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Demographic Characteristics, Service Utilization, and Satisfaction among Users of a Traditional Chinese Medicine Internet Hospital Convenient Dispensing Clinic: A Retrospective Descriptive Study

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Abstract

Objective: This study aimed to investigate the demographic characteristics, geographic distribution patterns, and service utilization behaviors of users seeking Traditional Chinese Medicine (TCM) services through an internet hospital convenient dispensing clinic platform affiliated with a major TCM university hospital, and to evaluate patient satisfaction with these digital TCM services. **Methods:** A retrospective descriptive design was used to analyze operational platform data extracted from the convenient dispensing clinic of an internet hospital platform connected to a tertiary TCM hospital in Hangzhou, Zhejiang Province, China. In total, 25,382 patient records, 77,297 dispensing orders across 333 cities in 30 provincial-level administrative divisions, repurchase records from 73,541 users, and 172 patient satisfaction evaluations were included. Descriptive statistics, frequency distributions, cross-tabulations, and percentage calculations were employed for data analysis. **Results:** The platform served users across 30 provincial-level administrative divisions of China. Zhejiang Province contributed the highest proportion of both registered users (22.4%) and orders (32.8%). Female users substantially predominated, making up 80.8% of the registered user base and generating 68.6% of all dispensing orders. The 31 - 40 age group accounted for the largest share of both users (50.6%) and orders (56.3%), with a mean user age of 34.1 years (range: 4 - 85 years). The medication repurchase rate stood at 4.7%, with 3454 out of 73,541 users placing two or more orders. Among the 172 users who submitted evaluations, satisfac-

tion was high: 90.1% awarded the maximum score of 5 out of 5, yielding a mean satisfaction score of 4.82. Geographic analysis revealed a strong concentration of utilization in the Yangtze River Delta region. **Conclusion:** Internet hospital convenient dispensing clinics serve as an effective channel for delivering TCM services to a geographically diverse population. The predominantly female, young-to-middle-aged user demographic suggests these digital TCM services may be especially attractive to working-age adults, a pattern consistent with the demographic profile of sub-health populations identified in epidemiological surveys, though clinical data would be needed to confirm this interpretation. While satisfaction ratings among the small subset who submitted evaluations were high, the relatively low repurchase rate signals a need for better patient retention through structured follow-up and engagement mechanisms.

Keywords

Sub-Health, Traditional Chinese Medicine, Internet Hospital, Telemedicine, Convenient Dispensing, Health-Seeking Behavior, Digital Health Services, Preventive Health Management

1. Introduction

The World Health Organization (WHO) has long emphasized that health is not merely the absence of disease, but a state of complete physical, mental, and social well-being (WHO, 1948). Between clearly healthy states and clinically diagnosable diseases lies a broad and poorly understood territory that Chinese medical scholars have come to call sub-health (ya jiankang). This concept, while modern in its terminology, resonates deeply with the preventive philosophy embedded in classical TCM texts, particularly the principle of zhi wei bing (treating disease before it manifests), articulated in the Huangdi Neijing (Unschuld & Tessenow, 2011). Estimates suggest that 60% - 70% of the Chinese adult population experiences sub-health conditions at any given time (Li et al., 2013), creating an enormous demand for preventive and restorative health services that conventional Western medicine often struggles to address comprehensively.

Sub-health conditions manifest across three interrelated dimensions: physical symptoms such as chronic fatigue, poor sleep, and digestive irregularities; psychological symptoms including anxiety, irritability, and difficulty concentrating; and social symptoms like diminished capacity for interpersonal engagement. These complaints are remarkably common among working-age adults, particularly those in high-pressure professional environments (Li et al., 2013). From a TCM perspective, these states correspond to identifiable patterns of constitutional disharmony, including liver qi stagnation, spleen qi deficiency, and kidney essence insufficiency, which can be addressed through individualized herbal prescriptions, dietary adjustments, and lifestyle modifications (Wang et al., 2014).

