

The Research on the Construction of Public Hospitals Performance Evaluation Index System

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Abstract: [Purpose] Constructing a scientific and reasonable performance evaluation index system for the public hospital and providing a representative, objective, operable evaluation tool, which is helpful to guide them return to the position of the public welfare and sociality. [Methods] Using the expert contrast sorting method, in order to ensure that the evaluation index of the screening is scientific, practical and operable, this research carried out 2 rounds of expert consultation. Inviting 10 experts to propose suitability feedback on public hospitals performance evaluation index for the first round, including 3 hospital management experts, 2 statistics experts and 5 economic experts. Scoring and ranking the index elements according to the degree of importance, using mathematical method to calculate the proportion of each index. [Results] The evaluation index system of public hospital includes 3 primary indicator items (business level, operation status and patient's satisfaction) and 32 two class indicators. The calculation of specific gravity is objective and accurate. [Conclusion]The constructed public hospital performance evaluation index system is combined comprehensiveness with innovation. It is important and comprehensive, It shows the modern teaching philosophy and in line with the requirements of the evaluation of public hospital. It can reflect the objective level of the public hospital fully and objectively. In the 2000 World Health report, WHO proposed the concept of health performance system to evaluate the performance of the health system by the health outcomes, reactivity and equity finance. WHO also pointed out the government should evaluate the existing health system performance and find the problems and discuss how to make health system to be used to maximum effect. Adhere to the scientific development concept as a guide, focusing on the needs of the overall construction of the hospital, holding the objective law of the development of hospital seriously and further enriches the connotation of development. Innovate the evaluation system of public hospitals performance is an effective measure to solve the problems. For example, it's too hard and too expensive to see a doctor. The existed evaluation system for public hospitals is focused on economic management. It's too far from meeting the requirements of government supervision and evaluation of public hospitals. It is not in line with the requirements of scientific development concept. Therefore, restudying and establishing a scientific and reasonable performance evaluation index system of public hospitals is helpful to guide hospitals to return to a public welfare and social position.

Object and Method

This research organizes 10 members from health administrative departments, hospital management experts, clinical experts, health statistics experts.

Advisory object. Choose ten experts from Shandong Province as the research Advisory objects, 3 females and 7 male. Their ages range from 40 to 49 years old. The average age is 43.4 years old; education background: 1 doctor, 7 masters, 2 undergraduates; Title: 2 senior titles, 8 deputy senior titles; they are engaged in hospital management from 10 years to 30 years. The average management year is 18.6 years. There are 7 members work for 10 years to 20 years, and 2 members work for 20 years. They are now mainly engaged in the following fields (maybe crossed): 5 members in the clinical field, 4 members in the teaching management field, and 3 members in the education field.

Using the expert contrast sorting and the mathematical calculation method to find the proportion of each index, that is, through the expert's judgment by experience at first, then analyzing the qualitative index and make quantitative analysis. After two rounds of expert's review, it can evaluate the hospital performance from three aspects: the level of business, management condition and satisfaction of the patients. There are 32 indicators. Among them, the level of business includes: medical, prevention, education and scientific research. The three aspects are occupy a certain proportion, calculate the mean value of the hospital survey data and according to both the number and standard difference to find the confidential limits of each index. Combined with the nature of the survey and give the survey index data. Then calculate the points according to the proportion of the primary indicators and the standard score of two classes, and the total score is the composite score. After discussion, they study out the public hospital performance evaluation index system elements tentatively, including 3 primary indicators and 32 two class indicators.

Consult the expert's opinion, and then sort the factors by contrast. In the first round, consult the experts about the primary indicators and the two class items' suitability. When adding or deleting items, researchers should explain the reason in the remarks column; at the same time, and score the primary indicators' importance in the whole index system and the two class items' importance in the corresponding index level (scoring contains the adding items, namely, 1 - 5points, one point for the least important evaluation indicators. then followed by 2 points, by analogy, the most important gets 5 points), then the researchers summary the frequency the 10 experts feedback and the scoring about the importance of the primary indicators and secondary indicators. After 1 month, designing and delivering the second round of expert opinion consultation table, for the first round of expert opinion, majority of these index items' suitability reached 100% (only 1 expert on the original basis increase 1 second level index, for it not accepted by the majority of the experts, it is not adopted), therefore, in the end, the primary indicators of the research index items are 3, and the second class items are 32. Therefore, the design of the second round of expert opinion consultation only scores on the importance of the indicators of the project.

