Construction of “Internet+” Medical User Portrait

Haowei Huang, Xueyin Liu, Jinyue Cao*

Beijing Information Science and Technology University, Beijing, China

*corresponding author

Keywords: Internet medical; Consumer behavior; User portrait

Abstract: With the development of "Internet +", medication could gradually depend on the "Internet+" to operate online medical services. As well as realize the full integration and utilization of medical resources to help patients to obtain medical treatments. This study investigated "Internet +" medical consumption. The behaviors of the respondents were grouped into 3 types by k-means clustering according to the tendency of visiting places, which were online, offline and the combination of online and offline. Aiming to analyze "Internet+" medical consumer group characteristics and influencing factors in depth.

1. Introduction

In recent years, internet medical services have continued to grow rapidly. Affected by the novel coronavirus pneumonia, the actual demand for internet medical services has increased rapidly, and frequent policies have promoted the development of the Internet healthcare industry. Authorized by PKUCare CNOOC Hospital, the Internet plus medical consumption survey was conducted to collect and characterize data effectively. Medical market and the Internet plus medical consumption market are also summarized. Using k-means clustering method, the behaviors of respondents were divided into three types according to the tendency of visiting places: online, offline and the combination of online and offline.

2. Review of literature

Scholars world-widely generally believe that the integration of medical ecology of "Internet+" will be the trend for hospitals in the future. C-end service system involving payment, real-name electronic identity, data processing, electronic medical record, remote collaboration, finance, peripheral, e-commerce and other comprehensive capabilities has taken shape, but it still needs to continue to develop and improve.

Even J. Lanseng, Tor W. Andreassen [1] examines people's readiness and attitudes towards self-diagnosis, which may provide patient-centred care. Sherwin Lim, Lishan Xue, Ching Chiuan Yen, Leanne Chang, Hock Chuan Chan, Bee Choo Tai, Henry Been Lirn Duh, Mahesh Choolani [2] used the data collected by correlation analysis and hierarchical regression analysis to investigate the receptivity of Singaporean women to obtain health information by using mobile phones, and the results showed that perceived usefulness and self-efficacy positively predicted their willingness to seek health information by using mobile phones. Yifeng Hu, S Shyam Sundar [3], based on the types of online information sources, examined the direct and combined effects of original information sources (doctors, laymen) and selected information sources (websites, bulletin boards, blogs, personal hompages, Internet) on perceived credibility and behavioral intention of health information. Snehal Tare, Deepali Garge [4] believed that electronic medical technology would bring a revolution in the medical field in the future, and information and communication technology should be continuously improved and developed. Healthcare professionals will prefer automated systems because patients can also access electronic health data from healthcare providers. Sturt Jackie, Huxley Caroline, Ajana Btihaj et al. [5] showed that digital technology has changed the nature of medical consultation and the identity and role of clinicians and patients, which in turn requires the redefinition of the traditional concept of medical ethics. Overall, digital counseling has the potential to significantly reduce costs

  DOI: 10.25236/icbcme.2021.028

while maintaining or improving patient care and clinical outcomes.

3. Data processing

A total of 314 questionnaires were collected in this online survey, of which 305 were valid, with a recovery rate of 97.13%. The male-female ratio was 2:3. The reliability was measured by clonbach alpha, with an overall reliability of 0.866. The behaviors of the respondents were grouped into 3 types by k-means clustering according to the tendency of visiting places, which were online, offline and the combination of online and offline.

Table 1 Treatment pattern selection tendency portrait

Item		Tendency to choose medical treatment		
		Off-line	Online	Combination with offline and online
The overall satisfaction level of Internet medical care		Normal	Satisfied	Satisfied
Use"report queries" frequently		False	False	True
The reason for choosing online diagnosis and treatment is that there are more medical resources and more choices		--	True	False
Offline diagnosis and treatment is chosen because the payment is linked with medical insurance and the price is lower		False	--	True
Offline diagnosis and treatment is chosen because face-to-face consultation facilitates communication		Ture	--	Ture
Willing to pay for Internet healthcare		Does not matter	Prefer	Prefer
The qualifications of Internet agencies are mixed and need to be improved		True	False	False
Gender	Male	35.9%	32.5%	42.0%
	Female	64.1%	67.5%	58.0%
Age	Under 18	2.6%	22.5%	0.0%
	18~25	33.3%	25.0%	29.6%
	26~30	23.1%	37.5%	23.0%
	31~40	25.6%	10.0%	36.3%
	41~50	12.8%	2.5%	9.3%
	51~60	2.6%	2.5%	1.3%
	Above 60	0.0%	0.0%	0.4%
Education level	High school	7.7%	7.5%	6.6%
	College	17.9%	15.0%	12.4%
	University	71.8%	50.0%	71.2%
	Master or above	2.6%	27.5%	8.8%
Career	Middle management of enterprise/company	28.2%	22.5%	24.3%
	General staff of enterprise/company	28.2%	27.5%	31.4%
	Professionals	5.1%	15.0%	7.1%
	Student	0.0%	0.0%	14.2%
	Unemployed/laid-off/unemployed persons	2.6%	2.5%	0.9%
	Others	0.0%	5.0%	0.9%
Monthly income	Under 2000	20.5%	5.0%	11.5%
	2001-4000	5.1%	10.0%	11.1%
	4001-6000	12.8%	15.0%	18.1%
	6001-8000	25.6%	22.5%	20.8%
	8001-10000	28.2%	12.5%	18.6%
	10001-12000	5.1%	15.0%	9.7%

