The analysis of health education of the population as an important factor in optimizing medical expenses

Cătălina Liliana Andreia, Stelian Stancu, Tudorel Andreib *

*aUniversity of Medicine and Pharmacy "Carol Davila", 020022, Bucharest, Romania
bThe Bucharest Academy of Economic Studies, 010374, Bucharest, Romania

Received October 28, 2009; revised December 4, 2009; accepted January 14, 2010

Abstract

Population health education consists in developing the level of the health culture of different population groups and the health educational facilities and processes necessary to create a sanogenic behavior. Also there is a conditioning between education and health that is substantiated by the major functions of the education for health: sanogenic function and prevention function. Therefore, from this conception, this study aims on the one hand, to highlight how to optimize individual and community health and, on the other hand, how to achieve the objectives of the primary, secondary and tertiary prevention. In this context, using a sample set from the medical staff with higher education in Bucharest we collected some information related to health education of the population in terms of the following issues: education among the population for prevention or worsening of a disease, the habit of the people hospitalized in the past for carrying out regular medical checks later, the contribution of some factors (Ministry of Health, Education, medical units and the media) in health education and disease prevention among the population.

Keywords: Health education; statistical survey; medical expenses; healthcare; medical statistics.

1. Introduction

The population health education consists in developing the level of health culture of different population groups and educational and health facilities and processes necessary to form a sanogenic behavior.

The design and implementation of health education of the population starts from the definition of health as "the state of physical, mental and social wellness".

This says the World Health Organization "is not only absence of disease or infirmity". There is also an interconditioning between education and health based on the major functions of education for health: sanogenic function and prevention function. Therefore, from this design, this study aims on one hand to highlight how to optimize individual and community health and, on the other hand, how to achieve the objectives of primary, secondary and tertiary prevention.
This study aims to present a series of observations relating to the health education for the population in terms of the following issues: education among the population for prevention or worsening of a disease, the habit of the people hospitalized in the past for carrying out regular medical checks later, the contribution of some factors (Ministry of Health, Education, medical units and the media) in health education and disease prevention among the population.

The study is based on data series obtained through the application of a statistical survey to a sample of physicians from the Bucharest academic center. The sample consisted in 452 people, the error is 2%, and the results are guaranteed with a probability of 98%. The results obtained are interesting because they are based on opinions expressed by the personnel who come directly into contact with persons who require medical care.

At European level there is a concern for the measurement of the health education of the population (Bassett, 2007). The results of this study present a perspective on this important issue in terms of medical personnel with high level qualifications. This measurement is accurate because it is made based on the experience of health professionals engaged daily in patients’ healthcare.

2. Population health education for preventing illness and worsening of a disease

Since, in terms of economic and social development there are significant differences between urban and rural, the analysis of the population health education for prevention of diseases or their aggravation is done separately for urban and rural population. We defined $A1_1$ and $A1_2$ variables. For each case we used a measuring scale with five values, from 1, which was awarded when the doctor have the opinion that most people do not give importance to prevent the occurrence or worsening of a disease, to 5, where most population give importance to prevention or worsening of a disease. The inclusion of this section in the questionnaire, started from the fact that an accurate knowledge of the level of the public health education is an important source for shaping national programs in the field and to develop programs directed to students at the schools in the country.

For an overall assessment of the level of health education of the population in urban and rural areas we defined the ESP variable:

$$ESP : P \rightarrow [1,5], \text{ where } ESP_i = E(A1_1_i, A1_2_i).$$

A high value of average of this variable shows a favorable opinion on the level of education in urban and rural population to prevent or worsening of diseases.

After processing data series were obtained results that are presented in figure 1.

![Image of figure 1. Distribution of answers on health education of the population](image-url)
After processing the data series of the level one aggregate variable defined on the basis of the relationship [1] we obtain the following results.

- The average of the variable equals 2.07 which indicate that the majority of the population does not give importance to prevent illness and disease worsening.
- The perception is relatively similar in medical staff groups defined by sex, age, the category of the staff and academic title.
- There is a significant difference between the behavior of urban and rural areas. According to medical personnel with higher education, half the rural population gives a low importance of disease prevention.

3. The habit of the people hospitalized in the past for carrying out regular medical checks later

The request for a post-admission control of a patient is a way to streamline the medical act. In our questionnaire, we inserted a question to assess the extent to which patients require such treatment. From this perspective we separately assessed patients' behavior from and urban areas. To measure this aspect in the two populations we defined $A_{2\_1}$ and $A_{2\_2}$ variables. We used a five value scale to measure the medical staff opinion, from 1, which was awarded when, according to the doctor, only a small proportion of patients that had an admission in a hospital in the past require a new medical examination at the end of the treatment, to 5, where, with few exceptions, all patients require medical examination.

