA were used to examine the differences in patient trust across various groups; structural equation modeling was employed to verify the theoretical hypotheses and mediation effects.

Results: Patients expect a higher level of confirmation. The patients' trust is generally high, among which the emotional trust is the highest and the service trust is the lowest. Patients who were adults, aged 60 and above, suffered hypertension or diabetes, had signed a family doctor, chose a fixed doctor, and had higher expectation confirmation showed higher trust in primary care. Expectation confirmation did not significantly affect the willingness to seek initial treatment at primary care facilities, but patient trust served as a complete intermediary.

Conclusion: Patient trust has a complete mediating effect between expectation confirmation and the willingness to seek initial treatment at primary care facilities. Meeting patients' targeted needs and providing experiences that exceed their expectations are the starting points for patient trust. Patients' willingness to seek initial treatment at primary care facilities can be enhanced by emotional trust based on public health services, technical and service trust by improved diagnostic capabilities and referral services.

The tiered diagnosis and treatment system is a key strategy to optimize the allocation of medical resources and improve healthcare service efficiency. Initial treatment at primary care facilities is the fundamental and foundational element of this system.[1] Initial treatment at primary care facilities can be implemented in three models: (1) Mandatory primary care initial treatment system combined with strict referral system in countries like the UK, led to >90 % consultations conducted in general practice clinics.[2] (2) Higher reimbursement rates for primary care visits by tiered reimbursement or subsidy policy in countries like Germany, with primary care consultations accounting for >70 % of total visits.[3] (3) No policy intervention and complete freedom of choice for healthcare providers in rare countries like Switzerland, led to 65 % of total consultations in primary care, with general practitioners (GPs) handling 58 % consultations, while specialist clinics and hospital outpatient services account for 42 %.[4] In terms of effectiveness, the mandatory primary care initial treatment system proves to be the most effective, followed by the tiered reimbursement or subsidy policy. However, the case of Switzerland suggests other methods to enhance primary care utilization: First, the distribution density and service efficiency of primary care clinics provide a "convenience of proximity", driving residents to choose primary care facilities. Second, GPs with high level of expertise and diagnostic skills attract initial consultations of residents. Third, in spite of standardized reimbursement rate for medical insurance, the pricing at primary care clinics is lower than at general hospitals, leading to lower

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out-of-pocket costs for residents. Lastly, the high health literacy of Swiss residents (with the highest health literacy score in Europe of 82) performed a habit of seeking primary care first and specialist care later.[4,5] Thus, it is clear that an orderly primary care initial treatment system can be established not through force, but by capitalizing on highly accessible primary care network, reasonable service pricing, professional GPs, and rational healthcare-seeking behaviors in residents.

Currently, China has not implemented a mandatory primary care initial treatment system. Instead, the design of policies focuses on addressing both supply and demand, promoting primary care consultations through both policy guidance and primary care services attractiveness. China has established a primary care network covering both urban and rural areas, significantly improving the accessibility of primary care services. The gradual reform of medical service pricing, including tiered pricing for basic medical services and gradient reimbursement policy, effectively reduced the financial burden on patients. Infrastructure standardization, workforce development, diagnostic capabilities improvements, medications and consumables insurance enhanced primary care services capacity. The extensive promotion of family doctor contract services and tiered healthcare system gently guided residents' orderly healthcare-seeking habits.[6] From 2021 to 2023, the primary care consultation rate increased from 50.2 % to 51.8 %,[7] indicating some progress in the reform, but remains short of the target of 70 %.[8]

In this context, some scholars suggested guide healthcare system reforms from the perspective of shaping social attitudes, emphasize the impact of residents' perceptions and emotional experiences on their healthcare-seeking behaviors.[9] Among these, the critical role of patient trust in healthcare-seeking behaviors has been confirmed.[10–12] For example, in online settings, patient trust mediates healthcare choices and consultation behaviors.[13] Similarly, in primary healthcare settings, patients' trust patterns and levels also influence their willingness to seek initial treatment at primary care facilities.[14] Exploring the driving mechanisms of continued willingness for primary care initial treatment from the perspective of patient trust can provide valuable insights for overcoming the practical barriers faced by family doctor contracted services and promoting primary care initial treatment. Currently, research on healthcare willingness and behavior mechanisms primarily relies on the Theory of Planned Behavior.[15]

