Qualitative factors in the healthcare services

Factorii calitativi în serviciile medicale

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Abstract
It is known that the efficiency of medical services is a broad social and economic concept, influenced by both numerical-quantitative and non-numerical-qualitative factors. The dynamic nature of technical progress and the accelerated pace of scientific discoveries in the field of health, enhances the size and complexity of economic issues related to assessing the efficiency of these social activities.

Keywords: *evaluation, efficiency, healthcare services*

Rezumat
Este cunoscut faptul că eficienţa serviciilor medicale reprezintă o noţiune economico-socială largă, influenţată atât de factorii numerici-cantitativi, cât şi de factorii nenumerici-calitativi. Caracterul dinamic al progresului tehnic şi ritmul accelerat al descoperirilor ştiinţifice din domeniul sanitar, amplifică dimensiunea şi complexitatea problemelor economice aferente evaluării eficienţei acestei activităţi sociale.

Cuvinte-cheie: *evaluare, eficienţă, servicii de sănătate*

JEL Classification: I10, I18

Introduction

In the healthcare services there are two types of factors, with great influence over the efficiency of the process : quantitative factors and qualitative factors. In this paper we want to focus on the qualitative factors, considering the fact that the influences caused by demographic, cultural and socio-economic factors is pertinent because a nation's level of development determines the living standards, quality of life and thus health.

The algorithm of qualitative factors assessment of the sanitary activity consists in collecting and processing health information using reference models and index value, setting the level of health and the causes involved, the application of "treatment" on causal and risk factors, including health monitoring by proper control.

The main objectives of structural analysis aim at providing comfort and appropriate microclimate, ergonomic working conditions, disease prevention, strong reduction of the work incapacity and early death.

Knowledge and assessment of health services qualitative factors by economic analysis leads, ultimately, to sharing of people, promoting and recovery of health through society's organized effort. This effort must be supported by laws, prevention and disease control programs, medical institutions and educational services for population.

In current conditions, socio-cultural investment and, in particular, investments in health care can not be treated as being profitless, since they contribute to the material production both directly and indirectly. Thus, investment in health lead to improved health status of the main input, which is man. Relations between health investment and economic investment are bilateral; whereas economic development determines the development of new sanitary objectives while medical units contribute to improved performance in production processes by providing work capacity, state of health. The interaction between health, social economic system and environment is shown in the Figure 1.

Evaluation of economic efficiency of health services is made by comparing the investment efforts with the effects obtained. The difficulty in the economic analysis is in the complex character of quantifying all effects obtained from all allocated investments in medical system. These effects have a direct character, in the sense that it is done the restoring of population's work capacity, population which is receiving medical care, but also an indirect character given by the extra production based on reducing disability to work.

Mathematical methods for assessing the qualitative factors and structural socio-economic effects aim the combination of numerical quantitative elements with those of a qualitative nature.

Establishing the relationship between the results of policy is carried out by scientific observations and by criteria considered, using Boolean variables to compose the options expressed by policy makers and differentiation of preferences that reflects qualitative phenomena. The ordering relation allows determination of scores or grades given by experts on each criterion analyzed by final composition of the results.

