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## Postprint of a Review on the Research Status of Domestic Online Health Communities

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### Abstract

[Purpose/Significance] This study retrospectively reviews and systematically organizes the current state of domestic online health community research, aiming to provide references for related studies and guide practical explorations toward greater maturity and standardization. [Method/Process] Through literature investigation, this paper systematically elaborates on the interrelationships among the three core elements of online health communities—information, users, and community—and establishes a comprehensive research framework. Based on this framework, it thoroughly examines the principal achievements and current research status of domestic online health community research from the three dimensions of information, users, and community. [Results/Conclusion] Online health communities comprise three elements: information, users, and community, which mutually influence and depend on one another. Domestic research on online health communities primarily unfolds along these three dimensions, characterized by interdisciplinary approaches and methodological diversification, thereby offering broad perspectives and abundant references. Compared with relevant international research, this paper critically evaluates the deficiencies of domestic online health community research in terms of target populations, degree of collaboration, and research content, and identifies future research directions.

### Full Text

### Preamble

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### A Review of Domestic Online Health Community Research

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## Abstract

**[Purpose/Significance]** This article reviews and synthesizes the current state of domestic online health community research, aiming to provide reference and guidance for related research and to steer practical explorations toward greater maturity and standardization. **[Method/Process]** Through literature investigation, this paper systematically elaborates on the interrelationships among the three core elements of online health communities—information, users, and community—and establishes a comprehensive research framework based on these relationships. It then comprehensively reviews domestic research achievements and current status across the three dimensions of information, users, and community. **[Result/Conclusion]** Online health communities comprise three interdependent and mutually influential elements: information, users, and community. Domestic research on online health communities primarily unfolds along these three dimensions, characterized by interdisciplinary approaches and diversified research methods, offering broad perspectives and rich insights for reference. Compared with international research, this paper identifies deficiencies in domestic studies regarding target populations, collaboration levels, and research content, and points out future research directions.

**Classification Number:** G203

**Keywords:** online health community; internet health information; health information behavior; topic identification; online social support

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## 1. Introduction

The continuous development of online communities and growing public health consciousness have fueled the rise and flourishing of online health communities (OHCs). According to a national survey by the Pew Research Center, 26% of adult internet users browsed health-related personal experiences shared by others on forums and blogs in 2013, while 16% sought out others with similar health conditions [1]. Online health communities enable convenient access to and utilization of health information, with diverse application modes including forums, blogs, BBS, online forums, Q&A platforms, QQ groups, Weibo, and WeChat.

Unlike traditional physician-centered healthcare service models, online health communities provide users with an open platform for exchanging information, sharing experiences, consulting on health-related issues, and receiving social support [2]. For the general public and patients, especially those with chronic diseases, the powerful interactive functions of online health communities play a significant positive role in health self-management and daily disease control [3]. Additionally, these communities help alleviate the real-world problems of limited and unevenly distributed healthcare resources [4].

In recent years, internet-based health practices such as mobile health management, online healthcare, and online health communities have developed rapidly

[5]. An iResearch consulting report shows that driven by policy incentives, China's healthcare industry is becoming increasingly internet-based, with relevant departments such as the National Health and Family Planning Commission introducing policies to encourage innovative medical service models, online health service integration, and development. Domestic online health community applications have flourished, with typical representatives including Sweet Home, Haodf.com, and Baidu's HIV/AIDS forum.

However, despite growing research attention on online health communities, comprehensive reviews and syntheses remain scarce [6]. Therefore, based on literature investigation, this paper systematically interprets, synthesizes, and describes the current status and development trends of domestic online health community research from three dimensions—information, users, and community—to provide insights for related research and guide the maturation and standardization of online medical services, e-health, and smart healthcare practices.

## 2. Overview of Domestic Online Health Community Research

The relevant literature for this review primarily originates from Chinese academic databases (CNKI, Wanfang, VIP) and the Baidu Academic search engine. Key terms related to online health communities include “online health community,” “virtual health community,” “e-health community,” “online medical community,” “virtual medical community,” “e-medical community,” “internet health community,” and “internet medical community.” Using these terms as keywords (search date: September 10, 2017), combined with paired searches of “health,” “medical,” “disease,” “patient” with “BBS,” “forum,” “blog,” “Weibo,” and “social media,” and supplemented by backward and forward citation searches, we identified 55 highly relevant documents after screening: 1 monograph, 44 journal articles, 1 conference paper, 2 doctoral dissertations, and 7 master's theses.