However, due to factors such as information asymmetry between doctors and patients and emotional disturbances like pain and fear,[16] healthcare behaviors tend to be irrational and impulsive, not fully align with the rational behavior hypothesis of the Theory of Planned Behavior. Furthermore, this theory primarily explains the formation of behavioral intentions rather than the driving mechanisms behind continued behaviors. Healthcare behaviors are inherently experiential and uncertain, patients form expectations regarding the effectiveness of medical services and the skill of physicians before consultation, and compare actual experiences with expectations, which aligns with the Expectation Confirmation Theory proposed by Oliver.[17] The core logic of this theory is as follows: Individuals form "expectations" about a product or service before experiencing it, and upon experiencing it, they form a "perceived performance." The comparison between "perceived performance" and expectations leads to "expectation confirmation," which in turn generates an emotional response as "satisfaction", "satisfaction" then drives subsequent behavioral tendencies, such as "intention for continued utilization." This theory is widely applied in the consumer behavior field, such as in studies on brand loyalty and service continuance intentions.[18–20] However, Expectation Confirmation Theory was rarely used to study the willingness of healthcare services utilization.

In Expectation Confirmation Theory, expectation confirmation is typically the independent variable, satisfaction serves as the mediator, and continued willingness of utilization is the dependent variable. However, some scholars argue that satisfaction is neither influenced by expectation confirmation nor does it fully drive continued willingness of utilization, thereby questioning its mediating role.[21,22] Given the significant impact of patient trust on willingness for patients to seek initial treatment at primary care facilities, and considering that trust encompasses both rational and irrational characteristics,[23] using trust as a mediating variable rather than satisfaction is more appropriate in the context of primary care choosing among Chinese residents, for trust represents expectations about future behavior, satisfaction merely reflects contentment with past behavior.[24] Furthermore, trust plays a more effective role in encouraging patients to follow their doctor's advice and maintain long-term relationships,[25] which aligns more closely with the policy goal of establishing strong contractual relationships between family doctors and patients. Therefore, this study constructed theoretical model using expectation confirmation, patient trust, and continued willingness for primary care initial treatment as core variables based on Expectation Confirmation Theory. We hypothesizes that patient trust mediates the relationship between expectation confirmation and the continued willingness for patients to seek initial treatment at primary care facilities (Appendix Figure S1), to validate the social-psychological mechanisms underlying patients' continued willingness for patients to seek initial treatment at primary care facilities, clarify the role of patient trust, and provide reference for enhancing patients' willingness.

Methods

This study employed a cross-sectional design and used a convenience sampling method. In March 2024, trained surveyors conducted face-to-face surveys with patients at a community health centre in Chengdu, utilizing the "Wenjuanxing" platform (www.wjx.cn) for online electronic questionnaires. We selected a community health service centre in Chengdu as the study site due to its designation as a "National Demonstration Community Health Service Center", its standardized service processes and management reduce heterogeneity ensure the stability and reliability of the data, provide context for examining the micro-level mechanisms to drive primary care initial treatment willingness.

