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Research on Satisfaction Factors of Referral Reimbursement for College Students in Beijing under the Background of Free Medical Care

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ABSTRACT

The public free medical system is an important component of medical security system in China. It also plays an important role. Through research, it is found that college students, as one of the service targets of the public free medical system, reacted strongly to the problem of referral and reimbursement after receiving relevant services under the system. In order to analyze the influencing factors of college students' satisfaction of referral and reimbursement in the context of public medical care, the paper took Beijing college students as an example, and sorted out the problems that affect the satisfaction of college students by conducting in-depth interviews with nearly 50 Beijing college students who have experienced referral and reimbursement. It is found that all problems we received could be divided into three parts: the service process of referral reimbursement, the service quality of referral reimbursement, and the related feedback mechanism. First, based on the interview content, the Kano model was used to design the satisfaction questionnaire. Secondly, the questionnaire survey was conducted with 930 university students as sample in Beijing. Then, the data analysis of 709 valid questionnaires was carried out with Kano model. Thirdly, every category of each influencing factor were summarized after the calculation of the various influencing factors of the three parts of the issues. Finally, some put forward targeted opinions and comments were put forward on each type of influencing factor.

KEYWORDS: *referral and reimbursement; kano model; satisfaction*

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1. INTRODUCTION

The public free medical care system in China was established in accordance with the "Instructions on the Implementation of Public Medical Prevention by State Functionaries of People's Governments, Parties, Organizations, and Subordinate Institutions" issued by the State Council in 1952 [1]. The purpose is to protect national staff as well as to provide free medical and preventive services to them.

At present, the service objects of public free medical care are the staff who are paid from the State Budget, the government staff, the retirees of the public medical unit who benefit from the free medical care, and the general college and university students, master students enrolled in the regular colleges and universities plan officially approved by the state, and the students who are in approved suspension for one year due to illness [2]. College students are not the main benefited group of public medical care, and their medical security system has been in a subordinate position in the entire public medical system [3].

At present, college students are not much satisfied with public free medical care services. The reasons mainly include the following three points [4].

First, the non-optional medical institution. Medical institutions in colleges and universities occupy absolute medical resources for students, and they have absolute control over students' medical treatment. Although some complicated diseases can be transferred, approval from the school hospital is necessary. The public medical care for college students is based on a "low standard, all-inclusive" medical model. It is difficult to improve the level of medical services in school hospitals, and many college students are dissatisfied with this. And because the school hospitals have the absolute referral authority of college students, it could be a relative high probability of misdiagnosis and missed diagnosis [4].

Second, the scope of public medical services is limited. The current public free medical care system does not include the overall planning of serious and extreme serious diseases, accidents and accidental casualties are also a blind area which makes it impossible to guarantee the treatment costs for those serious diseases. Many schools established that regardless of whether they are hospitalized in-campus or off-campus hospitals, the total reimbursement of medical expenses shall not exceed 30,000 to 50,000 yuan, and the excess part shall be borne by students' own. In reality, the cost of some major emergencies has become a medical vacancy, therefore public medical care system cannot fully demonstrate its superiority as it should do. As for any accidents, and casualties of college students during their school hours, neither the school nor the individual can afford

the huge medical expenses according to the current public medical system.

Third, the limitations of medical service level. For a long time, due to the limited public medical funds for students, it is impossible to provide students with comprehensive and effective medical services because all reasons such as the medical equipment in the school hospital is relatively poor and aging, the professional and specialized levels of medical staff are not good enough, the treatment is limited. College students have a lot of complaints about the facilities in the school hospital, the attitude and professional level of medical staff, and the quality of medicines, etc. They also express their dissatisfaction about the diagnosis and treatment of general diseases. These all reflect their strong opinions about the current state of public medical care system.

Under the public medical care system for college students in Beijing, the problems of the referral and reimbursement in the process of medical treatment, as follows: the referral and reimbursement processes are too much complicated, referral hospital choice is limited, reimbursement is cumbersome, and have a unbearable time lag, greatly weakened the demand for college students and seriously affected the convenience and the satisfaction of the medical system[3].

2. Research theory and research hypothesis

2.1. Research theory

This article selects the Kano model of Professor Noriaki Kano from Japan.

Kano model: The two-factor theory is introduced and a two-dimensional model of user satisfaction is constructed [5]. The two-factor model is an motivation model. Its basic content mainly includes: First, not all needs can be met to stimulate people's enthusiasm, and only those needs called motivation factors can be met to arouse people's enthusiasm; Second, it will cause strong dissatisfaction when there is no hygienic factor, but it will not necessarily mobilize strong enthusiasm when it is available; third, the motivation factor is work-centric, which mainly occurs when employees are working.