### 2.1 Literature Distribution and Research Development

**Temporal Distribution:** Domestic online health community research can be divided into three stages (see [Figure 1: see original paper]). The **embryonic stage (2008-2010)** featured limited publications confined to public health and nursing, without explicit use of “online health community” terminology. The **initial development stage (2011-2014)** saw modest growth in publications spreading to medical informatics, management science, and information management, with explicit terminology emerging. The **rapid development stage (2015-present)** has witnessed a surge in publications with clear growth trends, expanded disciplinary fields, and diversified research methods.

**Institutional Distribution:** Several influential research institutions and teams have emerged, primarily concentrated in management, information

science, and medical health management (see ), demonstrating the interdisciplinary nature of this field.

**\*\* Distribution of Major Research Institutions\*\***

Major Research Institutions	Number of Publications	Representative Research Teams
Harbin Institute of Technology, School of Management		Guo Xitong, Yan Xiangbin
Wuhan University, School of Information Management		Zhang Xing, Xia Huosong
East China Normal University, Department of Information Management		
Huazhong University of Science and Technology, School of Medicine and Health Management		
Wuhan Textile University, School of Management		

**Funding Support:** Online health community research has also received support from national funds such as the National Natural Science Foundation and National Social Science Foundation (see ), covering themes including knowledge sharing, doctor-patient interaction, privacy protection, and health promotion effects.

**\*\* National Natural Science Foundation and Social Science Foundation Projects Related to Online Health Communities\*\***

Year	Project Title
	Research on Knowledge Sharing and Behavior Diffusion Mechanisms in Virtual Health Communities
	Research on Doctor-Patient Interaction Mechanisms Based on Online Medical Communities
	Knowledge Sharing in Online Health Communities: The Impact of Individual Motivation and Network Structure on Sharing Behavior

Year	Project Title
	Research on User Behavior Evolution in Online Medical Communities Under Content-Relationship Interaction
	Research on User Experience Optimization and Privacy Protection Mechanisms for Online Health Service Communities
	Research on the Impact Mechanism of Online Patient Social Networks on Individual Health
	Research on User Interaction Behavior in Online Health Communities and Its Impact on User Health Utility

### 3. Main Content of Domestic Online Health Community Research

Online health communities can be viewed as complex systems comprising three interdependent and mutually influential elements: information, users, and community (see [Figure 2: see original paper]). Information records user interactions and community operations, reflecting user needs, cognition, emotions, attitudes, and social support. The accumulation and aggregation of health information supports community information services and knowledge discovery. Users are participants, contributors, and managers, including health consumers (general public, patients, caregivers, doctors, nurses, healthcare institutions) who generate, disseminate, acquire, evaluate, and use health information. The community provides the infrastructure, cultural environment, and institutional mechanisms for user activities and information exchange.

#### [Figure 2: see original paper] Relationship Among the Three Elements of Online Health Community: Information, Users, and Community

Based on this analysis, we construct a research framework across three dimensions (see ) and systematically review the hot topics, current status, and development trends.

\*\* Main Content and Framework of Domestic Online Health Community Research\*\*

Dimension/Perspective	Research Topics
<b>3.1 Information Dimension</b>	Information theme content; Information quality and credibility; Information privacy

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Dimension/Perspective	Research Topics
<b>3.2 User Dimension</b>	User relationship networks; User health information behavior; Doctor-patient interaction and physician groups
<b>3.3 Community Dimension</b>	Community value and service applications; Community models and operational mechanisms; Community status and development trends

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### 3.1 Information Dimension Research

**3.1.1 Information Theme Content** Online health communities contain vast amounts of user discussion content in text form. Researchers have examined hot topics across different diseases (diabetes, hypertension), platforms (Baidu Tieba, Baidu Zhidao, Yahoo Answers, Weibo, forums), time periods, and countries.

Early studies primarily used content analysis and manual annotation. For example, Bai Guannan and Niu Wenyi [7-8] conducted qualitative analysis of posts from Baidu's "HIV/AIDS Forum," identifying four themes: health needs, attitudes toward AIDS, psychological reactions, and social support utilization. Jin Biyi and Xu Xin [9] analyzed diabetes-related questions on Yahoo Answers, finding hot topics in daily disease management, diagnosis and treatment, with less attention to disease prevention. They further compared eight major themes across health forums and Q&A platforms, finding consistent distributions but different emphases [10]. Shi Yilong and Xu Xin [11] compared autism-related Q&A data from Baidu Zhidao and Yahoo Answers, analyzing questioner-patient relationships, question themes, and answer quality. Guo Haihong et al. [12] manually classified hypertension-related health questions, finding public information needs concentrated in treatment, diagnosis, healthy lifestyle, clinical findings/disease management, epidemiology, and physician selection.

