Investigation on Influencing Factors and Triage Accuracy in General Clinic of Syndrome Hospital

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ABSTRACT

Objective • The general practice (GP) system is associated with patient-centeredness, high-quality general practitioners, and comprehensive digital information technology. Therefore, it has been promoted greatly over the recent years in China. However, there is a relatively insufficient number of patients in the general outpatient department of comprehensive tertiary hospitals in China. Therefore, the aim of the present paper is to analyze the specific influencing factors and triage accuracy in the general clinic of Syndrome Hospital.

Methods • The work involves the use of a questionnaire designed to probe the influencing factors, through the survey of 389 patients. According to different departments, the patients were enrolled into a GP group (n = 126) and a specialized practice (SP) group (n = 263). The basic information and survey results of the patients were obtained, and the reasons influencing the choice of the department were analyzed. In addition, the triage accuracy by general practitioners was assessed.

Results • The age, position, current residence, education level, payment method, annual income, awareness of GP diagnosis and treatment policies, self-conscious severity of disease, and registration method of patients in the GP group were obviously different from those in the SP group ($P < .05$). Self-payment, annual income ≤ 5 w, high and medium level of awareness of GP diagnosis and treatment policies, and on-site registration were the influencing factors for patients' choice of GP. The triage accuracy of general practitioners (89.29%) was higher than that of guidance doctors, registered triage, and online expert consultation (76.05%) ($P < .05$).

Conclusion • The GP diagnosis and treatment policies exhibited a high value of clinical promotion. Self-payment, low annual income, awareness of GP policies, and registration mode affected the patients' choice of GP, and the triage accuracy by general practitioners was higher compared to SP. (*Altern Ther Health Med.* 2024;30(1):116-121).

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INTRODUCTION

General practice (GP) is a standard and professional characteristic department that has mastered the diagnosis and treatment methods of multiple common clinical diseases, chronic geriatric diseases, and general acute attack diseases, and belongs to the second-level discipline of clinical medicine.[1,2] China released relevant documents in 2015 to promote the establishment of general practice in tertiary general hospitals. In 2016, this focus was further increased and was included in the reform actions of the medical service industry - to improve the satisfaction of patients' experience in the process of medical treatment.[1] In recent years, GP has been regarded as the main model of hospital diagnosis and treatment in the basic medical service system and has achieved certain developments. Comprehensive hospitals have a high level of mastery in various advanced medical technologies. It can not only improve the general practice service system to a certain extent and promote the development of a hierarchical diagnosis and treatment system but also play a major role in the standardized training of qualified and high-quality general practice talents.[3,4] GPs not only take health examination, management consultation, service, education and diagnosis, and treatment as the main task to provide comprehensive services to patients. In addition, for patients who do not know their own disease conditions, a GP can make a general understanding of the patient's condition and guide them to the corresponding specialty for detailed diagnosis and examination, which is also triage.[5] Although GP has a more comprehensive service effect in the diagnosis and treatment of

patients' diseases, the GP consultation rate in our primary medical and health institutions is often higher than that in the comprehensive third-class A hospitals. Studies have found that the first diagnosis rate of GP in third-class general hospitals is relatively low.[6] Therefore, it is worth exploring what causes the relatively small number of patients in general Grade A hospitals to choose GP. In addition, with the more detailed department classification in recent years, more departments have been established in hospitals, and the diagnosis and treatment methods of clinical medicine have developed towards the direction of advanced, precise, and cutting-edge.[7,8] In this case, it is necessary to be more meticulous to correctly guide patients to triage, after all, the accuracy of triage will affect patients' satisfaction with the diagnosis and treatment experience. GP also plays a role in guiding patients to triage treatment. However, there is no investigation on the effect of GP triage, and its accuracy in guiding patient triage is not well understood.