For an overall assessment of the practice of the patients who have undergone a treatment to seek a new expert consultation we defined the PCS variable:

$$PCS : P \rightarrow [1,5], \text{ where } PCS_i = E(A_{16\_1}, A_{16\_2}).$$  [2]

A high value at least equal to 3, of the average value of this variable shows a proper behavior of the population that may reduce the medical act costs in an average time horizon.

After processing the data series in the sample we obtained the results presented in table 1.

<table>
<thead>
<tr>
<th></th>
<th>Urban population (%)</th>
<th>Rural population (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No answer</td>
<td>1.5</td>
<td>3.9</td>
</tr>
<tr>
<td>A small part of the patients</td>
<td>13.0</td>
<td>39.1</td>
</tr>
<tr>
<td>A moderate part of the patients</td>
<td>32.4</td>
<td>33.4</td>
</tr>
<tr>
<td>Half of the patients</td>
<td>23.3</td>
<td>14.3</td>
</tr>
<tr>
<td>The majority of the patients</td>
<td>28.0</td>
<td>98.5</td>
</tr>
<tr>
<td>With few exceptions, all the patients</td>
<td>1.7</td>
<td>1.5</td>
</tr>
</tbody>
</table>

The aggregate variable features used to characterize the behavior of patients to apply for a medical examination at the end of treatment are given below.

The histogram of the data series of the variable is defined on the basis of the relationship [2]. The average value of the PCS variable based on the responses completed of the sample population is equal to 2.34 and the standard deviation is 0.917. The average level of variable shows that less than half of patients who had undergone a treatment recommended by a doctor ask a specialist consultation at the end of this period. This behavior of the population recommends that the Ministry of Healthcare should develop health education programs to the public.
Different views on the request of medical consultations after a treatment period are observed in the groups of doctors defined by age.

Table 2. The analysis by groups of staff of the perceptions of a consultation request

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Under 30</th>
<th>31-40</th>
<th>41-50</th>
<th>51-60</th>
<th>Over 60</th>
<th>F statistics and the level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.33</td>
<td>2.13</td>
<td>2.25</td>
<td>2.55</td>
<td>2.36</td>
<td>2.65</td>
<td>2.67</td>
</tr>
<tr>
<td></td>
<td>(0.971)</td>
<td>(0.757)</td>
<td>(0.883)</td>
<td>(0.997)</td>
<td>(0.954)</td>
<td>(0.709)</td>
<td>(0.02)</td>
</tr>
</tbody>
</table>

To assess the medical opinion on the extent to which people give importance to their health by the care given to ensure daily consumption, prevention and treatment of diseases, etc. we defined two variables, one for urban population and the other for the rural population. The two variables, symbolized by A3_1 and A3_2 are defined with a measuring scale with five integer values from 1, which is awarded if the population does not give sufficient importance to their health, to 5, value to be granted in the favorable situation in which people give great importance to health.

For an overall assessment of the extent to which population given insufficient importance to their health we defined the PAC variable:

$$PAC : P \rightarrow [1,5], \text{ where } PAC_i = E(A17_{-1,i}, A17_{-2,i})$$  \[3\]

A high value at least equal to 3, of the average value of this variable shows a proper behavior of the population that may reduce the medical act costs in an average time horizon.

After processing the data series for this variable we obtained that the average is equal to 2.53 (the standard deviation is 0.780) which show that people give little importance to their health. For the urban population the average value is 2.97 (the standard deviation is 0.897), while the average value for the rural population is only 2.10 (the standard deviation is 0.914). To compute the three average values we taken into account only the questionnaires that were completed for answers to the two questions that were the basis for defining the two variables. Their number was 402. Following the results we observe a different behavior in the two populations in relation to the focus on their own health. By computing the F statistics we show that there are no differences in the groups of doctors defined in relation to various grouping characteristics such as gender, age, the category of the personnel and the academic title.
4. Conclusions

The development of special programs for improving the health education among population is a way to optimize the medical expenses in a medium and long term time horizon. This process is recommended especially for the more rural population.

Ministries of health and education can have an important role in medical culture in the school population. In our study most of the medical staff with higher education has highlighted this issue. Almost half of interviewees considered as indispensable ministry measure to develop new programs for health education and prevention among the population. Furthermore, it is essential to start as early as primary education.

These issues, related to the development of the health education and prevention may be important elements to enhance population health and reduce medical costs.

To increase the efficiency of health education of the population more tools to develop and strengthen it are recommended to be used since the early years of school, but also throughout the whole life by advertising campaigns and measures for dissemination of information by the central state institutions and the sanitary units. To achieve coherent policies in the field of health education of the population in many European countries there are specialized centers in supporting development of health education of the population.

In the developed countries there is a constant concern for assessing the health education of the population. For example, (Crews, 2005) shows that "The field of population education has existed in the USA for less than 30 years, attracting varying levels of interest from government officials, the media, and the general public”.

References