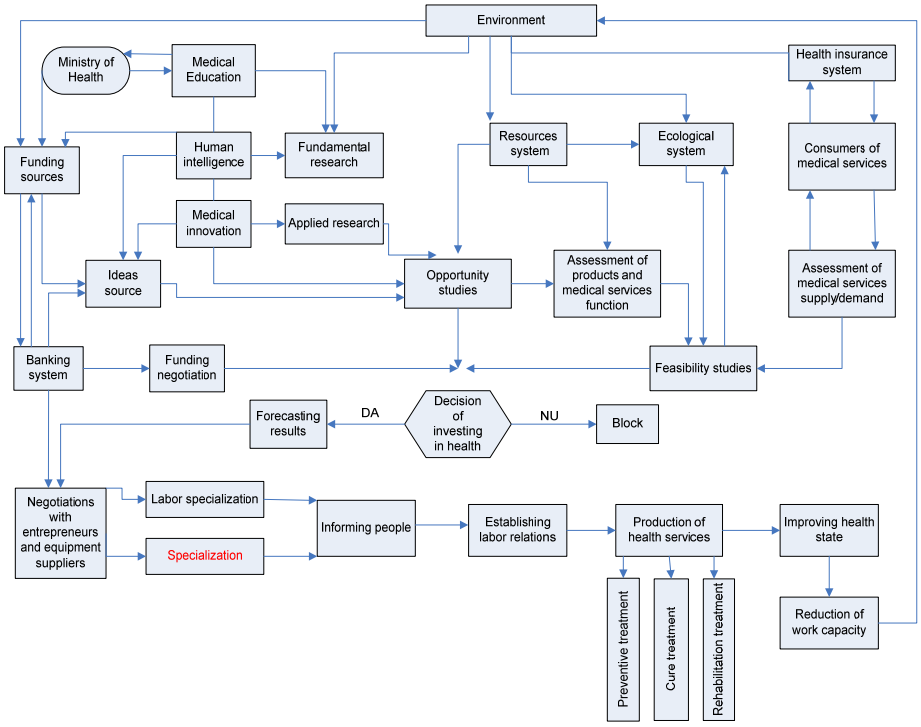

Figure 1 The interaction between health, social economic system and environment

The evaluation of economic and social effects by criteria that include both quantitative and qualitative factors is performed by associating Neumann-Morgenstern utility, which means calculating the marginal utility of the notes (scores) set by specialists for each result.

Findings of qualitative phenomena are possible using fuzzy values, meaning an amount that do not has a single value, but a lot of values that are assigned a membership degree to a particular property (Zadeh, 1965). In this case of using fuzzy values theory, for evaluating the work, scores or utilities are replaced by membership degree. The conceived methods are referring to associating a numerical characteristic to the analyzed phenomena, characteristic's decomposition in elements and sub-features, direct estimation of the membership degrees and carrying out of comparative studies, the use of observation operator for the composition of membership degrees.

Scientific studies have been extended also on assessing the links between the qualitative factors through relevant mathematical methods: the multiple correlations, open polygons technique, the assessment of fuzzy type relation, to substantiate the economic decision-making processes.

Main qualitative factors of the healthcare services

A. Investment factors

In the general economic concept is accepted the assumption that consumers who have a certain budget and know the value and characteristics of different products, are able to choose the quantities needed and their own way to satisfy their preferences.

Applied to health field, this assumption is questionable because people ignore its actual health state and does not know the possible effects of medical treatments that can be administered.

However, as awareness of the patient, the extent of inconsistencies between concrete situations and abstract models vary. Tests are multiple and are based on information degrees and dependency on medical staff degrees.

From studies, three general areas of research, that will be discussed below, can be distinguished:

- Capital investment;
- Price analysis (pricing medical services);
- Accessibility related to needs of health services.

The theoretical model on the capital investment is of type M. Grossman (1972), being representative to neo-liberal concept.

The main hypothesis of the model is that health is a durable good produced by capital invested.

Individuals inherit an initial stock of health that depreciates with age; they can increase the stock through investment. The problem is to determine, in the different periods of life, the optimal increases of that stock.

According to traditional beliefs, an agent seeks to increase at maximum the capacity for fulfill health and other goods purchased by the service, being subject to a double constraint:

• budgetary, for purchased services to be at its income level;

• time, for the time fund available to include working time, rest time, time allocated to investment in health, losses caused by diseases and others.

In these circumstances, we can say that for an individual at a time "n", optimal level is given by the equality between marginal efficiency of investment in health and marginal cost of health depreciation.

Marginal efficiency of investment in health includes psychological elements, whereas the increase in health stock raises the feeling of wellbeing. It should also be considered marginal monetary return (sn) in the time period "n". Its size is influenced by the:

• income (Wn) achieved during the "n" period;

• marginal product of health (Gn), calculated by the number of days which carries along the increase of one unit of the health stock (maximum one year);

• marginal cost of gross investment in health (Cn-1) during the "n-1" period.