With advances in text mining, automated techniques such as text clustering, R-based tools, and LDA topic models have been applied. Lü Yingjie [13] used text clustering on MedHelp forum posts to explore user interests and compare topic distributions across lung cancer, breast cancer, and diabetes forums. Jiang Ningping [14] used R tools to identify six themes in HIV-related Weibo posts: transmission and rumors, infected individuals, epidemic situations, infection incidents, prevention information, and public welfare propaganda, revealing more diverse and authentic social representations than traditional media. Li Chongyang et al. [15] combined LDA models with manual annotation to identify cancer-related themes and temporal trends. Other researchers used improved LDA models to analyze themes in a cerebrovascular disease forum, finding content concentrated in emotional expression, complications, symptom description,

dietary precautions, medical research, and medication [16].

**3.1.2 Information Quality and Credibility** Information quality in online health communities critically affects user adoption, needs satisfaction, and service experience. Domestic research in this area remains limited, focusing on quality issues and influencing factors. Qi Na and Song Lirong [17] analyzed popular health-related Weibo posts, revealing chaotic quality judgment standards, urgent need for improved scientific credibility, and lack of proper guidance. Zhang Xing et al. [18] identified argument quality, information completeness, expression quality, consistency, and source credibility as significant factors affecting information credibility. Shi Yilong and Xu Xin [11] evaluated answer quality from Baidu Zhidao and Yahoo Answers, finding clarity, completeness, accuracy, and operability as key determinants.

**3.1.3 Information Privacy** Online health communities involve sensitive information about identity, health status, medical history, and finances, raising privacy concerns. Li Yuguang [19] examined factors affecting patients' medical information sharing intentions in online medical communities, finding that information sensitivity had no effect—possibly because website privacy protection mechanisms weakened its impact. Conversely, Zhang Xing et al. [20] found privacy concerns significantly negatively affected information disclosure attitudes. Wang Wentao et al. [21] found privacy calculus significantly influenced usage intentions, as users weigh privacy disclosure against benefits. Chen Leiyang [22] systematically analyzed user privacy content and leakage methods, proposing comprehensive protection solutions from legal, technical, and awareness perspectives.

## 3.2 User Dimension Research

**3.2.1 User Relationship Networks** User behaviors such as posting, replying, following, and adding friends create connection networks. Research focuses on three aspects: network structure, formation factors, and social support.

*Network Structure:* Studies examine network density, core-periphery analysis, and small-world effects. Generally, tighter member relationships facilitate more efficient information dissemination. In Sina Weibo health communities, low mutual communication and clustering phenomena may hinder information flow [23]. Wu Jiang and Zhou Lusha [24] studied knowledge-sharing networks in a breast cancer community, finding scale-free and small-world characteristics indicating core contributors and effective knowledge propagation through short paths. Similar patterns were found in Baidu's "Tumor Forum" [25] and "HIV Forum" [26], though with low density, few core members, and unbalanced information exchange.

*Formation Factors:* Research examines individual attributes (age, gender, friend count) and network structural attributes (reciprocity, triadic closure). Song Xiaolong [27] used Exponential Random Graph Models (ERGM) to study patient friend-formation, finding health homophily (preference for similar condi-

tions/treatments) and that individual activity and past experiences affect emotional support exchange. Wu Jiang et al. [28] used Stochastic Actor-Oriented Models to analyze China's largest diabetes community, Sweet Home, finding gender, age, and disease type significantly influenced friend relationships; users with more friends, longer online time, and higher activity were more likely to form connections; and users preferred befriending friends-of-friends.

*Social Support:* Online health communities provide psychological benefits and supplement real-world support systems. Studies of a Douban health group found information support most frequently exchanged, followed by emotional and companionship support, with denser networks forming around emotional/companion support [29]. In Baidu's "HIV Forum," information support was most sought and provided, with demand far exceeding supply [26].

**3.2.2 User Health Information Behavior** Research covers information disclosure, seeking/sharing, service usage, and social support behaviors.