The rapid digitalization of China's healthcare system has opened new possibili-

ties. Internet hospitals, a distinctively Chinese innovation in digital healthcare delivery, emerged around 2014 and were formalized through National Health Commission (NHC) regulations in 2018 (National Health Commission of the People's Republic of China, 2018). Unlike simple telemedicine video calls, Chinese internet hospitals function as comprehensive platforms that integrate medical consultation, prescribing, pharmacy dispensing, and home delivery into unified digital ecosystems. By 2023, more than 3,000 licensed internet hospitals were operating nationwide (Han et al., 2020), with emerging models incorporating artificial intelligence-based pharmacy services (Bu et al., 2022) and whole-course outpatient pharmacy delivery systems (Gao et al., 2024). The COVID-19 pandemic proved to be a powerful catalyst for adoption (Gong et al., 2020). For TCM services in particular, the State Administration of Traditional Chinese Medicine (SATCM) explicitly encouraged integration into online platforms in 2019 (SATCM, 2019).

The convenient dispensing clinic (bian jie pei yao men zhen) model represents a particularly innovative approach within this ecosystem. Under this model, licensed TCM physicians conduct consultations through an internet hospital platform, issue individualized herbal prescriptions, and the affiliated hospital pharmacy then dispenses and delivers the medications directly to patients' homes. This model overcomes several practical barriers that have historically limited access to quality TCM care: the difficulty of finding reliable herbal pharmacies in many regions, the complexity of herbal medicine preparation, and the time constraints facing working professionals.

Despite the rapid growth of internet hospital TCM services, surprisingly little empirical research has examined who actually uses these platforms, where they come from geographically, how they engage with the services over time, and how satisfied they are with the experience. Most existing studies on internet hospitals focus on Western medical specialties or general utilization trends (Xie et al., 2017; Xu et al., 2021; Yang et al., 2025; Cheng & Yip, 2024), leaving a notable gap in our understanding of TCM-specific digital services.

The present study addresses this gap through a systematic analysis of real-world operational data from the convenient dispensing clinic of an internet hospital affiliated with a tertiary TCM university hospital in Hangzhou, Zhejiang Province. Drawing on three datasets encompassing 25,382 registered users, 77,297 dispensing orders, and 172 patient satisfaction evaluations, the study pursues four specific objectives: 1) to characterize the demographic profile of platform users by age, gender, and geographic origin; 2) to map the geographic distribution of service utilization at both the provincial and city levels; 3) to analyze medication repurchase behavior as an indicator of continued patient engagement; and 4) to evaluate patient satisfaction with the convenient dispensing service.

2. Materials and Methods

2.1. Study Design

This study adopted a retrospective descriptive design using operational platform

data within a defined observation window. The convenient dispensing clinic was launched in 2021. The study period encompassed the full operational history of the convenient dispensing clinic from its inception through December 30, 2025, for user registration, order, and repurchase data. Satisfaction evaluation data were collected specifically from January 1 to December 30, 2025. The descriptive design was chosen because the primary objectives centered on describing the demographic composition, geographic reach, utilization patterns, and satisfaction levels of the platform's user population. The study did not aim to establish causal relationships or track changes over time.

2.2. Data Sources and Setting

The study was conducted using data from the internet hospital platform of a major tertiary TCM hospital affiliated with a leading Chinese medical university in Hangzhou, the capital of Zhejiang Province. The hospital is a Grade III Level A institution, providing a comprehensive range of TCM clinical services across more than 30 departments. The internet hospital platform's convenient dispensing clinic operates under the supervision of the TCM Department. Patients access the platform through a mobile application or web interface, consult with licensed TCM physicians, receive individualized herbal prescriptions, and have medications dispensed by the hospital's own pharmacy and delivered directly to their homes.

Three distinct datasets were utilized, each capturing a different dimension of the platform's operations (Table 1):

Table 1. Summary of data sources and sample sizes.

Data Source	Content Description	Sample Size	Key Variables
User Database	Registered patient records	N = 25,382	Age, gender, provincial-level administrative divisions
Order Database	Dispensing orders by location	N = 77,297 orders	Provincial-level administrative divisions, city, order count, age, gender
Evaluation Database	Patient satisfaction ratings	N = 172 evaluations	Score (1 - 5), star rating, department, date

Note: The order database also included repurchase frequency data for 73,541 individual users.