Therefore, to understand the reasons for the limited development of GP at present, this work conducted a questionnaire survey among patients in GP and other outpatients in general third-class A hospitals. The reasons for choosing or not choosing GP were analyzed, and statistics were made for the patients who had been referred. The triage accuracy of GP was assessed by understanding the patient's diagnosis and treatment after referral. It was hoped that this work can provide reasonable investigation and research basis for the further development of GP in general third-class A hospitals.

PATIENTS AND METHODS
Research objects
In this work, patients who received medical treatment in GP and specialized outpatient department (such as respiratory, endocrinology, dermatology, and cardiology) of Jiaxing Second Hospital from February 2021 to August 2022 were selected as subjects for questionnaire survey. 400 questionnaires were issued, of which 389 were valid. All the patients in this work were in stable physical condition, and the patients or their family members accompanying the treatment had a clear experience of the treatment process, and could accurately and unambiguously express their own ideas. In addition, all patients and their companions participated in this work voluntarily and signed informed consent. The work had been approved by the relevant medical ethics committee.

Method of investigation
The work considered the impact of the patient's own physical state and the patient's family's joint decision-making on the questionnaire results. The work would further understand the contents of the questionnaire for patients who were younger than 18 years and older than 70 years. For the other patients, the work would focus on the answers in the questionnaire. For patients involved in the follow-up study, one-to-one consultation could be conducted for hospitalized patients, and telephone survey could be conducted for patients treated at home or discharged from hospital.

Table 1. Questionnaire of Related Research Questions

Questionnaire
Gender_____   Age_____   Current resident_____
Occupation_____   Education level _____   Department_____
First time to admit in our hospital:
Yes ☐   No ☐
Registration method:
On-site registration ☐   Online registration ☐   Self-service registration ☐   Telephone registration ☐   Others ☐
Severity of disease:
Slight ☐   General ☐   Severe ☐   Very severe ☐
Family annual income:
< 5 W ☐   5 - 10 W ☐   > 10 W ☐
Who bears the cost:
Children ☐   Yourself ☐   Children + yourself ☐   Parents ☐   Others ☐
Medical insurance:
Self-payment ☐   NRCMS (new rural cooperative medical system) ☐   Medical insurance for residents ☐   Medical insurance for urban employees ☐   Other ☐
Awareness of GP diagnosis and treatment policies:
High ☐   Medium ☐   Low ☐   Don't know ☐

Questionnaire contents
Experts in the fields of health management and hospital management who were familiar with the diagnosis and treatment of patients in our hospital were selected to form the expert group for the research topic. Through relevant research to understand the domestic and foreign reasons affecting the diagnosis and treatment institutions of patients, and combined with the selection of the diagnosis and treatment institutions of patients in our hospital, the experts designed the contents of the questionnaire survey. The contents of the questionnaire can be divided into basic demographic characteristics, patients' income level, patients' perception of the severity of their disease, the distance between the patients' disease location and the hospital, the hospital's medical insurance policy, patients' understanding of the general practice diagnosis and treatment policy, the relationship between patients and doctors, and major medical expense bearers and other factors. The specific contents of the questionnaire are displayed in Table 1.

Grouping
Questionnaires were conducted on 389 patients in this work. Patients were divided into a GP group according to different departments (patients who chose GP for the first visit, n = 126) and a SP group (patients who chose specialty (such as respiratory, endocrinology, dermatology, and cardiology) for the first visit, n = 263 cases). The general situation and investigation results of the two groups of patients were analyzed, and the reasons influencing the choice of the department were analyzed. At the same time, 126 cases of referred GP patients in the specialist outpatient service were counted, and the triage accuracy of general practitioners was assessed.

Observation indicators
(1) The basic information, economic income level, disease perception result, distance from the hospital, medical insurance policy, awareness of GP diagnosis and treatment policies, and the relationship between the two groups of patients and the cost bearers were understood through a questionnaire survey. Logistic regression analysis was performed to evaluate the factors influencing the choice of department.