Survey instrument

The self-developed questionnaire "Patient Willingness to Seek Medical Care" (Appendix Questionnaire S1) includes two categories: (1) General information including age, gender, occupation, health conditions and family doctor contraction; (2) Scales measuring Expectation Confirmation, Patient Trust, and continued willingness to seek initial treatment at primary care facilities. The Expectation Confirmation and Continued Willingness to Seek Initial Treatment at Primary Care Facilities scales were adapted from Bhattacherjee's research.[26] Previous studies on patient trust typically employed established scales or their revised versions, we developed "Family Doctor Patient Trust Scale" to align with capability requirements of family doctor,[27] which can be summarized into "effectively manage minor ailments, accurately diagnose serious conditions, and appropriately refer urgent cases". The scale development followed a standardized procedure. Initial items were drafted based on literature review, and two rounds of expert consultations were conducted with 11 experts to optimize content validity (with an expert authority coefficient of 0.927). The scale was iteratively modified based on reliability and validity analyses from a pre-survey, followed by formal survey administration for final validation. The scale demonstrated good reliability, with Cronbach's α coefficients for both the overall scale and each dimension exceeding 0.8. Confirmatory factor analysis showed excellent model fit indices ($\chi^2/df = 2.244$, RMSEA = 0.066, GFI = 0.929, NFI = 0.943, CFI = 0.967, IFI = 0.967). The scale also exhibited good convergent validity (all item factor loadings greater than 0.5, each dimension's AVE greater than 0.5, and CR greater than 0.8). Discriminant validity was also satisfactory (dimensions were significantly correlated, but the correlation coefficients were lower than the square root of the corresponding AVE).

The final scale included 13 items on three dimensions of technical trust, service trust, and emotional trust. The technical trust dimension reflects trust in the family doctor's professional capabilities, including

diagnosis, referral judgment, and treatment effectiveness. The service trust dimension focuses on the reliability of the family doctor in managing specialist appointments or hospital beds in superior hospitals. The emotional trust dimension emphasizes the emotional connection by timely responses, protecting patient privacy, and showing empathy for the patient's pain. A 5-point Likert scale was used for scoring, where "1″ to "5″ represent "much lower than expected" to "much higher than expected," "very distrustful" to "very trustworthy," and "very unwilling" to "very willing," respectively.

Sample size

The target sample size for this study was set at 300 participants based on the standard that sample size should be at least 5 to 10 times the number of items on the scale,[28] and the minimum sample size require 200 for structural equation modeling (SEM) analysis,[29] the target sample size for this study was set at 300 participants.

Participants

The inclusion criteria were as follows: (1) Adults provided their own responses, while minors were assisted by their parents; (2) No communication barriers; (3) Received basic medical services and public health services such as elderly health management, chronic disease management, and child health management from family doctors at the community health centre.

The exclusion criteria were as follows: unwillingness to participate or never received above services. A total of 318 questionnaires were collected, of which 288 were valid, yielding an effective response rate of 90.57 %. All participants were informed and voluntarily to participate. The survey was conducted anonymously, and the data was used solely for academic research purposes. This study was approved by the Ethics Committee of the Fifth People's Hospital of Chengdu (Approval No: Lunsen 2021–071 (Ke)-01).

Quality control

The investigators consisted of second-year students from the Public Administration department at the university underwent standardized training on survey objectives, standardized methods, and important instructions for completing the questionnaires. After data collection, a double-checking procedure was used to enter and verify the data, with any invalid survey records being excluded. Questionnaires completed in <120 s, with incomplete responses or logical inconsistencies in the data were excluded.

Statistical analysis

Data were organized and analyzed using SPSS 26.0 and AMOS 24.0 statistical software. Continuous variables were expressed as mean ± standard deviation. Independent sample *t*-tests, analysis of variance (ANOVA), correlation analysis, and structural equation modeling were employed for data analysis. A significance level of $P < 0.05$ was considered statistically significant.