The relation of calculus is as follows:

$$s_n = \frac{W_n \cdot G_n}{C_{n-1}}$$

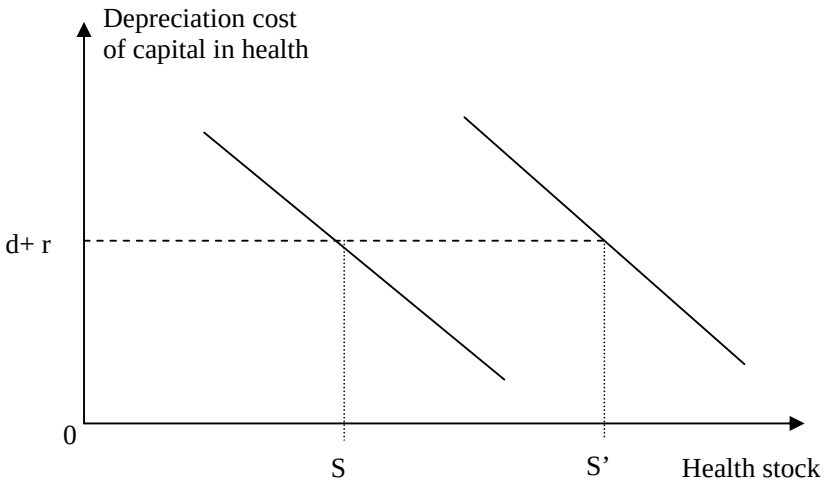

Figure 2 The Influence of wage growth and stock health

This is explained by the fact that the marginal product can not exceed one year, and overtime work only generates a greater productivity through new investment in health.

Marginal cost of health depreciation includes the sum of two elements, namely:

• degree of health status depreciation (dn) in the time period "n";

• interest degree (rn) in the time period "n", to which an individual gives up an unit increase in the stock of health due to depreciation cost of capital.

It results that the optimal capital investment in health is given by:

$$s_n = \frac{W_n \cdot G_n}{C_{n-1}} = d_n + r_n$$

This equation allows retention of the following aspects:

a) The analysis of influences determined by age.

Let's suppose that isolating age factor, health expenditure, the marginal product and the marginal cost of investments in health are independent of this factor. Then, the position of the regression line representing the marginal efficiency of capital in health, according to the marginal return and stock health, does not

change with age. In contrast, age influences the process of health depreciation. This means that all older people deplete their health capital. With this assumption, as the degree of health depreciation grows, the return on investment should increase and the stock of health should decrease. This explains the fact that health status is falling off, a time when the health stock falls below the minimum required life and in which death occurs.

The results of the analysis carried out, are given by two main behavioral attitudes of individuals. Supposing that two persons (a) and (b) departing from a given position (point 1), suffering from over a year the same degree of health depreciation, are finding themselves in the same position (point 2) at the end of the year.

The (a) person believes that for the stock of health in point 2, the marginal return on investment is very high; used to work for a long time, this person will have a limited activity. In these circumstances, this person is investing a lot to regain equilibrium (point 3), balances depreciation as much as possible and the new state of health is close to the old one.

Person (b) believes - contrary - that reducing the initial stock of health is not difficult, is investing less in that respect and the health stock is reduced significantly. Thus, the increase in health capital depreciation in relation to age has in this sense, variable effects on total investment.

From undertaken research, it is considered that the attitude of the person (a) is more common than the attitude of person (b).

b) The analysis of influences determined by income increase.

By increasing income, the marginal product of health value has a pronounced increase and the marginal cost of investment (including time) increases equally.

If the hourly wage increases by x%, the value of marginal product increases equally. The value of the marginal cost of investment in health will increase after the following relationship:

$$\frac{Wt}{Wt + Z} x < x$$

where: W - hourly wage;

t - time of the investment in health;

Z - value inputs in investment ($Z \neq 0$).

For any level of health, the marginal return on investment is rising and the regression line of the marginal return (efficiency) is moving up.

At a certain degree of interest (r) and depreciation (d), the optimal health stock is moving from S to S‘. Increase in health produced by a unit increase in investment leads to the conclusion that the level of investment increases with income.

M. Grossman model takes into account aspects of the training level effects. Thus, the more educated a person is, the more important an investment in health is. Investments efforts are less high because capital is used in terms of efficiency.

The model is conceptually complex, without reaching to surprising conclusions. Essentially, in an economic view, appears the idea that public authorities must provide information so that users can decide rationally on making investments in health.