Survey-based studies dominate (see ), supplemented by interviews and grounded theory [21]. Objective network data analysis has increased, using web scraping, content analysis, and social network analysis. Zhou Junjie [37] categorized user participation into six types in a cancer-themed QQ group, finding emotional support, knowledge sharing, and off-topic behavior as primary types with positive interrelationships. Deng Shengli and Liu Jin [38] analyzed hypertension-related questions from Baidu Zhidao, revealing needs concentrated in daily management, diagnosis, and treatment. Social network analysis has matured, with Liu Xuan et al. [39] using ERGM to model replying behavior, finding reciprocity, transitivity, homophily, and social capital as key factors. Zhai Yujia et al. [40] analyzed Baidu's smoking cessation forum, revealing user attrition and fragmentation. Evolutionary game theory and simulation have also been applied, such as Hou Guisheng et al.'s [41] analysis of knowledge transformation strategies.

**3.2.3 Doctor-Patient Interaction and Physician Groups** Physicians contribute through profile updates, educational articles, and consultation responses. Research examines influencing factors from both patient and physician perspectives. For patients, Liu Xiaoxiao [42] found physician online reputation, effort, and service price significantly affected consultation volume, with price mediating reputation/effort effects. For physicians, Han Xiaocui [43] and Li Yang [44] found economic returns, reputation, and offline identity positively influenced contribution behavior, with varying effects across diseases and time periods.

Doctor-patient interaction research focuses on knowledge exchange, communication, and trust. Fan Xiaoni and Ai Shizhong [36] validated how both parties' behaviors affect knowledge exchange outcomes. Ma Chengyu [45] studied Haodf.com interactions from activity, visits, and satisfaction perspectives. Deng Chao-hua and Hong Ziyang [46] integrated trust factors with perceived benefits/risks, finding website, hospital, and physician credibility significantly affected online trust.

### 3.3 Community Dimension Research

**3.3.1 Community Value and Service Applications** Researchers have explored virtual communities [50] and Weibo [51] for health education, blog strategies for health information dissemination [52], and enhancing doctor-patient communication and trust [53]. Patient online communities' value in health improvement, service innovation, and social support system building has been discussed [54]. Yang Hualong and Ju Xiaofeng [55] provided empirical evidence that social support and personal goals in online health communities positively affect health status improvement.

**3.3.2 Community Models and Operational Mechanisms** Research has examined operational models and business patterns. Zhou Huilai et al. [56] identified stakeholders (consumers, doctors, hospitals, pharmaceutical/insurance companies) and their value demands across healthcare service stages, summarizing general operational models and three business patterns: consumer-oriented, physician-oriented, and user data-based healthcare services. Lan Fuqiang et al. [57] constructed a framework for patient health information exchange in virtual communities, including communication subjects, motivations, content, channels, and symbolic systems.

**3.3.3 Community Status and Development Trends** Analyzing current status and trends is crucial for identifying problems and promoting sustainable development. Shen Feifei [58] surveyed health sections in 76 university BBS platforms, examining development trends and influencing factors. Shao Shuang et al. [59] compared three major health platforms (39 Health Network, Xunyiwenyao, Haodf.com) from service, operational, and profit models. Tang Xiaolin et al. [60] identified three categories of health websites: health information/online consultation, online pharmacies, and medical tools, with intense competition within categories. Ma Chengyu [45, 61] noted that while China's online medical communities have achieved scale, conversion rates remain low, service efficiency needs improvement, and integration with traditional healthcare systems requires exploration.

## 4. Conclusion and Outlook

Online health communities have profoundly changed public health information seeking and communication, holding significant importance for China's internet health service innovation. This review reveals several characteristics of domestic research: (1) It spans multiple disciplines including library/information science, management science, medical informatics, nursing, and communication; (2) Research methods are diverse and often mixed, including surveys, web scraping, quantitative analysis (SEM, regression), qualitative methods (grounded theory, content analysis), and computational approaches (text mining, social network analysis, game simulation).

However, compared with international research, domestic studies show three main deficiencies:

1. **Target Population:** Research primarily focuses on adolescents/college students and limited disease types (diabetes, HIV/AIDS), lacking attention to cancer, depression, chronic disease patients, elderly (and caregivers), women, and ethnic minorities. Future research should systematically analyze and compare diverse user groups.
2. **Collaboration Level:** Most research is conducted by universities alone, with minimal participation from medical research institutes or enterprises, and limited cross-institutional/interdisciplinary collaboration. Future efforts should explore cross-sector partnerships, including with platform operators, to leverage backend log data for optimizing services.
3. **Research Content:** While focusing on topic mining, user behavior, and relationship networks, research lacks depth in information quality evaluation/management, privacy mechanisms/protection, social value, and community operation/management. Future studies should systematically explore these weak areas to balance and sustain research and practice development.

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