Results

Demographic Characteristics of Participants

Among the 288 participants, 178 were female (61.8 %) and 110 were male (38.2 %). Of these, 128 participants were aged 60 years or older (44.4 %). The majority of participants were registered as urban residents, with 148 participants (51.4 %) falling into this category. The largest proportion of participants had a lower level of education, with 113 participants (39.2 %) completed middle school or less. The most common occupation was retirement, with 91 participants (31.6 %) being retirees. A total of 282 participants (97.9 %) had medical insurance, with urban employee basic medical insurance being the most prevalent (50.3 %). Regarding age, 257 participants (89.2 %) aged over 18 years, and 31 participants (10.8 %) aged lower than 18 years. Additionally, 91 participants (31.6 %) had hypertension or diabetes. In terms of proximity to the nearest community health service centre, 205 participants (71.2 %) could reach within 15 min. 178 participants (61.8 %) did not sign a family doctor. Furthermore, 228 participants (79.2 %) received medical services at the community health centre, while 60 participants (20.8 %) only received public health services without medical care. Among those seeking care, 91 participants (31.6 %) chose a family doctor, while 161 participants (55.9 %) preferred to see a non-fixed doctor (Appendix Tables S1 and S2).

Expectation confirmation, patient trust, and continued willingness to seek initial treatment at primary care facilities

The mean score for expectation confirmation was 3.99 ± 0.74, indicating a relatively high level of expectation confirmation among patients. The overall mean trust score was 4.13 ± 0.61, reflecting a high level of trust in the doctors.

Among the three dimensions of trust, emotional trust had the highest mean score (4.35 ± 0.64), while service trust had the lowest mean score (3.60 ± 1.02), and technical trust scored (4.18±0.65). The mean score for continued willingness to seek initial treatment at primary care facilities was (4.07 ± 0.93), suggesting strong willingness for patients to seek initial treatment at primary care facilities (Table 1, and Appendix Tables S3, S4, and S5).

Analysis of group differences in patient trust

ANOVA was conducted with patient trust as the dependent variable, using various demographic and healthcare-related factors as independent grouping variables. These factors included gender, age, household registration, education level, occupation, income, hypertension or diabetes status, medical insurance coverage, family doctor contract status, proximity to the nearest community health centre, prior experience with primary care, doctor selection, and expectation confirmation. Statistically significant differences ($P < 0.05$) were found in patient trust based on age, hypertension or diabetes status, family doctor contract status, doctor selection, and expectation confirmation. Specifically, patients aged 60 years or older (4.23 ± 0.51, t = 3.558, P=0.030), suffered hypertension or diabetes (4.23 ± 0.54, t = -2.014, P = 0.045), signed a family doctor (4.27 ± 0.52, t = 3.297, P = 0.001), chose a fixed doctor (4.29 ± 0.52, t = 9.886, P < 0.001), and with high expectation confirmation (4.23 ± 0.56, t = -4.526, P < 0.001) exhibited higher levels of patient trust. Detailed results are provided in Appendix Table S6.

Path analysis of the effect of patient trust on continued willingness to seek initial treatment at primary care facilities

Model reliability and validity testing

Pearson correlation analysis showed significant positive correlations among expectation confirmation, patient trust, and continued willingness to seek initial treatment at primary care facilities ($r = 0.42$, $P < 0.001$; $r = 0.33$, $P < 0.001$; $r = 0.51$, $P < 0.001$), indicating that structural equation modeling (SEM) is appropriate. The Cronbach's α values and composite reliability (CR) values for each subscale were all greater than 0.8, indicating good reliability of the model (Appendix Table S7). The average variance extracted (AVE) values for each subscale were all above 0.5, suggesting good convergent validity. Additionally, the square roots of the AVE for each latent variable were greater than the correlation coefficients between latent variables, indicating good discriminant validity (Appendix Table S8). Key fit indices, such as the CMIN/DF

Table 1
Levels of expectation confirmation, patient trust, and continued willingness to seek initial treatment at primary care facilities.

Item	Mean ± Standard Deviation
Expected Confirmation Overall Level	3.99 ± 0.74
Patient Trust Overall Level	4.13 ± 0.61
Technical Trust	4.18 ± 0.65
Service Trust	3.60 ± 1.02
Emotional Trust	4.35 ± 0.64
Continued willingness to seek initial treatment at primary care facilities	4.07 ± 0.93

Table 2
Test of the overall fit of the model.