(2) The number of GP group patients who were examined by general practitioners in 126 cases was counted. The accuracy of guided triage of patients by general practitioners was evaluated by knowing whether these patients were referred again in the subsequent diagnosis and treatment and whether the disease was effectively controlled and treated. SP group patients were also investigated with the same method to evaluate the accuracy of department selection of patients and make comparison.

(3) The patients' satisfaction with GP services was calculated. The patient satisfaction survey aimed to analyze the experience of patients in the process of seeing a doctor. It mainly included three dimensions: service link, medical technology, and the degree of privacy protection, which were further subdivided into seven items. Basing on the Likert 5 scale, the response against each item has 5 levels, where 5 indicated 'very satisfied' and 1 indicated 'extremely dissatisfied' (Table 2 for details). The patient satisfaction (Rs) was calculated using equation:

$$Rs = \frac{N_5 + N_4}{N_{all}} \times 100\%$$

In the above equation, N_5 represented the number of patients with level 5, N_4 represented the number of patients with level 4, and N_{all} represents the total number of patients.

Statistical analysis

Statistical Product and Service Solutions (SPSS) 23.0 (IBM, Armonk, NY, USA) was employed for data analysis. The statistical data were expressed as relative numbers, and the comparison was analyzed by χ^2 test. Multivariate Logistic regression analysis was used to analyze the influencing factors. $P < .05$ was considered statistically significant.

RESULTS

Basic demographic statistics

The basic data of GP group and SP group patients were statistically compared in this work, and the results are shown in Table 3. No statistical significance was observed in the distribution of men and women, the distribution of patients over 50 years old, the distribution of students and retirees, and the distribution of patients with college/vocational education level in the two groups ($P > .05$). We observed great differences in the distribution of patients aged 50 years and below, the distribution of current residence of patients, the distribution of farmers/enterprise workers/civil servants, and the distribution of patients in high school/technical secondary school or below and those with bachelor's degree or above ($P < .05$).

Household income and expense commitment

In this work, the numbers of patients with annual income of < 5 W, 5 W ~ 10 W, and more than 10 W accounted for 70.63%, 18.25%, and 11.11%, respectively in the GP group. In contrast, the number of patients with an annual income of < 5 W, 5 W ~ 10 W, and more than 10 W accounted

Table 2. Experience Satisfaction Survey of GP Patients

Item	Level				
Time from appointment to visit:	Level 5 ☐	Level 4 ☐	Level 3 ☐	Level 2 ☐	Level 1 ☐
Time for disease communication:	Level 5 ☐	Level 4 ☐	Level 3 ☐	Level 2 ☐	Level 1 ☐
Detailed understanding of disease:	Level 5 ☐	Level 4 ☐	Level 3 ☐	Level 2 ☐	Level 1 ☐
Clear explanation of disease:	Level 5 ☐	Level 4 ☐	Level 3 ☐	Level 2 ☐	Level 1 ☐
Degree of privacy protection:	Level 5 ☐	Level 4 ☐	Level 3 ☐	Level 2 ☐	Level 1 ☐
Therapeutic effect:	Level 5 ☐	Level 4 ☐	Level 3 ☐	Level 2 ☐	Level 1 ☐

Note: level 5: very satisfied; level 4: satisfied; level 3: general; level 2: dissatisfied; level 1: extremely dissatisfied

Table 3. Statistical Results of Basic Demographic Characteristics of Patients (n %)