If the hygienic factor cannot be satisfied, it is easy to cause dissatisfaction, passive sabotage, and even strikes and other confrontational behaviors. However, after the hygienic factor is improved to a certain extent, it is often difficult to satisfy employees no matter how hard they are to improve. Therefore, it is difficult to stimulate employees' enthusiasm for work, so in terms of health care factors: the opposite of "dissatisfaction" should be "no dissatisfaction."

Motivation factor refer to factors that can cause employees to feel satisfied. The improvement of motivating factors that make employees feel satisfied can greatly stimulate their enthusiasm for work and improve labor productivity; but even if the management does not give them satisfaction, the motivating factors will not make employees feel dissatisfied, so In terms of motivating factors: the opposite of "satisfaction" should be "not satisfied".

Kano KanoModel: As the founder of Kano Model, Kano Kano has extended and innovated on the basis of the two-factor model, and divided the quality characteristics that affect satisfaction into five categories——Must-be quality and Performance quality, Attractive quality, Indifference quality, Reverse quality.

Must-be quality means that the product or service should basically meet the needs of customers. When the school's referral and reimbursement system meets the basic needs of students, satisfaction will not increase significantly, but if it cannot be met, customer satisfaction will be greatly reduced.

Performance quality, expectation is the attribute demand that customer satisfaction will be affected year-on-year with the improvement of product quality or service level. If the school's medical services meet their expectations, the more this attribute is met, the more students Will be more satisfied with the service, without this attribute, the satisfaction of students will not change significantly.

Attractive quality is an attribute that surprises students. With the existence of such quality elements, user satisfaction will be improved. But when this attribute does not exist, students will not be dissatisfied.

Indifference quality in demand, no matter whether it is provided or not, it has no impact on user experience. They are neither good nor bad aspects of quality. They do not lead to customer satisfaction or dissatisfaction. For example: the gifts of no practical value provided by airlines to passengers.

Reverse qualityrefers to quality characteristics that cause strong dissatisfaction and quality characteristics that lead to low levels of satisfaction, because not all consumers have similar preferences. Many users do not have this requirement at all, and user satisfaction will decline after providing it, and the degree of provision is inversely proportional to the degree of user satisfaction. For example: some customers like high-tech products while others prefer ordinary products. Too many additional features will cause customer dissatisfaction.

For indifferent quality and reverse quality, whether or not the indifferent demand is provided will not have any impact on user satisfaction. Therefore, it does not have any substantive significance to study indifferent demand; User satisfaction is negatively correlated. Under normal circumstances, school hospitals will not subjectively provide services that arouse students' disgust.

Therefore, when designing products or providing services, two types of factors, indifferent quality and reverse quality, can be basically eliminated. In this article, these two factors are not considered [6] [7].

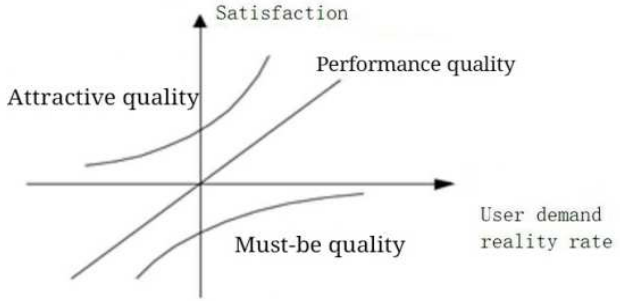

Figure 1 Analysis of satisfaction demand of Kano model

2.2. Research hypothesis

Based on the above theory, this study sets the following three hypotheses and takes them as important objects of the study.

Hypothesis 1: If the average importance is higher than the average satisfaction, this indicator sets the Must-be quality. This shows that if the expected service is not met, the

student's satisfaction will be greatly reduced, but if the service is met, the satisfaction will not change significantly;

Hypothesis 2: If the average importance is similar to the average satisfaction, this indicator is set as Performance quality. This shows that if the school's medical services meet students' expectations, satisfaction will increase greatly, but if students' expectations are not met, satisfaction will not change significantly;

Hypothesis 3: If the average satisfaction is higher than the average importance, this indicator is set as Attractive quality. This is a quality that people do not have excessive expectations. Once the medical service of the school hospital meets the students' expectations, satisfaction will be greatly improved.