Test Type	Model Indicator	Fit Criteria	Test Result	Fit Judgment
Absolute Fit Index	RMSEA	<0.08	0.06	Yes
	GFI	>0.90	0.90	Yes
Incremental Fit Index	RFI	>0.90	0.90	Yes
	TLI	>0.90	0.95	Yes
	CFI	>0.90	0.96	Yes
	IFI	>0.90	0.96	Yes
	NFI	>0.90	0.92	Yes
Parsimonious Fit Index	CMIN/DF	<3.00	2.05	Yes
	PGFI	>0.50	0.70	Yes
	PNFI	>0.50	0.78	Yes
	PCFI	>0.51	0.82	Yes

(chi-square/degrees of freedom ratio) and RMSEA (root mean square error of approximation), met the required fit criteria. Overall, the model demonstrated good fit in terms of absolute, incremental, and parsimony fit indices, with a good overall model fit (Table 2).

Construction of the second-order structural equation model

The results of the discriminant validity test showed that the correlation coefficients among technical trust, service trust, and emotional trust were all greater than 0.50, indicating the presence of a higher-order latent structure. Verification confirmed that the second-order model provided a better fit than the first-order model ($\Delta CFI = 0.057 > 0.01$, with all other fit indices being superior), and the standardized loadings of the second-order factors on the first-order factors were greater than 0.6.[30] Based on these results, the study constructed a second-order structural equation model using AMOS 24.0, with expectation confirmation as the independent variable, patient trust as the mediating variable, and continued willingness to seek initial treatment at primary care facilities as the dependent variable. The standardized factor loadings for the measurement model were all greater than 0.6 and the squared multiple correlations (SMC) were all greater than 0.36, indicating that the model has good explanatory and predictive power (Fig. 1).

Path testing of the second-order structural equation model

Path testing revealed that expectation confirmation did not have a significant positive direct effect on continued willingness to seek initial treatment at primary care facilities, with a path coefficient of 0.07 ($P > 0.05$). However, patient trust had a significant positive effect on continued willingness to seek initial treatment at primary care facilities, with a path coefficient of 0.61 ($P < 0.05$). Expectation confirmation also had a significant positive effect on patient trust, with a path coefficient of 0.48 ($P < 0.05$), as shown in Table 3. The mediating effect was tested using the Bootstrap method with a sample size of 5000 and a 95 % confidence interval. The results indicated that the direct effect of the path expectation confirmation → patient trust → continued primary care intention was not significant, as the confidence interval included 0. However, the indirect effect and total effect were significant, as their confidence intervals did not include 0 Tables 3 and 4.

Discussion

Our core finding show patient trust serves as a significant complete mediator between expectation confirmation and the continued willingness to seek initial treatment at primary care facilities, elucidating the complete psychological process underlying the formation of patients' willingness to seek initial treatment at primary care facilities. We innovatively introduce patient trust as a mediating variable and confirm its full mediating effect to address high degree of information asymmetry in healthcare services,[31] strong risk perception among patients,[32] and the susceptibility of healthcare decision-making to irrational factors,[33] this study innovatively introduces patient trust as a mediating variable, the results highlight unique role of patient trust as a deeper psychological construct in influencing residents' and patients' choices in primary care services in China.

This study found that expectation confirmation positively affects patient trust, which is consistent with previous research indicating that "patients' positive perceptions of healthcare service experiences are closely linked to the construction of trust".[34] Therefore, enhancing expectation confirmation serves as a crucial starting point for increasing patient trust, thus ultimately promoting the continued willingness to seek initial treatment at primary care facilities. Expectation confirmation is the difference between expectations and perceived performance.[35] High expectation confirmation typically arises from either high expectations with high confirmation or low expectations with high confirmation.[36]

