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Original Article

Analysis of downward referral willingness and its influencing factors among recovery phase hospitalized patients in tertiary hospitals

Yang Chen[1], Xiaowen Wang[1], Xiangjin Kong[2*], Lu Zhao, Yumeng Gao[2], Xinyuan Xu[2]

[1]*Dalian Health Development Center, Dalian 116011, Liaoning Province, China*
[2]*College of Humanities and Social Sciences, Dalian Medical University, Dalian 116044, Liaoning Province, China*

ABSTRACT

Objectives: This study aimed to understand the willingness of hospitalized patients in stable conditions and in the recovery phase in tertiary hospitals toward downward referral (DR) and to explore its influencing factors. **Methods:** A questionnaire survey was conducted among hospitalized patients from five tertiary general hospitals. Data were analyzed and processed using SPSS17.0 software. **Results:** The rate of knowledge regarding the hierarchical medical system and DR willingness were low. Per capital household annual income, the form of medical insurance, and the medical treatment decision-making process are the main factors influencing patients' willingness. **Conclusion:** To improve patients' DR willingness, it is necessary to further strengthen public understanding of the hierarchical medical system and to build the service capabilities of primary medical institutions.

Keywords: Tertiary hospital; Health care-seeking willingness; Two-way referral; Patients

INTRODUCTION

Two-way referral is key to the establishment of a hierarchical medical system.[1] Rational willingness and behavior of patients are prerequisites for the successful implementation of two-way referral. At present, patients' general inclination toward higher-level hospitals leads to the long-standing problem of a high rate of upward referrals and a low rate of downward referrals (DR).[2] In this study, a questionnaire survey was conducted among patients hospitalized in tertiary hospitals to analyze their DR willingness and its influencing factors, and evidence was provided for the improvement of the hierarchical medical system and relevant policies.

***Corresponding author.**

Xiangjin Kong: E-mail: kongxj110@126.com
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MATERIAL AND METHODS

Participants and methods

As sample institutions, this study included five tertiary general hospitals located in four cities in Liaoning province. Patients receiving inpatient treatment in the Gastroenterology, Neurology, Cardiology, Respiratory, and Endocrinology departments and who were in the stable recovery phase participated in the study. Based on the existing domestic and foreign literature, the "Questionnaire on patients' healthcare-seeking willingness and behavior (for downward referral)" was designed, and then revised and improved after expert consultation. The reliability and validity of the questionnaire were tested through a face-to-face survey with the participants. The questionnaire consisted of two parts relating to the socio-demographic characteristics of the participants and DR willingness. A total of 500 questionnaires were distributed, of which 498 were returned, with an effective recovery rate of 99.6%.

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Statistical analysis

The database was established using EpiData 3.1 software, and data analysis was conducted using SPSS 17.0. The socio-demographic characteristics of patients, their awareness of the relevant policies regarding the hierarchical medical system, and their DR willingness were analyzed with descriptive statistics. Chi-square test was used for influencing factors of DR willingness of patients in the recovery phase, and a *P*-value of less than 0.05 ($P < 0.05$) was considered statistically significant. Influencing factors with statistical significance were analyzed with logistic regression analysis.

RESULTS

Socio-demographic characteristics of participants

Among the 498 participants, 312 (62.7%) were female, 349 (70.1%) were aged over 35, 352 (70.7%) had a high school or technical school education or higher, 329 (66.1%) were urban residents, 203 (40.8%) had a per capita household annual income of less than CNY 20,000, 300 (60.2%) were covered by the Urban Employee Basic Medical Insurance and the Urban Residents Basic Medical Insurance, and 142 (28.5%) were covered by the New Rural Co-operative Medical System (Table 1).

Patient awareness of the hierarchical medical system

The results indicated that 49.8% of patients were "aware that the Chinese government is implementing the hierarchical medical system," whereas the other 50.2% indicated their "lack of awareness." A total of 50.6% of the patients stated their "awareness of the differential medical insurance reimbursement policy (the health claim settlement ratio for hospitalization in primary medical institutions is higher compared to higher-level hospitals)," whereas the other 49.4% indicated their "lack of awareness."

Patients' downward referral willingness

Regarding the question, "if your illness is stable and you are in the recovery phase, would you be willing to be referred downward to a primary medical institution to continue your treatment?". 67.1% of patients expressed their "unwillingness" and only 32.9% expressed their "willingness." Regarding "the main reasons for not accepting DR to primary medical institutions after the illness condition became stable," among 334 patients who indicated their unwillingness, 53.9% chose "distrust in medical technologies of primary medical institutions," 24% chose "fear of relapse," 11.1% chose "poor healthcare environment and equipment condition," and 11% chose "other reasons."