3. Data processing and analysis

3.1. Establishment of research materials and systems

In this research, 50 college students in Beijing who have experienced referral and reimbursement were randomly selected for interviews as research materials, and the interview method was structured interview. The content of the interview and the previous literature review were extracted, and then the satisfaction questionnaire was designed according to the Kano Model to conduct a questionnaire survey on college students in Beijing. Based on the in-depth structure interview and literature review mentioned above, the questionnaire summarized and refined three potential variables affecting satisfaction, and finally obtained a satisfaction evaluation index system consisting of eight observation indicators (Table 1), which provided a foundation for the subsequent questionnaire design and empirical analysis.

Table 1 Evaluation index system of college students' satisfaction with public medical referral reimbursement

Evaluation index system for college students' satisfaction with public medical referral reimbursement		
Potential variables (primary indicators)	The index	Observation indicators (secondary indicators)
Referral reimbursement service process	A1	Reimbursement time setting
	A2	Referral reimbursement process
	A3	Whether effective way to publicize
Referral reimbursement service quality	B1	Medical resources
	B2	Medical services
	B3	Health problem solving
	B4	The economic costs
Correlation feedback mechanism	C1	Information feedback

Medical service satisfaction assessment for experienced by patients, is the main research work of medical service attitude, it's hard to understand by means of observation or ask the patient's attitude, so we need to use a certain quantitative analysis technology to some processing of evaluation index, make the abstract "attitude" objective, quantitative analysis and the technology used in tool is the "scale".

Likert scale has been widely used in customer satisfaction measurement because of its simple design, wide range of application and easy to be understood by interviewees. In this paper, 5-level Likert scale was used to divide respondents' satisfaction with medical services into 5 levels and assign different values to them. In other words, "very satisfied" =5, "relatively satisfied" =4, "generally satisfied" =3, "not very satisfied" =2, "very dissatisfied" =1, and a preliminary questionnaire was designed. Since the Kano Model is adopted, the importance degree needs to be assigned by the same method, that is, "very important" =5, "relatively important" =4, "generally important" =3, "not very important" =2, and "very unimportant" =1.

Through the above methods, the attitudes of the respondents were quantified to achieve the purpose of matching the corresponding satisfaction value and importance value on the Likert scale sequence.

3.2. Data processing

First of all, in the satisfaction survey, we set a total of I survey questions for J respondents. Where, I={1,2, •• i}, J={1,2, •• j}

If the satisfaction of the jth respondent to the ith survey question is e_{ij} and its importance is s_{ij}, then the comprehensive evaluation of the client to the ith question is E_{ij}, E_{ij}= (e_{ij}, s_{ij}). Then, the average satisfaction, average importance and overall satisfaction of jth respondents to the ith question can be calculated.

Table 2 is the data collation of the respondents' satisfaction degree and importance evaluation of the secondary indicator" reimbursement time setting" under the primary indicator "referral reimbursement service process". The values in the table represent the number of people who choose the importance of different levels of satisfaction degree and time setting. For each grade in the table, the value is assigned by percentage system. 1-5 corresponds to 0%, 25%, 50%, 75% and 100% respectively.

Table 2 Reimbursement time setting satisfaction &importance cross table

Reimbursement time setting		importance					total
		1	2	3	4	5	
satisfaction	1	11	8	4	10	26	59
	2	3	16	27	30	27	103
	3	4	20	62	96	28	210
	4	3	11	74	68	75	231
	5	4	2	10	59	31	106
total	25	57	177	263	187	709	

1. For the average satisfaction/importance, assume that the expectation of respondents on the satisfaction/importance evaluation of the time setting is E_1, then the average satisfaction = E_1/ the total number of questionnaires, and the calculation of the average importance is the same.

2. The overall satisfaction as a measure of the "general", fully consider the importance for the satisfaction degree of the impact of side reflects the influence factors of each" secondary indicators "need to be solved urgently: the smaller the value, overall satisfaction to students on the influence factor of the satisfactory degree is lower, the more priority should be under the corresponding index of" primary indicators" of the influencing factors. Let the expectation of the synthesis be E_2, the number of questionnaires at each position in the table be n, the row be assigned x and the column be assigned y. For example, three rows and four columns, n_{34}, represent three row assignment 0.5 multiply four column assignment 0.75 multiply the number of table questionnaires n, then $E_2 = \sum (n*x*y)$/total number of questionnaires.

According to the above calculation method, the "average importance degree", "average satisfaction degree" and "overall satisfaction degree" were calculated for each influencing factor.

3.3. Data analysis results

3.3.1. Survey results Capital University of Economics and Business

According to the reliability and validity analysis results of the pre-survey data, we modified and improved the questionnaire. Between March 2020, 4th and April 8th, 730 questionnaires were distributed to students in the following six universities in Beijing: the capital University of Economics and Business, Beijing Wuzi University, Beihang University, University of Chinese Academy of Social Sciences, North China University of Technology and Tsinghua University. At last, we got 709 effective questionnaires.(Checked by SPSS, the questionnaire of Cronbach's alpha is 0.902, shows that the questionnaire has high reliability; KMO value =0.945, and the significance <0.05, indicating that the questionnaire has a high validity).