In this study, patient expectation confirmation are considered as the category of low expectations with high confirmation, which is closely related to the societal perceptions of primary care services. Public stereotypes of primary care facilities directly lower patients' expectations, such as "limited resources" and "insufficient capacity".[37,38] However, actual experiences such as perceived humanistic care and reasonable costs during the service process[39,40] create a significant "exceeding expectations" contrast compared to patients' low initial expectations, thus triggering the formation of trust, which described "surprise effect".[41] Lowering expectations is the key to generate surprise, the greater contrast leads to stronger feeling of surprise, forming a psychological commitment of "you deserve my greater involvement." Therefore, the gener-

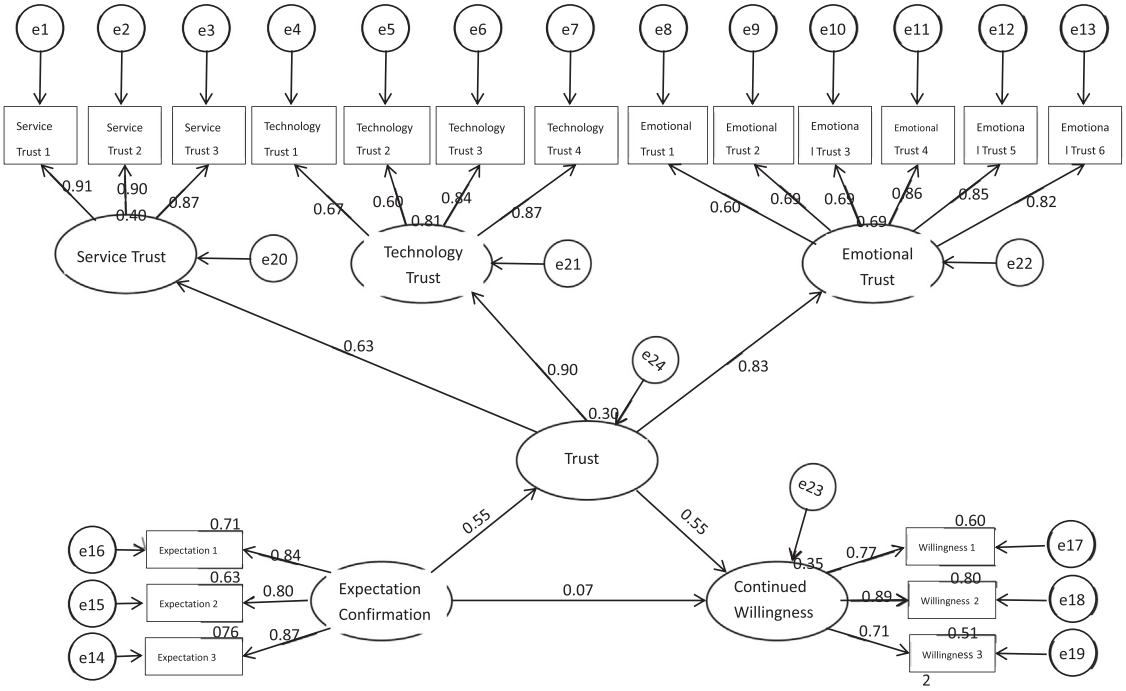

Fig. 1. Second-order structural equation model.

Table 3
Results of the analysis of path coefficients and their significance.

Path	Estimate	*P* value	Result
Expected Confirmation → Continued willingness to seek initial treatment at primary care facilities	0.07	0.368	Not Established
Patient Trust → Continued willingness to seek initial treatment at primary care facilities	0.61	0.000	Established
Expected Confirmation → Patient Trust	0.48	0.000	Established

Table 4
Mediating effect test of the path "Expectation confirmation → Patients' trust → Continued willingness to seek initial treatment at primary care facilities".