The user database (N = 25,382) and the order database (N = 77,297 orders) were extracted from different backend modules of the internet hospital platform. The repurchase frequency dataset (N = 73,541 unique users) was derived from the order database by aggregating orders at the individual user level; its larger user count compared with the registered user database reflects the fact that the order system captured transactions from users who may have placed orders through alternative account pathways. The satisfaction evaluation dataset (N = 172) represents voluntarily submitted evaluations linked to orders within the study period.

2.3. Study Variables

2.3.1. Demographic Variables

Patient age was recorded as a continuous variable (in years) at the time of registration and ranged from 4 to 85 years. For descriptive analysis, age was categorized into nine groups: 0–20, 21 - 25, 26 - 30, 31 - 35, 36 - 40, 41 - 45, 46 - 50, 51 - 55, and ≥56 years. Gender was recorded as a categorical variable with two primary categories: male and female. A small number of order records (n = 195, 0.3%) had gender listed as unknown and were excluded from gender-specific analyses.

2.3.2. Geographic Variables

Geographic information was derived from delivery addresses provided by patients at the time of ordering. Province-level analysis covered all 30 provincial-level administrative divisions represented in the data. City-level analysis was conducted for 333 cities in the order database.

2.3.3. Service Utilization Variables

Order volume served as the primary measure of service utilization. The medication repurchase variable captured repeat ordering frequency by individual users, with observed values ranging from 1 to 6 purchases. The overall repurchase rate was calculated as the proportion of users who placed two or more orders out of the total user base of 73,541 individuals.

2.3.4. Satisfaction Variables

Patient satisfaction was assessed through two distinct measures collected simultaneously via the platform's evaluation interface: 1) a composite numerical score on a continuous 1 - 5 scale, and 2) a separate integer star rating on a 1 - 5 scale. These are independently recorded measures, not the same rating captured twice. In 161 of 172 evaluations (93.6%), the two measures agreed exactly; in the 11 discrepant cases, the star rating consistently equaled or was lower than the floor of the numerical score (e.g., a numerical score of 4.6 paired with 4 stars), suggesting the star rating may be independently assigned by the patient or derived through a different rounding mechanism. All 172 evaluations were associated specifically with the convenient dispensing clinic within the TCM Department.

2.4. Data Analysis Methods

Frequency distributions and percentage calculations were computed for all categorical variables (Agresti, 2013). For the continuous variable of age, the mean, median, interquartile range (IQR), and full range were calculated. Ninety-five percent confidence intervals (95% CIs) were calculated for key proportions using the Wilson score method. Per-capita order rates were calculated by dividing order counts by user counts for each gender to describe differences in ordering intensity; this comparison is presented descriptively rather than as an inferential test because the order and user counts derive from different backend databases. Cross-tabulation was used to examine the relationship between gender and age group.

Geographic distribution was analyzed at both the provincial administrative division and city levels. All data processing and statistical calculations were performed using Python (version 3.10) with the pandas library and scipy.stats.

2.5. Ethical Considerations

This study used de-identified operational data from the internet hospital platform. All personally identifiable information was excluded prior to analysis. Data access was obtained through authorized institutional channels with appropriate administrative approval. The study protocol was reviewed and approved by Zhejiang University of Traditional Chinese Medicine Affiliated Ethics Committee (Approval No. 2026-KLS-264-01).

3. Results

3.1. Overview of Platform Utilization

The internet hospital convenient dispensing clinic platform accumulated a total of 25,382 registered users and 77,297 dispensing orders during the study period. These orders were distributed across 333 distinct cities spanning 30 provincial-level administrative divisions of Chinese Mainland. The only provincial-level administrative division not represented was Xizang Autonomous Region. The overall ratio of total orders to registered users was approximately 3.05:1, though this was heavily inflated by a small proportion of highly active users, as 95.3% of users placed only a single order.

3.2. Demographic Profile of Users

3.2.1. Age Distribution

The age distribution of the 25,382 registered users was concentrated in the young-to-middle-aged adult range. The mean age was 34.1 years, the median was 34 years (IQR: 29 - 38 years), and the range extended from 4 to 85 years. Users between the ages of 26 and 40 represented 73.1% of the total registered population. Young users under 20 years comprised only 1.0%, and those above 55 years accounted for just 0.7% (Table 2).

Table 2. Age distribution of registered users (N = 25,382).