| Indicators		GP group (n = 126 cases)	SP group (n = 263 cases)	P value
Gender	Males	77 (61.11%)	175 (66.54%)	.078
	Females	49 (38.89%)	88 (33.46%)	.065
Age	≤ 20 years old	13 (10.32%)	45 (17.11%)	.032[a]
	21 ~ 30 years old	15 (11.90%)	55 (20.91%)	.033[a]
	31 ~ 40 years old	23 (18.25%)	24 (9.13%)	.012[a]
	41 ~ 50 years old	25 (19.84%)	31 (11.79%)	.019[a]
	51 ~ 60 years old	28 (22.22%)	58 (22.05%)	.109
	≥ 60 years old	22 (17.46%)	50 (19.01%)	.087
Current residence	Local	71 (56.35%)	123 (46.77%)	.021[a]
	Nonlocal	55 (43.65%)	140 (53.23%)	.011[a]
Occupation	Students	15 (11.91%)	32 (12.17%)	.165
	Retired	23 (18.25%)	50 (19.01%)	.087
	Farmers	43 (34.13%)	75 (28.52%)	.032[a]
	Employees of an enterprise	35 (27.78%)	40 (15.21%)	.002[a]
	Civil service	10 (7.94%)	66 (25.10%)	.021[a]
Education level	Junior High School and below	67 (53.17%)	83 (31.56%)	.003[a]
	High school/technical secondary school	18 (14.29%)	58 (22.05%)	.045[a]
	Junior College/Vocational College	20 (15.87%)	43 (16.35%)	.078
	Bachelor degree or above	22 (17.46%)	79 (30.04%)	.009[a]

[a]indicated that the data difference between GP group and SP group presented $P < .05$.

for 47.15%, 40.68%, and 12.17%, respectively in the SP group. By comparison, the proportion of patients < 5 w in GP group was higher than that in SP group, and the proportion of patients with 5 W - 10 W was lower ($P < .05$), and there was no sharp difference for proportions of patients with annual income of > 10 W in the GP and SP groups ($P > .05$), as shown in Figure 1A. The distribution of major cost bearers in the two groups of patients in this work is shown in Figure 1B. Among GP group and SP group patients, children (18.25% vs. 18.25%), themselves (55.56% vs. 54.75%), children + themselves (15.87% vs. 15.97%), parents (5.56% vs. 6.08%), and others (4.76% vs. 4.94%) exhibited no obvious differences ($P > .05$). The specific comparison is given in Figure 1.

Medical insurance usage

In terms of payment method of patients in the GP group, the proportions of patients using the self-payment, NRCMS, medical insurance for residents, medical insurance for urban employees, and other methods were 65.87%, 9.52%, 7.94%, 12.7%, and 3.97%, respectively; while those were 42.59%, 16.35%, 17.87%, 18.25%, and 4.94%, respectively in the SP group. Upon comparison, the proportion of patients in the GP group patients who adopted self-payment was much higher, while the proportions of those who adopted NRCMS, medical insurance for residents, and medical insurance for urban employees were remarkably lower than patients in the SP group ($P < .05$). Figure 2 is drawn to illustrate the above results.

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Figure 1. Comparison of the Distribution of Annual income (A) and Expense Bearers (B) of Patients (I: Children; II: Themselves; III: Children + Themselves; IV: Parents; V: Others)
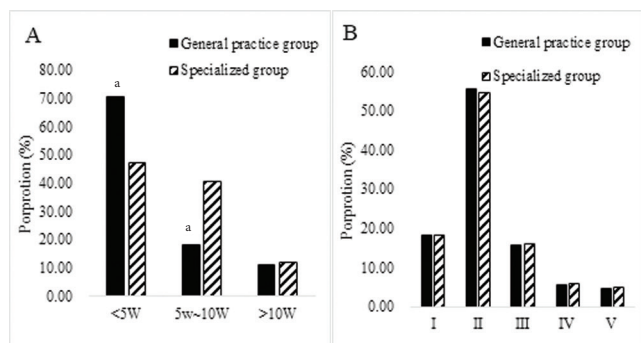

ªindicated *P* < .01 to the SP group

Figure 2. Comparison of Payment Method Between the Two Groups (A: Self-Payment; B: NRCMS; C: Medical Insurance for Residents; D: Medical Insurance for Urban Employees; and E: Others)
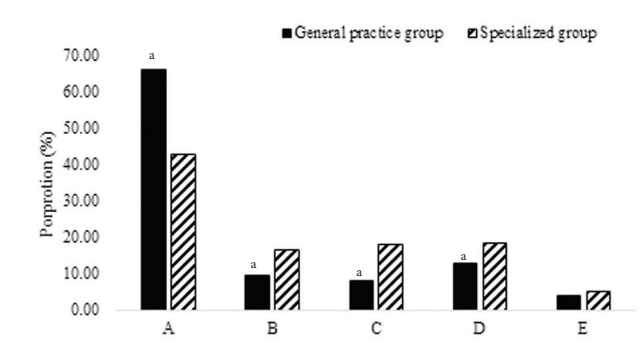
ªindicated *P* < .05 between the GP and SP groups