B. Demographic factors

From studies, it appears that funds for health are unevenly distributed. Following an investigation conducted in 1990 in developed European countries, it was observed that:

- 40% of the population did not used medical services;
- 5% of the population uses 63% of total funding for health;
- 70% of the population brings 8% to health funds.

These data reveal the concentration of duties and liabilities on individuals, but more important is their interpretation on users groups, among them, teenagers' and women's behavior and the behavior of elderly are most relevant.

1. Influences determined by young

Young people are important consumers, particularly those in urban areas using the hospital system. Thus, the statistical data shows that the addressing of children and young to physicians, by age groups is as follows:

- Group 0-2 years: 11 consultations per year;
- Group 2-4 years: 6 consultations per year;
- Over 4 years: five consultations per year.

The share of ambulatory care, by specialist medical staff, represents 24% of the population with a middle level and 40% of the population with an elevated level.

In the past 10 years, the number of visits has increased approximately twice. Apart from general practitioners, most in-demand are pediatricians (78% of cases) compared with ENT (9%) and ophthalmologists (5%).

Health demand structure reflects the frequency of younger age pathologies. Demand growth is in line with the supply of pediatricians, expanding health insurance, strengthening the health education, high demands for health, improving living standard.

The social dimension is reflected in the important place that maternal protection and infant prevention occupy. At this level, the policy of encouraging higher birth gains valences, in relation with high addressability of parents to physicians even in benign cases without serious consequences, but with effect on the avoidance of disease progression.

These features are specific to young children up to age 5. Exceeding this threshold age, susceptibility to disease decreases, consumption of medical services

decreases to about two meetings per year for girls aged 10-14 years and for boys aged 15-19.

Specific combinations of biological factors and social factors, explain the complex phenomenon of hospitalization. It is generated, at a third of the children, by birth causes, increased for children of 0-1 years, and then decreases rapidly. It was found that boys are more hospitalized (approx. 10%) than girls, being more vulnerable - especially in accidents (in crashes or in the family) – to the age group 0-10 years. According to specialists' opinion, the parents adopt different attitudes on the hospitalization in relation with the sex of children, namely attitudes given by conceptions on the special role of male or female gender. In fact, at this age is important to prevent diseases and parents addressability to practitioners, requiring, in this respect, special government measures. Through actions and special funds allocated by the Ministry of Health, the child mortality and morbidity can be substantially reduced.

Unfortunately, in recent years in Romania, infant born premature and low birth index reached alarming levels. Based on these remarks, we can see sharp declines due to unfavorable factors: reduction of prenatal surveillance, adverse social conditions, reduction in living standards and of purchasing power.

2. Influences determined by women

Behavioral differences of women and men aged 17-40 years are remarkable. Women resort to specialists three times more than men, occurring in urban areas a number of two medical meetings annually. Attendance of general practitioners is 10% higher than medical specialists. In the 40-50 years age category, the difference is much reduced; in terms of ambulatory medical care, this is 50% higher in male population.

These differences have their importance and their evolution has different levels, being influenced by fertility problems, increase in the number and quality of health care in obstetrics – gynecology specialty, progress of investigation methods, effects of family planning, behavioral and attitudinal changes, psychological problems resulting from difficulty of family and professional role conciliation.

High frequency and high consumption of medical services for the female population compared with the male population are found in the hospitalization field, when specific problems of pregnancy periods, motherhood, sterility treatment, contraception and similar appear.

In developed countries, 10% of women aged between 20-30 years, go every year to hospitals for obstetrics - gynecology, while only 5% of men attend the general hospital, annually; however, if we exclude obstetrics – gynecology problems, women are less hospitalized than men. The behavior of the female population is therefore significant and the effects are felt on the costs of health care, especially in the field of obstetrics and gynecology field, in the mentioned context.

3. Influences determined by elderly

The consumption of medical services in this social category is the highest compared to other social groups in urban; 75% of population aged over 70 years is calling quarterly for health care services. Procurement of pharmaceutical products confirms this trend, being 3 times higher in elderly than young on equivalent purchasing power. Care provided by medical personnel in the field of rheumatology, balneal physiotherapy, cardiology, physical therapy, geriatrics, and others of this kind are very numerous and are exceeding, for elderly, four times the average of other age groups. Accordingly, increases the addressing to medical services and clinical laboratory tests, radiology, ultrasound, cytology, tomography and so on.

