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Definition of Indicators of Competitiveness of Ophthalmological Centers by Expert Evaluation.

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ABSTRACT

Historically, only medical parameters were examined to assess the effectiveness of the medical organization (MO), however, in recent years the integrated approaches to the assessment of MO become relevant by considering the economic efficiency. To adapt accounting and reporting indicators of performance assessment existing in the world practice for independent ophthalmology centers with the help of expert assessment. On the basis of guidelines and other literature sources it was compiled a primary list of accounting and reporting indicators comprised of 47 indicators that were divided into 4 groups (production and technological indicators, financial and economic indicators, organizational indicators, marketing indicators). The experts included all the major freelance ophthalmologists of regions of the country (on number of regions) and head physicians of eye clinics. In a specially designed form, with a list of the accounting indicators, the experts were suggested to set the grade point on a 3 point scale depending on the importance of a certain indicator for the overall assessment of competitiveness of ophthalmology center, where 3 points means high level, 2 points – medium, 1 - low. All estimates obtained from the expert assessment were recorded in the general summary table where each indicator was consistent with estimates from experts (from 1 to 3 grade points) with calculation of arithmetic mean ratings for each indicator followed by the final ranking according to the principle: the higher the grade point, the more significant any indicator in determining the competitiveness of the organization. To establish the degree of consistency of experts' opinions it was calculated the coefficient of concordance. The last stage of data processing was consisted in integrating all data with the formulation of conclusions. The indicators with low average total ratings and also duplicate each other were excluded from the study. The expert assessment allowed under limited time and financial resources to obtain qualified information, scientific opinion of specialists. In this way it was established an adequate, compact list of accounting and reporting indicators which has a sufficiently high representativeness and availability to calculate on their basis the weighting factors with the purpose of conducting a comparative analysis of the competitiveness of independent ophthalmology centers.

Keywords: competitiveness, ophthalmology center, expert evaluation

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INTRODUCTION

New economic conditions bring about changes to many aspects of the national economy including the health care sector. If, historically, to assess the effectiveness of the medical organization (MO) only medical indicators (turnover and bed occupancy, mortality, complications...) were considered, in recent years the integrated approaches to the assessment of MO become relevant by considering the economic efficiency [1-3]. In modern healthcare there are such concepts as health, social and economic efficiency [4]. Under the medical effectiveness it implied a certain final result of the prevention, diagnostics, treatment and rehabilitation which is analyzed both from the position of the patient (services consumer) as the recovery, restoration of functions, general well-being mend and from the position of the organization (services provider) as the number of treated cases, number of complications, the level of hospital-acquired infections and others. [4]. The World Health Organization has defined medical efficiency as one of the important criterion in determining the quality of medical care along with such criteria as adequacy, efficiency and scientific and technical level [5]. Social efficiency is directly determined by such indicators as incapacity, disability and mortality reflecting the social activity of the population. In this case, if at the level of the services consumer the determining criterion will be the satisfaction with quality of provided medical care, at the level of services providers – the dynamics of mortality and morbidity, disability. Economic efficiency is determined by the ratio of costs to results [4]. Slow implementation of marketing management tools is typical for Kazakhstan as for countries with majority state regulation of health care. Assessment of MO is carried out mainly for medical reasons. In the current economic conditions rational use of material and technical, economic resources are becoming more and more relevant to ensure sustainable competitiveness of the MO in the market of services [6]. In the scientific literature there is no common methodology of integrated assessment of the competitiveness in the context of medical, social and economic indicators, there are many accounting and reporting indicators to assess the performance of health care organizations, thus the clinical profile and the specificity of institutions are not taken into account [7, 8]. It is known that only 30% of all available reporting indicators are really informative. In this regard it is of relevance to make the list of indicators which have a high informative value and significance in determining the competitiveness of the organization. One way of obtaining such information is the method of expert evaluation [9].

The expert evaluation involves obtaining, processing and analysis of information based on opinions of specialists (experts) with a view to subsequent adoption of decision [10]. The expert assessment by itself is very subjective and depends on individual- psychological and personal characteristics of the experts as well as directly from the peculiarities of the format of the evaluation procedure, the content of the questions, their wording and representativeness. A number of independent experts (not affiliated with each other) better estimate and predict the result than the structured group (team of individuals) that avoids an open conflict between speakers of opposing views and group influence occurring when they collaborate and the ability to operate extraterritorially without collecting all in one place. At the moment in the world literature there are no common selection methods of experts' selection [11, 12].

Aims: To adapt accounting and reporting indicators of performance assessment existing in the world practice for independent ophthalmology centers with the help of expert assessment.

Methods: The study was conducted as full-time with the aim to focus the attention of experts for specific purpose, on the number of iterations (repetitions) it is one – step, on crucial tasks – assessing, on the type of answer - ranking, according to the processing method of opinion - analytical, on the number of involved experts – limited. The requirements applicable to the experts are the highest qualification category, work experience in the field of health care organization for at least 5 years, ophthalmologists must have the experience of administrative activity, economists must have the experience in the field of ophthalmology, and also the requirements as the high level of general knowledge, high qualification (professional) level in the estimated area, the ability to think prospectively, a susceptibility to innovations, the lack of subjectivity in the application of the evaluated ideas, production and (or) research experience in this field. As experts it was selected 16 professionals which included all the major freelance ophthalmologists of regions of the country (on number of regions), the leaders of the eye care clinics with sufficient experience both in the practical ophthalmology and in the field of health care organization.