Collect data and calculat the proportion of each index mainly by distributing and recovering the email, individual mail, distributing 10 questionnaires for each of the two rounds, 10 copies were returned, the recovery rate was 100%, and the effective rate was 100%. Count the appropriate frequency of the first round of the 10 experts about the index items. Then summarize the frequency of the experts about the importance of the primary indicators and the two class items for each of the two rounds.

When calculating the proportion of each index, set m evaluation factors $U_i (i = 1, 2, \dots, m)$, namely evaluation index, inviting n experts $V_i (i = 1, 2, \dots, n)$.by scoring and the importance of the evaluation factors, giving the ranking k, the least important evaluation item scores one point,

followed by 2 points, and so on. The formula:
$$W_i = \frac{\sum f_k \cdot \log_m k}{n}$$
, W_i is the proportion, f_k is the frequency of k, k is the score, we can count the proportion of each index by the formula.

Reliability of Expert Consultation. The reliability of expert consultation is mainly considered by two indexes, the positive coefficient of expert and the coefficient of expert authority. For the recovering rate of the questionnaires reach 100 percent, we can see the enthusiasm of the experts is very high, that is, the positive coefficient of the expert is high. The authority coefficient of the expert C_r equals the arithmetic average number of C_a and C_s , and the formula is $C_r = (C_s + C_a) / 2$. The quantitative study in this study is shown in Table 1 .

Table 1 Judging Basis(Ca) and Proficiency's Quantization Table

Degree of Family	Quantized Value	Judging Basis	Quantized Value
Very familiar	1.0	Theoretical analysis	0.8
familiar	0.8	Practical experience	0.6
More familiar	0.6	Understanding of domestic and foreign counterparts	0.4
Ordinal familiar	0.4	Intuition	0.2
Less familiar	0.2		
Very unfamiliar	0.0		

Through calculating, five primary indexes are showed in the stable 2 by the experts' authority coefficient.

Table 2 experts' authority coefficient

Primary index	Ca	Cs	Cr
Social function	0.63	0.85	0.74
Medical service	0.65	0.85	0.75
Medical quality	0.64	0.87	0.755
Patient's safety	0.62	0.83	0.725
Management and development	0.66	0.82	0.74

For the above five indicators, the authority index of the experts are more than 0.7 points, that is, the experts in this industry has a higher authority. The positive coefficient and the authority coefficient of the expert are both high proves that the result of the expert consultation is credible..

Results

Ten experts made feedback for the suitability of this index system and shows that each index item's appropriate frequency reached 100% (only 1 expert add a two class index on the basis of the original one, that is, practice self-management ability), i.e. experts reached a high consistency for this index system in the project .

Experts score the index system by the degree of the importance of each factor .Gathering the score frequency by the degree of the importance of each factor .Two rounds' results are completely consistent.

The established hospital performance evaluation index system is feasible, scientific and practical. the hospital performance management should be based on the complete analysis of the hospital (medical quality) work efficiency) operating conditions). According to the nature of hospital and the difference of bearing the major function, establish the hospital performance evaluation index system correspondingly; make a comprehensive evaluation for the performance of each hospital, and improve in the process of running constantly. It is helpful to make health systems and hospital managers know the dynamic development of the hospital performance timely and combine with the hospital development goals, taking effective measures to improve the hospital performance and enhance the competitiveness of the hospital.

In conclusion, the design of the performance evaluation index system fully reflects the comprehensive performance evaluation that combined with working efficiency and quality, index

selected overall, proportion coefficient is scientific and reasonable, evaluation example conform to the actual situation can be used for the performance evaluation of comprehensive hospital. It can compare the performance of hospitals in the same period horizontally, and also compare the same hospital's performance in different periods longitudinally, because the performance evaluation index system is still in the primary stage, the design of index system is scientific or not, proportion coefficient is reasonable or not, calculation method is proper or not still remain to be examined in the future and continue to improve.

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