The strong growth in demand for medical services for elderly is explained by both general health degradation and the "phenomenon of generation". According to this phenomenon, the tradition of obtaining medical services during work and maintaining them during retirement is felt. It is no accident that the biggest consumers of medical acts in 1960 were 60-70 years old, 70-80 years old in 1970 and over 80 years in 1980.

In the same time, at the third-age people, the ambulatory treatment of long and costly diseases are done primary in high life social layer and with significant financial resources. This phenomenon is particularly sensitive and explains the increase in annual rate of hospitalization with 6% in the last 20 years, at age between 70-80 years, double rate than that recorded in other categories. The frequency share of elderly hospitalized is 20% higher for men than for women, because male-specific risks (heart disease, respiratory, urological disease, malignant tumors and so on). Moreover, it was found that in advanced age, female actual number is higher than male actual number.

Overall, there is an aging population leading to increased costs. The behavior of older people is less sensitive to prices in the medical-pharmaceutical field for acceptable monthly income. This observation allows advancing two arguments:

- life extension may be accompanied by a transfer from costly periods when persons have made payments without receiving health care in exchange (Zweifel 1990);
- government policy in health care may support financially the high medical demand of elderly and can affect birth (M. Gadreau, 1989).

Research has led to establishing the economic effects of aging on social life. The work of S. Sandier (1987) for the International Labor Office had as a starting point statistics in the Netherlands and France and established the need to increase existing obligations of payment for medical services in the period 1985-2005 by 2.5 times. Launois R. and A. Palo (1989) evaluations for the World Health Organization had determined conclusions on the opportunity of considerable increase in government spending during 1995-2000. Consumption of medical services depends on periods of life and general structure of population, on

which it is difficult to operate at a national level. However, development of demand depends on social factors closely related to demographic variable. This ultimately leads to acceptance of the M. Grossman economic model under which the amount of medical services depends on the marginal efficiency variations of health capital. Even in the case of stock depreciation, this theory which favors the view of market economy, partly explains the benefits that elderly should benefit. Full explanation leads to the need to deepen the social variables' analysis with their dominant: cultural variables.

C. Cultural factors

The analysis of cultural factors is necessary to establish the differences on importance given to health and, in particular, the gap between the consumptions of medical care.

1. Differences on importance given to health

The levels of importance given to health can not be calculated directly, but by index of information about this social problem.

The investigation carried out in Western Europe (1980) showed that the number of medical visits due to prevention is diverse. Thus, for workers and farmers, the consultations level is 20% lower than average level, reaching the upper limit of 40% for average staff and then going down to 25% for higher education staff. The investigation referred to householders, the percentage being higher for inactive wives. Undeniably, the concern over the physical integrity is the main source of health expenditure, but their amount is uneven. For example, in developed countries large sums to eliminate excess weight and the extra calories are spent because of their adverse effects on the cardiovascular system (A. Letourny, 1976).

Realizing the danger of cardiovascular disease, individuals in knowledgeable social groups monitor their diet: 4.2% of higher professional, 3.4% of middle level compared to only 1.3% of farmers who are following slimming regimes.

In relation to the place and role of health, there is a new variable of medical expenses, which vary by socio-professional category of individuals. However, the need to prevent diseases does not automatically attract additional health spending.

Thereby, from the investigation realized by Desplanques G. (1984), the mere reduction of alcohol consumption contributes to reducing morbidity and mortality. According to that survey, staff with higher education consumes three times less alcohol than workers and farmers. Also, sports can improve health status without proper medical expenses. According to investigation, in western countries two-thirds of those with higher professional practice sport constantly while only one third of workers use this form of maintaining health.

The survey data shows that behavioral differences are obvious. They depend on social distances and differences between groups of individuals. When these distances and differences are small, medical recommendations are applied. In contrast, when distances and differences are large, medical advices are ignored or read as bad. This game of cultural variables, regarding the importance given to health, it manifests itself in multiple forms on medical care.