Age Group	Number of Users	Proportion (%)	Cumulative (%)
0 - 20	265	1.0	1.0
21 - 25	2342	9.2	10.3
26 - 30	5699	22.5	32.7
31 - 35	7239	28.5	61.3
36 - 40	5613	22.1	83.4
41 - 45	2601	10.2	93.6
46 - 50	1027	4.0	97.7
51 - 55	418	1.6	99.3
≥56	178	0.7	100.0

3.2.2. Gender Distribution

Female users substantially outnumbered males, comprising 80.8% of the total population (n = 20,509; 95% CI: 80.3% - 81.3%) compared with 19.2% for males (n = 4873) (Table 3).

Table 3. Gender distribution of registered users.

Gender	Number of Users	Proportion (%)
Female	20,509	80.8
Male	4873	19.2
Total	25,382	100.0

Note: Female proportion 95% CI (Wilson score method): 80.3%–81.3%.

3.2.3. Cross-Tabulation of Gender and Age

The female predominance varied substantially across age categories. The gender gap was narrowest among the youngest users (0 - 20 years, female-to-male ratio 2.5:1) and reached its peak in the 41 - 45 and 46 - 50 age groups at approximately 5.4:1. A chi-square test confirmed that the association between gender and age group was statistically significant ($\chi^2 = 287.4$, df = 8, $p < 0.001$) (Table 4).

Table 4. Cross-tabulation of gender and age groups

Age Group	Female (n)	Male (n)	Female (%)	F:M Ratio
0 - 20	189	76	71.3	2.5:1
21 - 25	1814	528	77.5	3.4:1
26 - 30	4387	1312	77.0	3.3:1
31 - 35	5861	1378	80.9	4.3:1
36 - 40	4720	893	84.1	5.3:1
41 - 45	2195	406	84.4	5.4:1
46 - 50	867	160	84.4	5.4:1
51 - 55	338	80	80.9	4.2:1
≥56	138	40	77.5	3.5:1

Note: Chi-square test of independence: $\chi^2 = 287.4$, df = 8, $p < 0.001$.

3.3. Geographic Distribution of Users and Orders

The registered user base spanned 30 provincial-level administrative divisions. Zhejiang Province contributed the largest share of users at 22.4% (n = 5682). The top five provincial-level administrative divisions collectively accounted for 52.9% of all registered users, and the top ten represented 68.6% (Table 5).

The geographic distribution of orders closely mirrored but was not identical to the user distribution. Zhejiang Province generated the largest share of orders at 32.8%, notably exceeding its 22.4% share of users. The four core Yangtze River Delta provincial-level administrative divisions and municipalities (Zhejiang, Jiangsu, Shanghai, and Anhui) together accounted for 56.4% of all orders (Table 6; Figure 1).

Table 5. Top 15 provincial-level administrative divisions by number of registered users.

Rank	Provincial-Level Administrative Divisions	Users (n)	Proportion (%)	Cumulative (%)
1	Zhejiang	5682	22.4	22.4
2	Jiangsu	3213	12.7	35.0
3	Guangdong	1979	7.8	42.8
4	Anhui	1314	5.2	48.0
5	Sichuan	1245	4.9	52.9
6	Shanghai	1243	4.9	57.8
7	Shandong	1088	4.3	62.1
8	Hebei	849	3.3	65.4
9	Henan	798	3.1	68.6
10	Fujian	724	2.9	71.4
11	Hubei	621	2.4	73.9
12	Beijing	588	2.3	76.2
13	Chongqing	562	2.2	78.4
14	Hunan	560	2.2	80.6
15	Liaoning	551	2.2	82.8

Table 6. Top 15 provincial-level administrative divisions by order volume.