Analysis of factors influencing patients' downward referral willingness

Single-factor analysis of personal socio-demographic characteristics influencing patients' downward referral willingness

The results showed that the proportion of male patients (73.1%) who were unwilling to accept DR was higher than the proportion of female patients (63.5%); the 35–45 age group had a higher proportion of patients unwilling to accept DR (71.3%) compared to other age groups; the proportion of patients from urban areas (72.9%) who were unwilling to accept DR was higher than those from rural areas (55.6%); the proportion of patients with a university degree or higher (77.8%) who were unwilling to accept DR was higher than other education groups; and the proportion of patients working in government/public institutions (80.5%) who were unwilling to accept DR was higher than those with other occupations. There were statistically significant differences among the participants regarding sex, place of registration, education,

Table 1. Socio-demographic characteristics of participants.

Socio-demographic characteristics		Number	Proportion (%)	Socio-demographic characteristics		Number	Proportion (%)
Sex	Male	186	37.3	Occupation	Government or public institution	113	22.7
	Female	312	62.7		Salaried employee	107	21.5
Age	<18	17	3.4		Farmer	68	13.7
	18–35	132	26.5		Student	94	18.9
	35–45	94	18.9		Self-employed	63	12.7
	45–60	146	29.3		Other	53	10.6
	≥60	109	21.9	Per capita household annual income (CNY)	<20,000	203	40.8
Place of registration	Urban area	329	66.1		20,000–29,999	118	23.7
	Rural area	169	33.9		30,000–39,999	117	23.5
Education	<Junior high school	146	29.3		≥40,000	60	12.0
	High school/technical school	96	19.3	Insurance	Urban Employee Basic Medical Insurance	150	30.1
	College	175	35.1		Urban Residents Basic Medical Insurance	150	30.1
	University or higher	81	16.3		New Rural Co-operative Medical System	142	28.5
					Other	56	11.2

occupation, and per capita household annual income (Table 2).

Single-factor analysis of impersonal socio-demographic characteristics influencing patients' downward referral willingness

The results indicated that the proportion of patients covered by the Urban Employee Basic Medical Insurance (UEBMI) (88.0%) who were unwilling to accept DR was higher than those covered by both the Urban Residents Basic Medical Insurance (URBMI) and the New Rural Co-operative Medical System; the proportion of those having knowledge of the hierarchical medical system and the differential medical insurance reimbursement policy (72.2% and 69.8%, respectively) who were unwilling to accept DR was higher than those lacking that knowledge; the proportion of those with experience of receiving medical treatment from a primary medical institution (67.9%) who were unwilling to accept DR was higher than those lacking that experience; the proportion of patients making their own treatment process decisions (78.7%) who were unwilling to accept DR was higher than those whose medical treatment was decided by family members or through co-determination by the patient and his/her family members. Patients with different types of medical insurance, awareness of the hierarchical medical system, and different decision-making processes showed statistically significant differences in their DR willingness (Table 3).

Table 2. Results of single-factor analysis of personal socio-demographic characteristics influencing patients' downward referral willingness.

Socio-demographic characteristics		Willing		Unwilling		χ^2-value	*P*-value
		Number	Proportion (%)	Number	Proportion (%)		
Sex	Male	50	26.9	136	73.1	4.920	0.030
	Female	114	36.5	198	63.5		
Age	<18	5	29.4	12	70.6	2.381	0.666
	18–35	50	37.9	82	62.1		
	35–45	27	28.7	67	71.3		
	45–60	47	32.2	99	67.8		
	≥60	35	32.1	74	67.9		
Place of registration	Urban area	89	27.1	240	72.9	15.176	<0.001
	Rural area	75	44.4	94	55.6		
Education	<Junior high school	49	33.6	97	66.4	10.344	0.016
	High school/technical school	26	27.1	70	72.9		
	College	71	40.6	104	59.4		
	University or higher	18	22.2	63	77.8		
Occupation	Government or public institution	22	19.5	91	80.5	19.521	0.002
	Salaried employee	29	27.1	78	72.9		
	Farmer	27	39.7	41	60.3		
	Student	42	44.7	52	55.3		
	Self-employed	24	38.1	39	61.9		
	Other	20	37.7	33	62.3		
Per capita household annual income (CNY)	<20,000	87	42.9	116	57.1	23.859	<0.001
	20,000–30,000	39	33.1	79	66.9		
	30,000–40,000	19	16.2	98	83.8		
	≥40,000	19	31.7	41	68.3		

Table 3. Results of single-factor analysis of impersonal socio-demographic characteristics influencing patients' downward referral willingness.