Figure 3. Comparison of the Knowledge of General Practice Diagnosis and Treatment System Between the Two Groups (H: High, M: Medium, L: Low, N: Unknown, K: Total Knowledge Proportion)
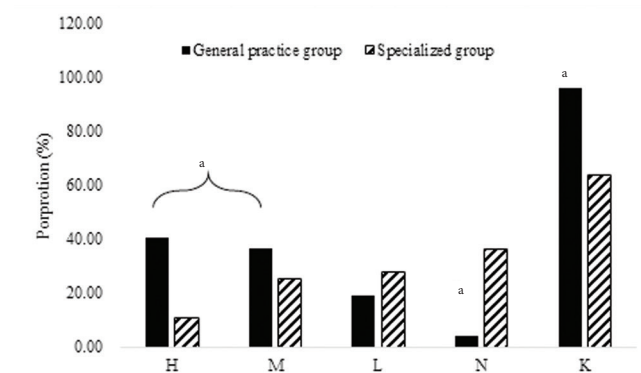
ªrepresented *P* < .05 in comparison with SP group

Understanding of the general practice system before the first visit

In this work, before the first visit, 40.48% of GP group patients had a high awareness of the general practice system, 36.51% had a moderate awareness, 19.05% had a low

Table 4. Self-Conscious Severity of Disease and the Distribution of Registration Method (n %)

Item		GP group (n = 126 cases)	SP group (n = 263 cases)	*P* value
Self-conscious severity of disease	Slight	5 (3.97%)	29 (11.02%)	.008ª
	General	50 (39.68%)	137 (52.09%)	.021ª
	Severe	66 (52.38%)	87 (33.07%)	.002ª
	Very severe	5 (3.97%)	11 (4.18%)	.011ª
Registration method	On-site registration	11(8.73%)	42 (15.97%)	.022ª
	Online registration	55 (43.65%)	134 (50.95%)	.009ª
	Self-service registration	13 (10.31%)	21 (7.89%)	.003ª
	Telephone registration	4 (3.17%)	37 (14.06%)	.032ª
	Other	43 (34.12%)	29 (11.02%)	.001ª

ªindicated that the data difference between GP and SP groups exhibited *P* < .05.

Table 5. Logistic regression analysis of influencing factors of GP visit selection

Independent variable		OR	95% CI	*P* value
Age (years old)	≥ 41 vs ≤ 40	2.189	1.827 ~ 3.212	.121
Position	Active, retired vs. others	1.892	1.032 ~ 2.342	.209
Current residence	Local vs. nonlocal	1.212	0.872 ~ 1.892	.089
Education level	Above junior high vs junior high and below	2.091	1.672 ~ 2.612	.211
Payment method	Self-payment vs others	1.212	0.782 ~ 1.992	.032ª
Annual income	≤ 5 W vs > 5 W	1.991	1.212 ~ 2.671	.009ª
Awareness of GP diagnosis and treatment policies	High, medium, and low vs. don't know	2.091	1.213 ~ 2.887	.001ª
Self-conscious severity of disease	Slight and very severe vs general and severe	1.223	0.781 ~ 1.789	.078
Registration method	On-site vs others	1.213	0.521 ~ 2.091	.009ª

ª*P* < .05.

awareness, and 3.89% had no awareness. Before the first diagnosis, 10.65% of SP group patients had a high awareness of the general practice system, 25.48% had a medium awareness, 27.76% had a low awareness, and 36.12% had no awareness. Statistical analysis showed that compared to the SP group, there were more patients in the GP group who knew the general practice system (96.03% vs. 63.88%). In addition, the proportion of patients with medium-high level of knowledge was much higher in the GP group compared to the SP group (76.98% vs 36.12%) (*P* < .05). While the proportion of patients with low and no awareness of general practice was higher in the SP group compared to the GP group. The specific results were illustrated in Figure 3.