Rank	Provincial-Level Administrative Divisions	Orders (n)	Proportion (%)	Cumulative (%)
1	Zhejiang	25,381	32.8	32.8
2	Jiangsu	10,272	13.3	46.1
3	Guangdong	4405	5.7	51.8
4	Anhui	4147	5.4	57.2
5	Shanghai	3760	4.9	62.1
6	Shandong	2908	3.8	65.8
7	Sichuan	2722	3.5	69.4
8	Fujian	2406	3.1	72.5
9	Henan	2353	3.0	75.5
10	Hebei	1961	2.5	78.1
11	Hubei	1936	2.5	80.6
12	Beijing	1717	2.2	82.8
13	Hunan	1369	1.8	84.6
14	Shaanxi	1355	1.8	86.3
15	Jiangxi	1312	1.7	88.0

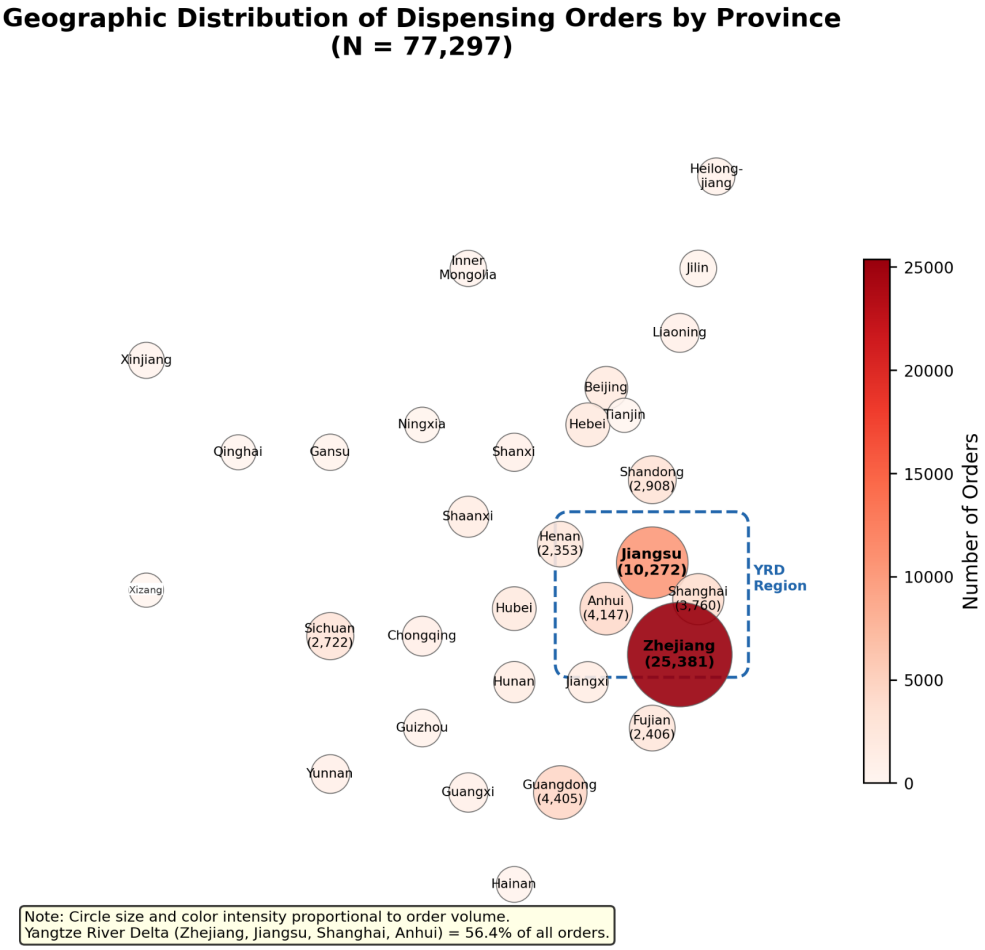

Figure 1. Geographic distribution of dispensing orders by provincial-level administrative divisions (N = 77,297).

At the city level, Hangzhou dominated with 11,288 orders (14.6% of total). Among the top 20 cities, seven were located within Zhejiang Province, four in Jiangsu, and the remainder distributed across seven other provincial-level administrative divisions and municipalities (Table 7).

Table 7. Top 20 cities by order volume.