Socio-demographic characteristics		Willing		Unwilling		χ^2-value	*P*-value
		Number	Proportion (%)	Number	Proportion (%)		
Medical Insurance	Urban Employee Basic Medical Insurance	18	12.0	132	88.0	61.595	<0.001
	Urban Residents Basic Medical Insurance	65	43.3	85	56.7		
	New Rural Co-operative Medical System	71	50.0	71	50.0		
	Other	10	17.9	46	82.1		
Knowledge of the hierarchical medical system	Yes	69	27.8	179	72.2	5.839	0.017
	No	95	38.0	155	62.0		
Knowledge of the medical insurance reimbursement policy	Yes	76	30.2	176	69.8	1.776	0.215
	No	88	35.8	158	64.2		
Receipt of treatment from primary medical institutions	Yes	123	32.1	260	67.9	0.501	0.498
	No	41	35.7	74	64.3		
Treatment-receiving decision-making process	By myself	33	21.3	122	78.7	32.961	<0.001
	By family members	38	61.3	24	38.7		
	Co-determination	86	32.5	179	67.5		
	Other	7	43.8	9	56.3		

Table 4. Logistic regression analysis of the factors influencing patients' downward referral willingness.

Variables	*B*	Sig.	Exp (*b*)	95% C.I. of EXP(*b*)	
				Min.	Max.
Sex					
Female		0.835			
Male	0.050	0.835	1.051	0.658	1.678
Place of registration					
Rural area		0.444			
Urban area	-0.253	0.444	0.777	0.406	1.484
Education					
University or higher		0.497			
<Junior high school	0.362	0.386	1.436	0.634	3.25
High school/technical school	0.465	0.275	1.593	0.691	3.671
College	0.041	0.912	1.042	0.505	2.151
Occupation					
Other		0.227			
Government and public institution(s)	0.166	0.707	1.180	0.497	2.802
Salaried employee	0.004	0.992	1.004	0.447	2.257
Farmer	0.900	0.051	2.460	0.995	6.083
Student	-0.010	0.980	0.990	0.449	2.182
Self-employed	-0.163	0.705	0.850	0.366	1.974
Per capita household annual income					
≥40,000		0.037			
<20,000	-0.333	0.376	0.717	0.343	1.499
20,000–30,000	-0.083	0.834	0.920	0.423	2.001
30,000–40,000	0.659	0.018	1.933	0.846	4.414
Medical insurance					
Others		0.000			
Urban Employee Basic Medical Insurance	0.279	0.577	1.322	0.496	3.524
Urban Residents Basic Medical Insurance	-1.302	0.002	0.272	0.117	0.631
New Rural Co-operative Medical System	-1.603	0.001	0.201	0.078	0.52
Knowledge of the hierarchical medical system					
No		0.794			
Yes	-0.06	0.794	0.941	0.598	1.482
Decision-making process					
Others		0.000			
By myself	0.306	0.604	1.358	0.427	4.324
By family members	-1.332	0.032	0.264	0.078	0.895
Co-determination	-0.108	0.849	0.898	0.296	2.721
Constant	1.812	0.074	6.125		

Logistic regression analysis of the factors influencing patients' downward referral willingness

The factors influencing DR willingness, as listed above, that showed statistical significance in the single-factor analyses (*i.e.*, sex, place of registration, education, occupation, per capita household annual income, medical insurance, knowledge of the hierarchical medical system, and medical treatment decision-making process) were regarded as independent variables. Patients' DR willingness was the dependent variable for establishing the logistic regression model. The analysis results indicated that per capita household annual income, medical insurance, and decision-making process were the three factors that had significant effects on patients' DR willingness; patients covered by the New Rural Co-operative Medical System and URBMI, and those whose treatment process was decided by their family members were more unwilling to accept DR; and patients with a per capita household annual income of higher than CNY 30,000 were more willing to accept DR (Table 4).