Self-conscious severity of disease and the distribution of registration method

The distribution of self-conscious severity of disease and registration method in the two groups was statistically analyzed, as shown in Table 4. By comparison, the distribution of self-conscious severity of disease in the GP group patients and the distribution of registration method were essentially different from those in the SP group (*P* < .05).

Multivariate logistic regression analysis

According to the above research results, the indicators of differences between the two groups of patients in this work were taken as independent variables. This included the patient's age, position, current residence, education level, payment method, annual income, awareness of GP diagnosis and treatment policies, self-conscious severity of disease, and registration methods. Multivariate logistic regression analysis

was carried out with GP as the dependent variable, and the results are shown in Table 5. After analysis, the self-payment, annual income ≤ 5 W, and awareness of GP diagnosis and treatment policies were of high and medium levels; while on-site registration was the preferred method of registration over other methods and hence is one of the factors that influence patients' GP selection.

Comparison of triage accuracy

After a follow-up study, it was concluded that 56 out of 126 GP group patients were referred to a specialist under the examination of general practitioners. Among them, 50 patients were effectively controlled, even improved, and cured after specialist treatment, while the other 6 patients were recommended to be referred again after specialist examination. Through calculation, the triage accuracy of general practitioners was 89.29%. 263 SP group patients were selected by guidance doctors, registered triage, and online expert consultation. Through investigation and analysis, 63 patients were recommended for referral during the examination, and the calculated triage accuracy was 76.05%. By comparison, the triage accuracy of GP was higher than that of other triage methods ($P < .05$), as demonstrated in Figure 4.

Satisfaction with GP

Further, we conducted a comparative survey on GP group patients' satisfaction with diagnosis and treatment, as demonstrated in Figure 5. Among them, the satisfaction of patients on the time from appointment to treatment was 81.75%, the satisfaction on the time of disease communication was 92.86%, and the satisfaction on the detailed understanding of the disease was 87.30%. The satisfaction degree of explanation of the disease was 96.03%, the satisfaction degree of privacy protection was 85.71%, and the satisfaction degree of treatment effect was 91.27%. The total satisfaction of diagnosis and treatment experience was 89.15%, which was at a relatively high level.

DISCUSSION

The general practice system is not only all-round, whole-course, providing medical care to the entire population, paying attention to humanistic care and health, consider patient as the center, but also involves high quality general practitioners. In addition, it has a comprehensive grasp of information digital technology, which is of high clinical application value in the diagnosis and treatment of patients.[9,10] Therefore, GP is a kind of diagnosis and treatment system that is being promoted greatly in our recent years. In this work, the experience satisfaction of GP patients was investigated, and it was found that patients treated in GP had a high satisfaction in all aspects, which was more than 80%, especially the satisfaction of the clear explanation of the disease reached 96.03%. This reflects that general practitioners not only have a good grasp of professional technology but also can make clear statements, further demonstrating that general practitioners are high-quality medical talents. Zhong et al.[11] also mentioned the

Figure 4. Comparison of Triage Accuracy (A: GP; B: Other Methods)

ᵃindicated statistical significance in data accuracy compared with other methods ($P < .05$)