Rank	City	Provincial-Level Administrative Divisions	Orders	% of Total
1	Hangzhou	Zhejiang	11,288	14.6
2	Shanghai	Shanghai	3760	4.9
3	Ningbo	Zhejiang	2804	3.6
4	Suzhou	Jiangsu	2364	3.1
5	Jinhua	Zhejiang	1985	2.6
6	Shaoxing	Zhejiang	1960	2.5
7	Jiaxing	Zhejiang	1918	2.5

Continued

8	Wenzhou	Zhejiang	1786	2.3
9	Beijing	Beijing	1717	2.2
10	Taizhou	Zhejiang	1486	1.9
11	Wuxi	Jiangsu	1361	1.8
12	Nanjing	Jiangsu	1313	1.7
13	Chengdu	Sichuan	1171	1.5
14	Hefei	Anhui	1117	1.4
15	Chongqing	Chongqing	1088	1.4
16	Shenzhen	Guangdong	1044	1.4
17	Huzhou	Zhejiang	1010	1.3
18	Changzhou	Jiangsu	913	1.2
19	Nantong	Jiangsu	898	1.2
20	Guangzhou	Guangdong	858	1.1

3.4. Order Volume and Patterns

3.4.1. Order Distribution by Age

While the 31 - 35 age group was the largest among registered users (28.5%), the 36 - 40 age group generated the highest proportion of orders at 30.6%. Users under 25 accounted for just 2.9% of total orders despite representing 10.3% of registered users (Table 8).

Table 8. Order volume distribution by age group (N = 77,297).

Age Group	Orders (n)	Proportion (%)	Cumulative (%)
0 - 20	244	0.3	0.3
21 - 25	2009	2.6	2.9
26 - 30	10,784	14.0	16.9
31 - 35	19,901	25.7	42.6
36 - 40	23,619	30.6	73.2
41 - 45	12,461	16.1	89.3
46 - 50	4948	6.4	95.7
51 - 55	1950	2.5	98.3
≥56	1119	1.4	99.7
Unknown	262	0.3	100.0

3.4.2. Order Distribution by Gender

Female users generated 68.6% of all orders, while males accounted for 31.2%. Although women constituted 80.8% of users, they produced only 68.6% of orders. This translates to an average of 4.95 orders per male user versus 2.58 orders per

female user (rate ratio: 1.92). This per-capita comparison is presented descriptively; because the user and order counts derive from separate backend databases with different units of analysis, a formal inferential test of this difference is not appropriate (Table 9).

Table 9. Order volume distribution by gender.

Gender	Orders (n)	Proportion (%)	Avg. Orders per User
Female	52,974	68.6	2.58
Male	24,128	31.2	4.95
Unknown	195	0.3	—
Total	77,297	100.0	3.05

Note: Male-to-female per-capita order rate ratio: 1.92. This comparison is descriptive; the user and order counts derive from separate backend databases.

3.5. Medication Repurchase Behavior

Medication repurchase behavior was assessed using data from 73,541 unique users. The vast majority (95.3%, n = 70,087) placed only a single order. A total of 3454 users (4.7%; 95% CI: 4.5% - 4.9%) placed two or more orders. Among those who repurchased, the most common frequency was two purchases (n = 3216, 4.4% of all users). The numbers dropped sharply at higher frequencies. This 4.7% repurchase rate should be interpreted as a lower-bound estimate, as the full cohort includes users who registered near the end of the observation period and may not have had sufficient follow-up time to place a second order. Individual-level registration timestamps were not available in the aggregated repurchase dataset, precluding a time-stratified sensitivity analysis (Table 10).

Table 10. Medication repurchase frequency distribution (N = 73,541).

Number of Purchases	Users (n)	Proportion (%)	Cumulative (%)
1 (single purchase)	70,087	95.3	95.3
2	3216	4.4	99.7
3	186	0.25	99.9
4	41	0.06	99.97
5	10	0.01	99.98
6	1	<0.01	100.0

Note: Overall repurchase rate (≥2 purchases): 4.7% (95% CI, Wilson score method: 4.5%–4.9%).