2. Disparities among consumptions of medical services

The influence of cultural factors in terms of disparities among consumptions of medical services has been studied by French economist Morniche P. (1986). Based on these studies and accumulation performed over time, the following have been found:

a) Active staff with high professional spends more for medical services (with 36% more than average) but uses less than inactive members of their families and than average (15%). There is shown a low addressability to general practitioners, evidenced by skepticism in relation to specialty notions and poor scientific interpretations. Also, high professional staff has higher expectations of their profession - and by default - is reluctant to stop working for medical reasons, it can not devote its time to general medical examinations.

b) Peasant farmers are recording less than 50% of the medical consumption average of the active population. This deficit in consumption is explained by the physical distance of consumer from medical or pharmaceutical staff. Also, there is a specific addressability of their families (inactive wives and children) to general practitioners. This behavior is explained by the severe farm workers attitudes towards own body, tougher relations than the rest of the population. These sometimes lead to a refusal to consult medical personnel. At this level, assumptions must be interpreted with caution in order not to affect the behavior of farmers' children to normal use of medical services. The independent status of agricultural worker, conjugated with the irregularity of activity and geographical distances, determines the separation of patients and sick people, according to the importance given to the time factor and the use of medical services in certain seasons. Overlaps of influences between cultural variables and other factors of supply determine delicate and sometimes contradictory interpretations.

c) Workers are using relatively constant and pregnant medical services, compared with other population groups, especially those of general practitioners. The main explanation of this situation is that workers have a relatively low interest to the current activity done and thus does not hesitate to stop working in order to care for their health. According to Bungener M. (1982) observations, during periods of recession when unemployment spectrum permanently presses, workers tend to avoid any absence or delay from work, even if this may be explained by the real need to seek medical services.

Another explanation of the request for medical services is that regarding effects of work accidents and occupational diseases, especially in high risk sectors: construction, mining, steel, wood, careers and so on. These effects combined sometimes with over-consumption of alcohol causes a distinct feature, namely "risk taste" of highlighting the courage and physical strength.

This phenomenon may be filled up with elements of "terribilisme", meaning eccentricity and elements of excessive courage that characterizes, in particular young people.

d) Middle level employees and officials are representing an important social category, with an important role in maintaining the high rate of health expenditure, according to a survey carried out by E. Levy (1982). Statistics from 1980 show that this category has an intermediate level of medical consumption, a lower frequency than for workers but higher than for higher professional staff to general practitioners. Individuals in this social category behave type relay, copying intellectuals' class and being followed by other categories. The number of these social groups is steadily growing in post-industrial and service sector companies, determining an important weight in the evolution of health care obligations. The results of the 1988 survey and of the analysis made by A. Mizrahi (1991) are not directly comparable with those of 1980, due to changes in their area of research and data collection methods, leading to additional comments. According to these results, differences in addressing health services are pregnant, regardless of the criteria of assessment used (activities, social and professional categories).

Demographic and cultural variables are fundamental factors of disease prevention and health care, with incidences difficult to assess. The causes of these incidences come from prices and medical fees, the amount of income and purchasing power occurred in the social protection system.

The mathematical calculations performed by A. Mizrahi and A. Sandier (1991), a 3% annual growth in gross domestic product, health expenses should grow by 3.5 - 4%, namely at a higher rate than GDP.

According to forecasts made by experts in the field, in 2002, health expenses had to represent at least 8.9% of GDP to ensure proper physical condition, in these circumstances, it is necessary to adjust demand and supply of medical services through the government of each country and based on cost and benefit studies of health status.

Conclusions

With the current unprecedented economic crisis, one of the key ways to revive economic activities is represented by the efficiency of all activities and the more rational use of resources. As we know, healthcare system is a large consumed resources sector (financial resources, human resources, material resources). Therefore, it is absolutely necessary to improve efficiency in this area, based on the factors of influence. Without neglecting the quantitative factor's influence over the

healthcare system, we can say that qualitative factors are determinants in evaluating and improving performance in this vital area of human activity. Investment factors (according to which health is a durable good), demographic factors (the influence of young, elderly and women) and cultural factors are vital for assessing the effectiveness of medical services.

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