Figure 5. Survey Results of Satisfaction with GP Visit Experience of Patients (A: Time from Appointment to Visit; B: Time for Disease Communication; C: Detailed Understanding of Disease; D: Clear Explanation of Disease; E: Degree of Privacy Protection; F: Therapeutic Effect; and G: Total Satisfaction)
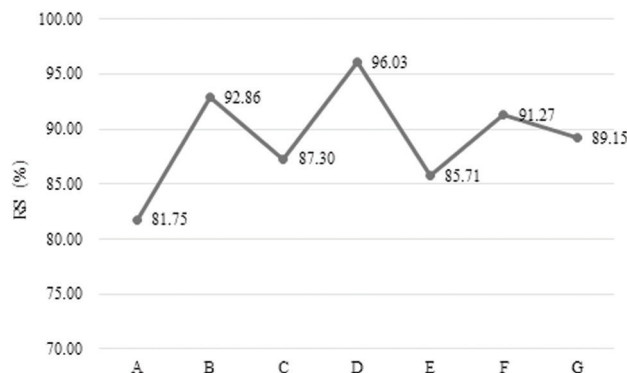
patient-centered high-quality talents in the study of general practitioners. However, our general practice system started late, and the general practice talent is also lacking, resulting in the general practice system not being very perfect. In addition, due to the influence of various reasons, there are not many GP patients in comprehensive third-class A hospitals, which leads to the low popularity of GP.[12] This work investigated and analyzed the factors influencing the choice of GP patients in general hospitals. After some investigation and analysis, it was found that compared to the patients in the SP group, GP group patients' age, position, current residence, education level, payment method, annual income, awareness of GP diagnosis and treatment policies, self-conscious severity of disease, and registration method exhibited statistical difference ($P < .05$). On this basis, multivariate logistic regression analysis was used to analyze the factors of patient choice. The results suggested that self-payment, annual income ≤ 5 W, and awareness of GP diagnosis and treatment policies were in high and medium level; while on-site registration was the influencing factor of

patients' GP selection. It can be inferred that patients' own economic status, awareness of GP diagnosis and treatment policies, and registration method will have a certain impact on the selection of treatment departments for patients. In terms of treatment cost, GP'level is lower than SP to some extent, and the diagnosis and treatment range is more comprehensive. Therefore, patients with low income or those who can only opt for self-payment will choose a GP for diagnosis and treatment.[13,14] However, most of the selection of GP is based on the understanding of the general practice system. Only with a full understanding of the general practice system can the GP be compared with the specialist outpatient department, so as to select a more appropriate diagnosis and treatment department according to their own conditions.[15,16] Therefore, the medical industry needs to strengthen the publicity of general practice and improve its penetration rate. Patients with on-site registration can get one-to-one popularization of the general practice diagnosis and treatment system by medical workers, which, to a certain extent, affects patients' choice of GP treatment.[17,18] In addition, this work also found that GP has high accuracy in the specialized triage of patients' diseases. The triage accuracy of general practitioners (89.29%) was higher than that of guidance doctors, registered triage, and online expert consultation (76.05%) ($P < .05$). This also reflects that general practitioners have a very comprehensive understanding of clinical diseases, and a higher grasp of the clinical manifestations of diseases, which again shows that general practitioners are highly talented medical professionals. Some studies have pointed out that the professional quality of medical staff is one of the factors affecting the triage accuracy of hospitals.[19,20] However, at present, there is no direct research to prove that the triage accuracy of general practitioners is higher, so we need to make further detailed exploration.

CONCLUSION

Based on statistical analysis of 389 patients' questionnaires, the work concluded that the general practice diagnosis and treatment policy had high clinical promotion value. Self-payment, low annual income, awareness of GP diagnosis and treatment policies, and registration method affect patients' choice of GP. The triage accuracy of general practitioners was higher. However, at present, there are only a few direct studies examining the factors influencing GP visits in general third-class A hospitals. Therefore, the results here lack direct research support and needs to be verified by further research. However, the promotion of the policy of general diagnosis and treatment in our medical system was imperative and cannot be ignored. It is hoped that the results of this study can provide effective basis for the improvement of the policy of general diagnosis and treatment.

There are some limitations in this study. First of all, this work involves a small sample and is a single-center study; second, the diseases are not comprehensive enough; and, third, the follow-up time was not long enough.

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