	Above 12000	2.6%	20.0%	10.2%
State of health	Healthy	76.9%	75.0%	76.1%
	Chronic diseases (diabetes, hypertension, etc.)	7.7%	12.5%	11.1%
	Have a mild illness (cold, tonsillitis, appendicitis, etc.)	15.4%	12.5%	12.4%
	Suffer from two or more diseases such as chronic disease and acute disease	0.0%	0.0%	0.4%
Insurance	New rural cooperation medical system	10.3%	2.5%	11.5%
	Medical insurance for urban residents	48.7%	37.5%	31.4%
	Employee's medical insurance	30.8%	47.5%	40.7%
	Commercial health insurance	2.6%	5.0%	2.7%
	Commercial medical insurance + national medical insurance	5.1%	7.5%	12.4%
	No health insurance	2.6%	0.0%	1.3%
Place of residence	Central area	59.0%	52.5%	55.3%
	Huancheng area	12.8%	25.0%	15.5%
	Outer suburban area	10.3%	2.5%	9.3%
	Binhai New Area	17.9%	20.0%	19.9%

Note: "--" means data missing, that is, the respondent does not need to answer the question when filling out the questionnaire.

4. Analysis

4.1 Users' portraits tend to be offline

As shown in Table 1, respondents who prefer offline medical treatment have low education level, and some people's monthly income is less than 2000 yuan. Compared with the other two types, there are more unemployed/laid-off/unemployed people, fewer professional and technical personnel, fewer patients with chronic diseases and more people without health insurance, especially commercial health insurance. They mainly live in the central city, and the outer suburbs are more than the other two types, but the number of residents in Binhai New Area is less.

They do not have the need to check physical examination reports online frequently, and choose offline treatment not because it is convenient for medical insurance reimbursement, but because it is convenient for communication of medical conditions. They do not mind paying for Internet medical care, and the qualification of Internet hospitals affects their satisfaction with Internet medical care. Hospitals that do not tend to choose the Internet may be limited by education and income, convenient medical treatment due to the residence, or lack of chronic diseases, so they do not often have similar medical needs.

4.2 Portraits of users who tend to go online

The respondents who tend to go online have higher education level, more young people, more professional and technical personnel, more high-income people and more patients. The number of people with new rural cooperative medical insurance is small, while the number of people with commercial medical insurance is large, and the demand for commercial medical insurance is high. Fewer people live mainly in the central urban area, while more people live around the urban area and binhai New Area.

They do not have the need to check the physical examination report on the Internet frequently. They prefer online medical treatment because there are more choices. They are more willing to pay for Internet medical treatment and have higher satisfaction with Internet medical treatment. They are more likely to choose Internet medical treatment because of their own poor health condition, or because of the demand for medical treatment choices caused by commercial medical insurance, or because they are more willing to accept new things and pay for them because of their educational

background and age.

4.3 Portraits of users who tend to combine online and offline treatment

The respondents who tend to combine online and offline medical treatment are mostly male and students, and the insurance system is relatively complete. They often need to check physical examination reports online. Compared with those who tend to choose offline medical treatment, they choose offline medical treatment mainly for reimbursement reasons, which may be related to the number of students.

5. Conclusion

5.1 The service objects of online and offline medical treatment are different

The objects of online and offline medical services are different. Traditional offline medical treatment can ensure the qualification of medical treatment, face to face medical treatment effect is good, convenient for patients (especially students) to reimburse medical expenses. It mainly serves residents of lower education, lower income, older, inner and outer urban areas. There are many choices of online medical treatment, serving people with higher education, higher income, younger age, chronic disease, more commercial insurance, and living in the urban area and Binhai New Area.

5.2 Internet medical treatment has a high degree of awareness, and consumers are generally optimistic about its development prospects

In this survey, 97% of the respondents said they had heard of Internet medical care, while 3% said they had not, indicating a high level of awareness of Internet medical care. In 2020, the National Development and Reform Commission issued opinions on Supporting the Healthy Development of New Business Forms and New Models, activating the Consumer Market, driving the expansion of employment, which mentioned actively exploring new modes of online services, and actively developing Internet medical services in activating the consumer new market. Optimize medical experience with the Internet and create a new ecology of health consumption; Standardize and popularize the models of Internet return visit, telemedicine and Internet health consultation for chronic diseases; Support the collaborative development of online medical treatment, health management, pension and health maintenance, and cultivate healthy consumption habits. In this survey, 94% of the respondents think that the future of Internet medical treatment is bright, and 6% of the respondents think that the future of Internet medical treatment is worrying, indicating that the vast majority of consumers have a positive attitude towards the development of Internet medical treatment.