Item	Effect Size	Product of Coefficients	Bootstrapping			
			Bias-Corrected 95 % *CI*		Percentile 95 % *CI*	
		SE	Lower	Upper	Lower	Upper
Total Effect	0.37	0.07	0.23	0.50	0.23	0.50
Indirect Effect	0.30	0.06	0.20	0.44	0.19	0.43
Direct Effect	0.07	0.08	-0.09	0.22	-0.08	0.22

ally low expectations regarding primary care services are not necessarily negative. For family doctor teams, achieving high expectation confirmation among patients with initially low expectations requires meeting their targeted needs and providing an "exceeding expectations" experience.

Furthermore, this study show high level of patient trust, which is consistent with the research by WU et al.,[42] but contrasts with the study by ZHAO et al.[12] The main reason for this discrepancy is that ZHAO et al.[12] did not use a reliable scale to measure trust, but instead relied on a single-item measure, which may compromised the accuracy and comprehensiveness of the measurement, potentially leading to biased results. In contrast, we used reliable multi-dimensional scales like WU et al.,[42] but systematically excluded patients who distrust or choose not to seek care at primary care facilities for the absence of first-visit system in primary care system of China, the sample is limited to "retained patients" who are both willing to use and have already utilized primary care services, this could lead to an overestimation of the overall trust level among residents with family doctor contracts. This phenomenon also aligns with the evaluation bias identified in the study by Wang et al.,[43] which highlighted that discrepancies between actual service utilization rates and contract signing rates can contribute to such biases.

This study also revealed a structural difference in patient trust, with "emotional trust > technical trust > service trust," highlighting both the strengths and weaknesses of current primary care. The level of emotional trust was higher than technical trust, which is consistent with the findings of TONG et al. and ZHAO et al.[12] The high level of emotional trust suggests that family doctors have established a "continuous healthcare" model through humanistic care and long-term interactions,[44] which is unique advantage of primary care facilities. This emotional trust can reverse patients' tendency to seek higher-level medical care, thereby promoting the transition from policy-driven demand to proactive choice for primary care. However, this result contrasts with higher levels of technical trust reported WU et al.[42] and CAI et al.,[45] which could be attributed to the location(more developed areas) of investigated institutions. In developed areas, medical resources are more concentrated, and patients tend to prioritize technical expertise, the gap

between primary care facilities and higher-level hospitals is smaller, which elevates the weight of technical trust, leading to higher levels of technical trust than emotional trust. Additionally, it is important to note that most previous trust scales did not include a service trust dimension. In this study, service trust was found to be the lowest. The reasons for this can be summarized as follows: (1)Patients' limited knowledge of referral services, some even became aware of referral services through the explanations from investigators; (2)patients' skepticism regarding the family doctor's ability to coordinate higher-level medical resources; (3)conflict between patients' desire for the freedom to choose higher-level hospitals between the restriction to specific collaborating hospitals. This highlights a lack of transparency and trust in the service pathways of primary care facilities.

Previous studies found that patient trust gradually develops over time and is characterized by both stage-based progression and dynamic evolution.[46–48] This study further reveals the unique evolutionary path of patient trust within the context of family doctor contracted services, emotional trust is established through public health services, while technical and service trust are built through medical and referral services, forming a progressive trust chain. Doctors in higher-level hospitals build patient trust based on institutional status and personal qualifications (such as academic degrees, professional titles, etc.), signaling their "expert" status and establishing trust driven by systemic factors,[12] in contrast, we found key patients targeted by public health services(patients with hypertension, diabetes, and elderly patients) exhibited higher trust in family doctors compared to other groups. This suggests that family doctors may establish initial trust with patients who continuously receive public health services with its link. This finding aligns with LIN et al.'s[49] conclusion that "patient trust in primary care relies on familiarity built through long-term interactions" and TONG et al.'s[12] statement that "interpersonal trust based on emotional connections is more likely to form between doctors and patients in primary care facilities."