3.6. Patient Satisfaction Analysis

A total of 172 patient evaluations were submitted between January 1 and December 30, 2025, representing a response rate of 0.68% relative to the 25,382 registered users and 0.22% relative to the 77,297 total orders. The distribution was over-

whelmingly positive: 155 evaluations (90.1%; 95% CI: 84.8% - 93.8%) awarded the maximum score of 5.0, yielding a mean satisfaction score of 4.82 (median: 5.0; IQR: 5.0 - 5.0) (Table 11). The star rating distribution (Table 12) closely mirrored the numericalscores. The 172 evaluations were distributed across 9 distinct physicians, with the top four receiving 31 - 40 evaluations each. Of the 172 evaluations, 160 were classified as "displayed" and 12 as "hidden" by the platform's interface. All 172 evaluations were included in the analysis reported above regardless of display status. A sensitivity analysis showed that the 160 displayed evaluations had a mean score of 4.98, while the 12 hidden evaluations had a substantially lower mean of 2.65. This disparity suggests that the platform's display mechanism may selectively conceal less favorable evaluations, though the reasons for hiding specific evaluations could not be determined from the available data.

Table 11. Patient satisfaction score distribution (N = 172).

Score Range	Count (n)	Proportion (%)
5.0 (Maximum)	155	90.1
4.0 - 4.9	8	4.7
3.0 - 3.9	2	1.2
2.0 - 2.9	1	0.6
1.0 - 1.9	6	3.5

Note: Mean: 4.82; Median: 5.0; IQR: 5.0 - 5.0.

Table 12. Patient satisfaction star rating distribution (N = 172).

Star Rating	Count (n)	Proportion (%)
5 stars	155	90.1
4 stars	8	4.7
3 stars	2	1.2
2 stars	1	0.6
1 star	6	3.5

4. Discussion

4.1. User Demographics and Health-Seeking Behavior

The 80.8% female share of registered users far exceeds the 55% - 65% female proportion typically reported in studies of general internet hospital utilization (Xu et al., 2021). Several overlapping factors may contribute. First, sub-health prevalence is genuinely higher among women, with hormonal fluctuations contributing to a broader range of functional complaints (Wang et al., 2014; Yan et al., 2009). Second, TCM has deep cultural roots in Chinese women's health management, including services such as menstrual regulation, fertility support, postpartum recovery, and menopausal symptom management (Wang et al., 2014). Third, women

in China consistently demonstrate higher rates of preventive health information-seeking behavior (Zhang et al., 2014).

The concentration of users in the 26 - 40 age range (73.1%) corresponds closely to the demographic profile of peak sub-health prevalence identified in epidemiological surveys (Li et al., 2013), though this interpretation remains plausible rather than confirmed, as clinical diagnosis or symptom data were not available in our dataset. This is a life phase characterized by converging pressures: demanding careers, family formation, and the earliest manifestations of age-related physiological change. The age data suggest a confluence of need factors, predisposing factors, and enabling factors consistent with Andersen's Behavioral Model of Health Services Use (Andersen, 1995).

The finding that male users placed nearly twice as many orders per capita as female users (4.95 vs. 2.58) suggests that men may tend to delay seeking healthcare until symptoms become more persistent (Courtenay, 2000), and those who do register may represent a more clinically motivated subgroup requiring sustained treatment.

4.2. Geographic Distribution Patterns and Implications

The geographic findings demonstrate strong local roots combined with genuine national reach. The Yangtze River Delta region alone accounted for 56.4% of all orders, consistent with Rogers' Diffusion of Innovations theory (Rogers, 2003). The 10.4 percentage-point gap between Zhejiang's share of users (22.4%) and orders (32.8%) reveals that proximity influences not just adoption but engagement depth. The meaningful representation of inland provincial-level administrative divisions such as Sichuan, Henan, and Hubei is encouraging from a health equity perspective, suggesting that internet hospital platforms may help bridge geographic gaps in TCM service availability.

Several platform-specific factors likely contribute to this geographic concentration beyond theoretical diffusion dynamics. First, institutional proximity and brand recognition play a key role: the affiliated hospital is a Grade III Level A TCM institution in Hangzhou with strong regional reputation, which likely drives higher awareness and trust among Zhejiang residents. Second, the Yangtze River Delta benefits from China's most developed logistics infrastructure, enabling faster and more reliable medication delivery—a critical factor for time-sensitive herbal preparations. Third, Zhejiang Province has been a national leader in digital health policy and "Internet+" governance reform (Zhejiang Provincial Bureau of Statistics, 2023), creating a more digitally literate patient population accustomed to online health services. Fourth, regional variations in internet hospital medical insurance reimbursement policies (NHSA, 2020) may influence utilization patterns, as provincial-level administrative divisions with more favorable reimbursement frameworks may see higher adoption.