DISCUSSION

Need for public understanding of the hierarchical medical system

The results indicated that the awareness rate of the hierarchical medical system and the differential medical insurance reimbursement policy was 49.8% and 50.6%, respectively. This indicated that the awareness rate was relatively low, mainly due to insufficient publicity regarding the system, relevant government policies, and health care delivery systems. An understanding of and familiarity with the hierarchical medical system and the effective use of medical resources is a prerequisite for the effective implementation of the hierarchical medical system, which is also a basis for patients to change their DR willingness. In the authors' opinion, efforts should be made in the following three ways to promote the awareness rate of the hierarchical medical system and relevant policies: (1) publicity for the rationale behind implementing the hierarchical medical system should be strengthened by the government in multiple ways and through multiple measures; (2) higher-level general hospitals (especially tertiary hospitals) must change their operating principle of providing both outpatient and inpatient services and must take responsibility for publicity regarding the hierarchical medical system and relevant policies. First, they should actively suggest that patients in the stable recovery period be referred to lower-level institutions; second, patients with common and chronic diseases who attend the hospital directly should be informed of preferential policies for receiving treatment in primary medical institutions to encourage them to seek treatment in those institutions first in the future; (3) primary medical institutions should make full use of the advantages of being geographically closer to patients[3] and knowledge of the hierarchical medical system should be promoted and popularized through health education.

Need for the development of basic standards of medical resources in primary medical institutions

The results showed that more than two-thirds of the participants stated their unwillingness to be referred to lower-level or primary medical institutions even though they were in the stable recovery phase. This indicates that patients in tertiary hospitals have a relatively low DR willingness and more than 50% of them were unwilling to accept DR due to "the distrust of medical technologies of primary medical institutions." These results are consistent with the study of Xiaofeng Liu.[4] on patient willingness for two-way referral and awareness. This is also the primary reason why patients prefer higher-level hospitals when seeking medical treatment. In other words, the main reason for patients to not accept DR is their distrust of the diagnoses and treatment available in primary medical institutions, and their concerns that receiving treatment from primary medical institutions will lead to a missed diagnosis and prolonged recovery. From this perspective, if the conditions of medical resources in primary medical institutions are not improved and there is no satisfactory basic standard for healthcare resources, it is difficult to change people's preference for seeking medical treatment from higher-level hospitals. With only "policy guidance" to encourage "voluntary" DR willingness, the effect will be limited.[5]

Need for improving differential medical insurance reimbursement policy

The analysis results indicated that, although patients with different sexes, places of registration, education backgrounds, per capita household annual incomes, medical insurance, awareness of the hierarchical medical system, and decision-making processes showed statistically significant differences in their DR willingness, the logistic regression analysis showed that personal socio-demographic characteristics are not the main influencing factors of DR willingness, which is inconsistent with previous studies on patients' DR willingness. For example, Runming Zhou 's[6] study suggested that the main factors influencing patients' DR willingness include patient's awareness of the two-way referral policy, the status of their family doctor, and their first choice of hospital; while Kuo Gao 's study proposed that the main influencing factors of DR willingness relate to the hospital, including the medical technology level of primary medical institutions, service attitudes, drug categorization, and referral procedures.[7]

In general, the financial capability of patients covered by the URBMI and the New Rural Co-operative Medical Scheme is lower than those covered by the Urban Employee Basic Medical Insurance and commercial health insurance schemes. However, the analysis results showed that patients covered by the URBMI and the New Rural Co-operative Medical Scheme were less willing to accept DR compared to those covered by the Urban Employee Basic Medical Insurance and other types of insurance (such as commercial health insurance). The reasons underlying this result need to be studied further. This result at least suggests that financial capability is not a main influencing factor of DR willingness on the one hand and, on the other hand, the existing differential medical insurance reimbursement policy does not produce an effective incentive effect.[8] Countries with

mature medical insurance systems all regard the differential medical insurance reimbursement policy as an essential means to guide patients toward a scientific and organized health-seeking process. Therefore, the Chinese government should further improve the medical insurance reimbursement policy to give play to its function as leverage for guiding patients to seek healthcare rationally during the establishment of the hierarchical medical system.[9] In addition, patients whose treatment processes were decided by their family members were less willing to be referred downward. This might be related to patients' lack of involvement in the medical decision-making process and overdependence on family members' decisions.

Solving the difficulties surrounding DR of patients in the stable recovery phase in general hospitals is one of the key steps for developing the hierarchical medical system. The implementation of the hierarchical medical system depends not only on the standardization of the system and the cooperation of medical institutions, but also on the approval and support of the public.[10] It is important to point out that developing a hierarchical medical system cannot fundamentally change people's choices when seeking medical care. During the improvement of the hierarchical medical system and relevant policies, one should consider not only the successful implementation of the system, but also how the system will influence patients' DR willingness.

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Conflict of Interest

None declared.

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