3.3.2. Sample characteristics description and statistics

According to the basic information of the questionnaire, the sample includes students of different genders, grades and different frequencies of medical use at public expense. The randomness is strong, which ensures the reliability of the analysis results. The specific characteristics of the sample are shown in Table 3. In terms of gender, male students account for 46.97% and female students for 53.03%, with a relatively balanced ratio of male and female. From the grade point of view, the number of students in each grade is more balanced, the difference is not big.

Table 3 Results of basic information of the questionnaire

attribute	classification of the project	number (person)	percentage (%)
gender	male students	333	46.97%
	female students	376	53.03%
grade	freshman	173	24.40%
	sophomore	221	31.17%
	junior	151	21.30%
	senior	164	23.13%
frequency	more often (at least once a month)	171	24.11%
	once every three months	110	15.51%
	once half a year	164	23.13%
	once a year	69	9.73%
	few	195	27.52%

3.3.3. Preliminary data results

The frequency distribution of overall satisfaction with medical services is shown in Table 4. Among the students surveyed, those who were very satisfied, relatively satisfied, moderately satisfied, not very satisfied and very dissatisfied were 181, 215, 172, 470 and 221, respectively. By calculating the proportion of very satisfied and relatively satisfied evaluations, the satisfaction rate can be calculated as 62.1%, which indicates that the overall evaluation of medical services by college students in Beijing is general.

Table 4 Frequency distribution of college students' overall satisfaction withmedical services in Beijing

questionnaire copies	709
very satisfied	181
relatively satisfied	215
generally satisfied	172
not very satisfied	470
very dissatisfied	221
Satisfaction (proportion of very satisfied and relatively satisfied evaluations)	62.1%

3.3.4. In-depth data analysis

Through the above mentioned calculation formula of overall satisfaction, average satisfaction and average importance, the overall satisfaction, average satisfaction and average importance of each influencing factor of "secondary indicator" are calculated respectively. According to the hypothesis of this paper, the demand type of each influencing factor is obtained by comparing the average satisfaction and average importance of each influencing factor, as shown in Table 5:

Table 5 Data analysis of eight influencing factors of "secondary indicators"

	Referral reimbursement service process			Referral reimbursement service quality				Correlation feedback mechanism
	Reimbu-rsement time setting	Referral reimburs-ement process	Whether effective way to publicize	Medical resources	Medical services	Health problem solving	The costs	Information feedback
Overall satisfaction	40.9%	41.9%	42.9%	46.2%	47.0%	48.2%	44.6%	43.9%
Average satisfaction	57.8%	59.9%	60.8%	63.4%	64.9%	65.3%	62.8%	61.1%
Average importance	68.7%	67.9%	67.4%	70.6%	69.2%	70.8%	69.0%	69.1%
Requirement types	Must-be demands	Must-be demands	Must-be demands	Must-be demands	Must-be demands	Must-be demands	Must-be demands	Must-be demands

As can be seen from the above table, according to the null hypothesis, simply comparing the values of average satisfaction degree and average importance degree cannot accurately obtain the demand types of influencing factors. The reason is that, for the respondents, the satisfaction degree and importance of "secondary indicators" influencing factors belong to two parallel systems, and the respondents do not think of comparing the absolute value of satisfaction degree and importance of this influencing factor when filling in the questionnaire.

So we improved the for each kind of quantitative evaluation method, the factors which influence our first to cross the "average satisfaction", to "the average satisfaction" down the value of each factor according to from large to small sort, ranking the first assignment of 100 points, ranking every back a minus five points, finally can get a set of "100, 95, 90, 85, 80, 75, 70, 65," the arithmetic progression, "the average importance" as above, also adjust the value of each index. By comparing the adjusted values of "average satisfaction" and "average importance" under each influencing factor, eight influencing factors of the referral reimbursement system were determined for the demand types of university students in Beijing. The overall analysis thinking and data are shown in Table 6.