5.3 The Internet medical market has great potential, but the combination of online and offline medical treatment is still the mainstream mode

Survey data show that 74% of surveyed prefer online combination treatment method, the percentage of people who use only online or offline services is 13%, this means that more and more consumers begin to recognize the advantages and convenience of Internet medical, but owing to problems of the traditional habits now will not choose the way to see a doctor for all online diagnosis and treatment.

In addition, due to the characteristics of Internet medical treatment, its consultation function and drug prescribing function can only be based on patient description, lacking certain instruments and equipment detection, and inferior to traditional face-to-face diagnosis and treatment in obtaining information. Therefore, Internet medical care is suitable for solving the management needs of some chronic diseases, simplifying repetitive work, and can be used to ease the journey of daily treatment for chronic diseases and save time and cost for patients. However, in the treatment of acute diseases or the diagnosis and treatment process that requires the hospital's own medical equipment, Internet medical care cannot replace offline hospitals to provide services. Internet medical treatment should adjust its direction according to its own characteristics and consumer needs, strive for improvement in chronic disease management, rapid registration of acute symptoms, rapid navigation and linking

with medical insurance, etc., focus on user groups, provide technical support for traditional offline medical treatment, and make medical treatment process more convenient.

6. Advices

6.1 Improve the publicity of Internet medical treatment, so that the public can have a general understanding of the concept and purpose of Internet medical treatment

Internet medical care represents a new development direction of the medical industry, which is conducive to solving the contradiction between the imbalance of medical resources in China and the increasing demand for health care. It is a medical development mode actively guided and supported by the Ministry of Health.

The "Internet+" Health-care initiative aims to promote the modernization of medical and health care through it application, and to build an efficient, unified, standardized, open and shared health information service system that benefits all. + medical and health services via the Internet, let the people go to a doctor diagnosis and treatment services more worry, settlement and payment services more convenient, patients' medical services more at ease, the public health service is more precise and complete coverage of remote medical service and health information services more popularization, emergency services more efficient, the Shared service is more transparent, inspection services more convenient, etc., The public should be better informed about the purpose of these Internet medical services, so that they can accept this modern service from the heart.

6.2 Strengthen the practicality of Internet medical functions, realize mobile hospital services, and make the combination of Internet and medical care closer

Basic functions such as "appointment registration", "online consultation", "report inquiry" and "outpatient payment" are the most commonly used functions by consumers. Internet medical services should improve these service function systems to make their operation easier and more smooth. When these basic functions are more sound, the number of consumers of Internet medical care can obtain a new growth point. The Internet medical industry should be clear about its own positioning, make a good guarantee platform for chronic disease management, and connect well with offline diagnosis and treatment institutions for acute diseases. At the same time, improve the way of communication, so that the disease communication more smooth, convenient.

6.3 Strive to solve the problem of Internet medical insurance reimbursement, and achieve convenient medical experience for patients

Accelerate the connection between the medical insurance information system and the national health information platform, realize the exchange and sharing of medical insurance data and medical health data; We will continue to expand the number of designated medical institutions connected to the Internet, and gradually include more primary-level medical institutions in the direct settlement of medical expenses in other places. We will vigorously implement intelligent audit and monitoring of medical insurance, embed rules such as clinical path and rational drug use payment policy into hospital information systems, realize warning in advance, in-process supervision and post-review, and strictly require supervision of medical behavior and expenses.

Reference

[1] Even J, Lan seng, Andreassen Tor W. Electronic healthcare: a study of people’s readiness and attitude toward performing self-diagnosis. International Journal of Service Industry –Management, 2007, (4).

[2] Lim Sherwin, Xue Lishan, Yen Ching Chiuan, Chang Leanne, Chan Hock Chuan, Tai Bee Choo, Duh Henry Been Lirn, Choolani Mahesh. A study on Singaporean women’s acceptance of using mobile phones to seek health information. International Journal of Medical Informatics, 2011, (12).

[3] Hu Yifeng, Sundar S Shyam. Effects of Online Health Sources on Credibility and Behavioral

Intentions. Communication Reports, 2010.

[4] Snehal Tare, Deepali Garge. E-health technologies: The future healthcare. Journal of Dental Research and Review, 2020, 7(5): 58-61.

[5] Sturt Jackie, Huxley Caroline, Ajana Btihaj, et al., How does the use of digital consulting change the meaning of being a patient and/or a health professional? Lessons from the Long-term Conditions Young People Networked Communication study. Digital Health, 2020, 6:2055207620942359.