4.3. Service Utilization and Repurchase Patterns

The 4.7% medication repurchase rate reveals a critical challenge in patient reten-

tion, though as noted in Section 3.5, this figure should be interpreted as a lower-bound estimate because the cohort includes users who registered near the end of the observation period and had limited follow-up time. For context, a multicenter study of internet hospital consultation services reported repeat consultation rates of 10.38% (Yang et al., 2025), telemedicine follow-up rates in chronic disease management typically report re-engagement rates of 15% - 30% (Tuckson et al., 2017), and a study of internet hospital follow-up services found patients averaged over 2 visits (Wang et al., 2024). Eysenbach's Law of Attrition observes that high dropout rates are near-universal in digital health interventions (Eysenbach, 2005). Future studies with individual-level longitudinal data should conduct cohort-based analyses to provide a more accurate estimate of true repurchase behavior. Several factors may contribute to the low observed rate: the inherently gradual nature of TCM therapeutic effects; the ease of disengagement in a low-barrier digital environment; competitive alternatives in the digital health marketplace; and the absence of structured follow-up mechanisms within the platform.

4.4. Service Quality and Patient Satisfaction

Among the 172 users who submitted evaluations (representing only 0.68% of registered users), satisfaction ratings were positive, with 90.1% awarding the maximum score and a mean rating of 4.82 out of 5.00. However, the 172 evaluations represent a tiny fraction of the total user base, and voluntary self-selection is well-documented as a source of upward bias (Perneger et al., 2015). The sensitivity analysis of hidden evaluations is particularly noteworthy: the 12 evaluations classified as "hidden" by the platform had a mean score of 2.65, compared with 4.98 for the 160 "displayed" evaluations. While the reasons for hiding individual evaluations could not be determined from the data, this pattern raises methodological concerns about platform-mediated curation of user feedback. All reported analyses in this study used all 172 evaluations regardless of display status to avoid amplifying this potential bias. Despite these caveats, the distribution across nine physicians suggests the positive ratings reflect systemic service quality rather than individual performance.

4.5. Limitations

This study has several limitations. First, the retrospective descriptive design precludes causal inference. Second, the data come from a single platform affiliated with one institution in Zhejiang Province. Third, clinical data such as specific TCM diagnoses, prescription contents, and treatment outcomes were not available. Fourth, the satisfaction data are drawn from a self-selected sample of 172 evaluations. Fifth, the classification of platform users as a sub-health population is inferential rather than based on validated assessment instruments. Sixth, socioeconomic variables were not captured. Seventh, users who placed their first order near the end of the observation window may not have had sufficient time to place repeat orders, meaning the observed repurchase rate may underestimate long-

term behavior due to right-censoring.

5. Conclusion

Based on the analysis of 25,382 registered users, 77,297 dispensing orders across 333 cities and 30 provincial-level administrative divisions, repurchase data from 73,541 users, and 172 patient satisfaction evaluations, the following conclusions are drawn.

First, the platform serves a demographically distinctive population that is predominantly female (80.8%) and concentrated in the 26 - 40 age range (73.1%), with a mean age of 34.1 years. Male users, though fewer, placed nearly twice as many orders per capita (4.95 vs. 2.58).

Second, the platform achieved genuine national geographic reach across 30 of 31 provincial-level administrative divisions on the Chinese Mainland, though the Yangtze River Delta region accounted for 56.4% of all orders.

Third, the medication repurchase rate of 4.7%, which should be interpreted as a lower-bound estimate given the inclusion of late-registering users with limited follow-up time, reveals a critical challenge in patient retention, likely reflecting the gradual nature of TCM therapeutic effects, the absence of structured follow-up mechanisms, and low switching costs in a digital environment.

Fourth, among the small subset who submitted evaluations, satisfaction was high (90.1% maximum score, mean 4.82/5.00), though this is subject to selection bias given the extremely low response rate.

Future research should pursue longitudinal designs tracking individual patient trajectories, qualitative studies exploring motivations and barriers, clinical effectiveness trials comparing digital versus in-person TCM delivery, and health economic analyses evaluating cost-effectiveness.

Conflicts of Interest

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

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