On the basis of different guidelines and other literature sources it was compiled a primary list of accounting and reporting indicators comprised of 47 indicators that were divided into 4 groups:

1. Production and technological indicators (14);
2. Financial and economic indicators (16);
3. Organizational indicators (21);
4. Marketing indicators (6).

The group of production and technological indicators included the data on total volume of hospitalization, the number of operations conducted, the structure of surgical interventions, the number of visits in the outpatient department. Financial and economic indicators reflect information on income and cost parts of the enterprise. The group of the organizational performance included information about the staff and the hospital bed fund. Marketing indicators include data on the extent of consumers' satisfaction (questionnaire), as well as the volume of the paid services provided. The experts were asked to rank the presented indicators on a 3-point scale depending on the importance of a certain indicator for the overall assessment of competitiveness ophthalmology center, where the 3 points meant a high level, 2 points – average, and 1 point- low. The procedure was standard; each examiner was suggested to fill out a special form with indicating the date and signature after reviewing the goals and objectives of the study.

RESULTS

All estimates obtained from the expert assessment were recorded in the general summary table where each indicator was consistent with estimates from experts (from 1 to 3 points). To process the data array of experts it has been calculated the average arithmetic ratings for each indicator followed by the final ranking according to the principle: the higher the grade point, the more significant any indicator in determining the competitiveness of the organization. To establish the degree of consistency of experts' opinions it was calculated the coefficient of concordance. It is measured in the range from 0 to 1 (where 0 means complete opinion inconsistency, 1 – complete unanimity, from 0.1to 0.3 – low degree of consistency, from 0.3 to 0.6 – average, more than 0.6 – high). All calculations were performed automatically using the online calculator separately for each of the 6 groups:

$$W = \frac{S}{\frac{1}{12}m^2(n^2 - n) - m\sum T_i^2}$$

where S – sum of squared of ratings, n = number of observations and m – number of experts.

The necessary source data were uploaded to an electronic portal and in the result it was obtained the following data: As can be seen from the table the coefficient of concordance indicates the average (1,2,3,6) and high (4,5groups) degrees of consistency of experts' opinions. To assess the significance of the coefficient of concordance the fitting criterion of Pearson is calculated according to the following formula:

$$\chi^2 = \frac{S}{\frac{1}{12}mn(n+1) + \frac{1}{n-1} \sum T_i^2}$$

The calculated χ^2 is compared to the table value for the number of degrees of freedom $K = n-1$, with a given level of significance $\alpha = 0.05$. The table shows that in all groups the calculated χ^2 was greater than table and therefore the index W is not random value and the results can be used in further studies. The last stage of data processing consisted in the compilation of all data with the formulation of conclusions. Indicators with low average total grades were excluded from the study, and also the experts have noted some indicators characterizing the same data.

Such overlapping figures merged into each other. As the result the overall summary table included the following indicators:

The rating number	Indicators name	Average ratings	Medium standard deviation	Sum of ratings
Group 1. Production and technological indicators				
1	Volume of hospitalization to the day and night clinic	2.875	0.34	46

2	Volume of hospitalization to the outpatient department	2.813	0.40	45
3	Share of operations on outpatient department of the total number of operations in hospital	2.813	0.40	45
4	Total number of operations	2.75	0.44	44
5	Number of accepted patients in the outpatient clinic (budget + on a paid basis)	2.438	0.51	41
Group 2. Financial and economic indicators				
1	Total income	2.875	0.34	46
2	Total consumption	2.875	0.34	46
3	Profit / Loss	2.813	0.40	45
4	Share of paid services from the total income			
Group 3. Organizational indicators				
1	Total number of beds in the full day hospital	2.875	0.34	46
2	Total number of beds in the outpatient clinic	2.875	0.34	46
3	Average patient day in the day and night clinic	2.813	0.40	45
4	Total established posts (rates)	2.75	0.44	44
5	Bed turnover	2.75	0.44	44
6	Total number of doctors	2.438	0.51	39
7	Total number of the average medical personnel	2.25	0.44	36
Group 4. Marketing indicators				
1	Level of consumer satisfaction (questionnaire)	2.875	0.34	46

The table shows that in the group of production and technological indicators such indicators as the volume of hospitalizations, surgeries, the proportion of surgical interferences, the number of accepted patients in the outpatient department gained the highest average arithmetic ratings and the total sum of ratings. In the second group the indicators of total incomes and consumptions, the share of paid medical services scored the highest votes. In the group of the organizational indicators the data on the number of beds in the night clinic and also in the outpatient department, the bed turnover, the total number of doctors and nursing staff scored the most highest grade points. In the group of marketing indicators the level of patient satisfaction (questionnaire) is determined. On the basis of these indicators it will be calculated the weighting factors with the calculation of the complex coefficient of the competitiveness of the ophthalmology center.

CONCLUSION

Thus, the expert assessment allowed under limited time and financial resources to obtain qualified information, scientific opinion of specialists. In this way it was established an adequate, compact list of accounting and reporting indicators which has a sufficiently high representativeness and availability to calculate on their basis the weighting factors with the purpose of conducting a comparative analysis of the competitiveness of independent ophthalmology centers.

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