This study also found that patients who choose a family doctor or a fixed doctor for their visits exhibit higher trust, combined with the "pathway to forming continued willingness for patients to seek initial treatment at primary care facilities" validated in this study, underscoring the importance of fostering deeper trust in healthcare services. The delegation of diagnostic and treatment authority is not a relinquishment of rights, instead, it forms a dynamic cycle through expectation confirmation. Positive expectation confirmation regarding diagnostic outcomes and service experiences not only deepens emotional trust but also promotes the development of technical and service trust, drives continued willingness to seek initial treatment at primary care facilities, this aligns with WU et al.'s[42] view that "emphasizing and improving both technical proficiency and the level of care helps establish a positive cycle in doctor-patient trust relationships." Therefore, to improve continued willingness for patients to seek initial treatment at primary care facilities, family doctors in China should prioritize the enhancement of technical capabilities, provide high-quality service experiences, and strengthen emotional trust as a foundation for fostering technical and service trust.

This study has several limitations. First, cross-sectional survey can reveal correlations between variables but cannot verify temporal causality or identify the dynamic evolution of trust over the service period. Second, limited sample size restricted the generalizability of findings. The study employed convenience sampling, with a small sample predominantly consisting of middle-aged and elderly individuals over 45 years old, which may not fully represent the diverse characteristics of family doctor contracted patients. Third, the study sample included patients attending primary care facilities and did not include those who have not chosen or have ceased to choose primary care services. This could lead to an overestimation of expectation confirmation, patient trust, and continued willingness to seek initial treatment at primary care facilities, causing sampling bias relative to the entire community population. Fourth, measurement scales require improvements, the scale directly measured expectation confirmation without separately assessing expectations and perceived performance for limited questions, this may affect the precise analysis of trust formation mechanisms, such as the "low expectation, high confirmation" phenomenon, and make it difficult to distinguish the independent effects of expectations and service experiences. Fifth, the statistical analysis was constrained by the sample size, which prevented further testing of the moderating or chain mediation effects of variables such as whether the patient signed family doctor, whether they belong to a key population, or whether they consulted a fixed doctor. The independent mechanisms of technical trust, service trust, and emotional trust were also not analyzed separately, which could diminish the accuracy of the trust pathway analysis.

These limitations can be addressed by future research. First, expand sample coverage by multi-center sampling approach to include populations from both urban and rural areas, individuals across all age groups, and patients from both within and outside primary care facilities, especially focus on heterogeneity of key groups in family doctor contracted services. Second, identify dynamic evolution of expectation confirmation and trust by employing longitudinal design to track the dynamic evolution of trust. Third, measure expectations and perceived performance separately, use structural equation modeling to analyze the independent effects of different dimensions of trust in the context of family doctor contracted services in the scale design, providing more precise references for improving family doctor contracted services and advancing tiered diagnosis and treatment.

Conclusion

Based on expectation confirmation theory, this study focused on the context of family doctor contracted services and developed a theoretical model. It revealed that patient trust fully mediates the relationship between expectation confirmation and continued willingness to seek initial treatment at primary care facilities. The findings identify the critical pathway to enhancing continued willingness to seek initial treatment at primary care facilities from the perspective of the patient's cognitive and emotional processes, suggesting family doctors to establish patient trust by optimizing services and managing expectations, thereby influencing patient behavioral intentions.

Authors' contributions

Conceptualization, X.L.; Methodology, X.L., W.Y.; Data curation, M.X., L.X., H.X. and Z.S.; Formal analysis, M.X., L.X. and H.X.; Funding acquisition, X.L.; Project administration, not applicable; Resources, not applicable; Supervision, X.L; Validation, X.L.; Writing—original draft, M.X.; Writing—review and editing, X.L. and M.X. All authors have read and agreed to the published version of the manuscript.

Ethical approval and consent to participate

The study received approval from Ethics Committee of the Fifth People's Hospital of Chengdu (Approval No: Lunsen 2021–071 (Ke)-01).

Consent for publication

Not applicable.

Availability of data and materials

Not applicable.

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Declaration of competing interest

All authors declare that there are no competing interests

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.cgpj.2025.100083.

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