Table 6 Data analysis of influencing factors of the eight "secondary indicators" after adjustment

	Referral reimbursement service process			Referral reimbursement service quality				Correlation feedback mechanism
	Reimbur-sement time setting	Referral reimburs-ement process	Whether effective way to publicize	Medical resources	Medical services	Health problem solving	The costs	Information feedback
Overall satisfaction	40.9%	41.9%	42.9%	46.2%	47.0%	48.2%	44.6%	43.9%
Average satisfaction	57.8%	59.9%	60.8%	63.4%	64.9%	65.3%	62.8%	61.1%
Satisfaction ranking (1 highest, 8 lowest)	8	7	6	3	2	1	4	5
Adjusted satisfaction score	65	70	75	90	95	100	85	80
Average importance	68.7%	67.9%	67.4%	70.6%	69.2%	70.8%	69.0%	69.1%
Importance ranking(1 highest, 8 lowest)	6	7	8	2	3	1	5	4
Adjusted importance score	75	70	65	95	90	100	80	85
Requirement types	Must-be demands	Expected demands	Attractive demands	Must-be demands	Attractive demands	Expected demands	Exciting needs	Must-be demands

3.4. Analyze the results

Based on the above data analysis, the eight influencing factors are divided into demand types as follows:

Must-be demands: reimbursement time setting, medical resources, information feedback.

Expected demands: referral reimbursement process, health problem solving.

Attractive demands: whether effective ways to publicize, medical services, the costs.

From the perspective of the overall satisfaction of the influencing factors, the overall satisfaction of" reimbursement time setting", which belongs to the basic type of demand, is the lowest, 40.9%, followed by "information feedback" and "medical resources". The "referral reimbursement process" which belongs to the expected demand has the lowest overall satisfaction, at 41.9%, followed by "health problem solving". The" whether effective way to publicize" of attractive demands had the lowest overall satisfaction, at 42.9 % followed by "the costs" and "medical services." Therefore," reimbursement time setting", "referral reimbursement process" and" whether effective way to publicize" are the priority problems to be solved among the three requirement types respectively.

4. Conclusions and deficiencies

4.1. Findings

4.1.1. Emphasis on Must-be quality

Pay attention to the Must-be quality, It is the foundation of satisfaction, once the lack will lead to serious dissatisfaction.

Aiming at the problem of setting up reimbursement time, we can develop online APP, use Internet to remote processing of students' referral claims and make timely announcement of online reimbursement time. In addition, we should relax reimbursement time restrictions, appropriate extend reimbursement time and facilitate students of all grades and at all time levels. Those ways are aiming at achieving barrier-free communication between the public medical service office of the university hospital and the finance department, and coordinating and simplifying all procedures and steps of public medical reimbursement.

To solve the problem of setting up the feedback mechanism, a transparent and active feedback platform can be set up, such as setting up the feedback mailbox on the wall at the entrance of the school hospital, creating the public account of the school clinic online, setting up a special section to collect feedback from everyone, and making a timely reply to feedback through pushing.

In view of the problem of medical resources, it is suggested that the schools should attach importance to the allocation of medical equipment in school hospital, give more financial support, meet the basic needs of students to seek medical treatment, reduce the referral rate of the school hospital, and reduce the occurrence of "minor diseases also to run designated hospital" situations.

4.1.2. Improve Performance quality

To improve the Performance quality, the improvement of the Performance quality is proportional to satisfaction.

In view of the problem of referral reimbursement process, colleges and universities can reduce the trouble of students and related staff by streamlining the process and steps of referral reimbursement, and constantly improve the overall impression of students on the system.

In order to solve the health problems, the school hospital should perfect the basic equipment, enhance the basic medical service ability, reach the treatment expectation of students to the greatest extent, and reduce the referral rate.

4.1.3. Create Attractive quality

Actively create Attractive quality, the existence of Attractive quality will greatly increase the satisfaction of students, so moderate creation of Attractive quality is undoubtedly icing on the cake.

In view of the problem of effective publicity, the information of referral reimbursement procedures and reimbursement time can be published through the above-mentioned public accounts.

Regarding the issue of economic expenditure, according to the in-depth interviewees and most of the students surveyed, the intensity of medical reimbursement is relatively large, which basically meets the expectation of students. Therefore, it is hoped that the school will maintain the proportion of reimbursement at the same level.

In view of the problems of medical services, the referral hospital needs to strengthen the education and training of the service personnel, and improve the service attitude while maintaining the excellent, fine and accurate objective medical services.

4.2. the lack of research

Although this research uses Likert scale and kano model to obtain the demand types of factors affecting student satisfaction, and puts forward corresponding countermeasures and suggestions for each influencing fact. However, there are still some shortcomings in this study. For example, the number of universities surveyed in this study is small, and compared with all the universities surveyed in Beijing, the representative of the surveyed universities is poor. The number of questionnaires collected in this study is small and the data is not comprehensive enough. In the future, this study will continue to follow up the content changes of the public health care system and the improvement measures of Beijing universities on the referral and reimbursement process, and constantly improve the content of this study.

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