Use and Perceptions of Lithuanian Computerized Health Information System

Zilvinas Darulis

Nordic School of Public Health

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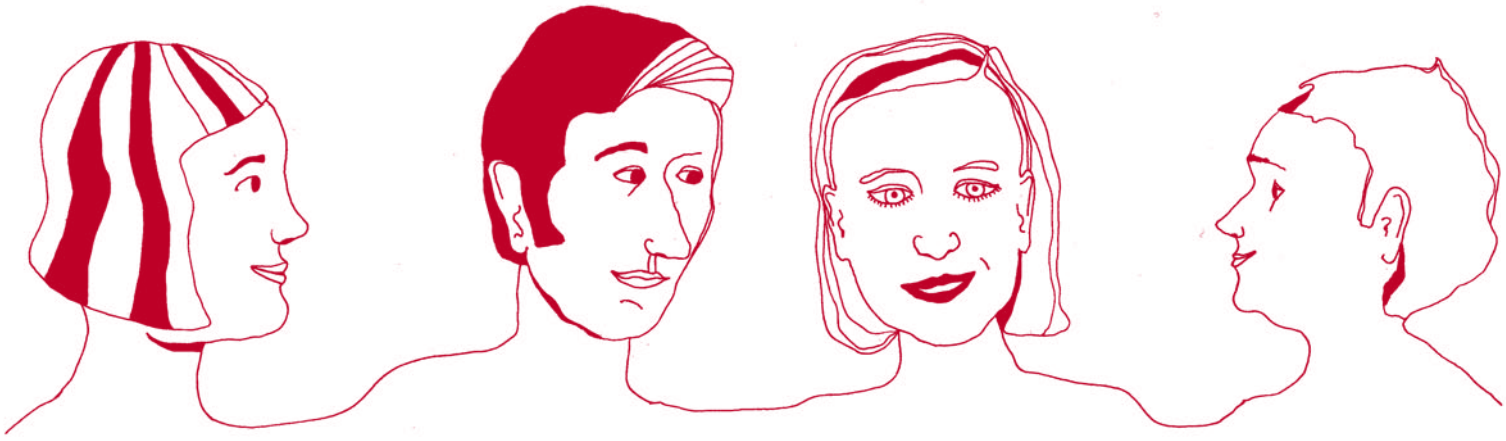

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Author				
Zilvinas Darulis				
Author's position and address				
Assistant Professor, doctoral candidate at the Department of Philosophy and Social Sciences, Faculty of Public Health, Kaunas University of Medicine A. Mickeviciaus str. 9, LT-44307, Kaunas, LITHUANIA				
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Abstract

The study was user survey method based, performed to get the overview of use and perceptions of health care managers towards Lithuanian computerized health information system as a tool for decision – making.

Aims of the study were to describe LCHIS, its inputs and potential use; to account for a survey of potential users, health care administrators; to discuss the need for improvement of the system and its use.

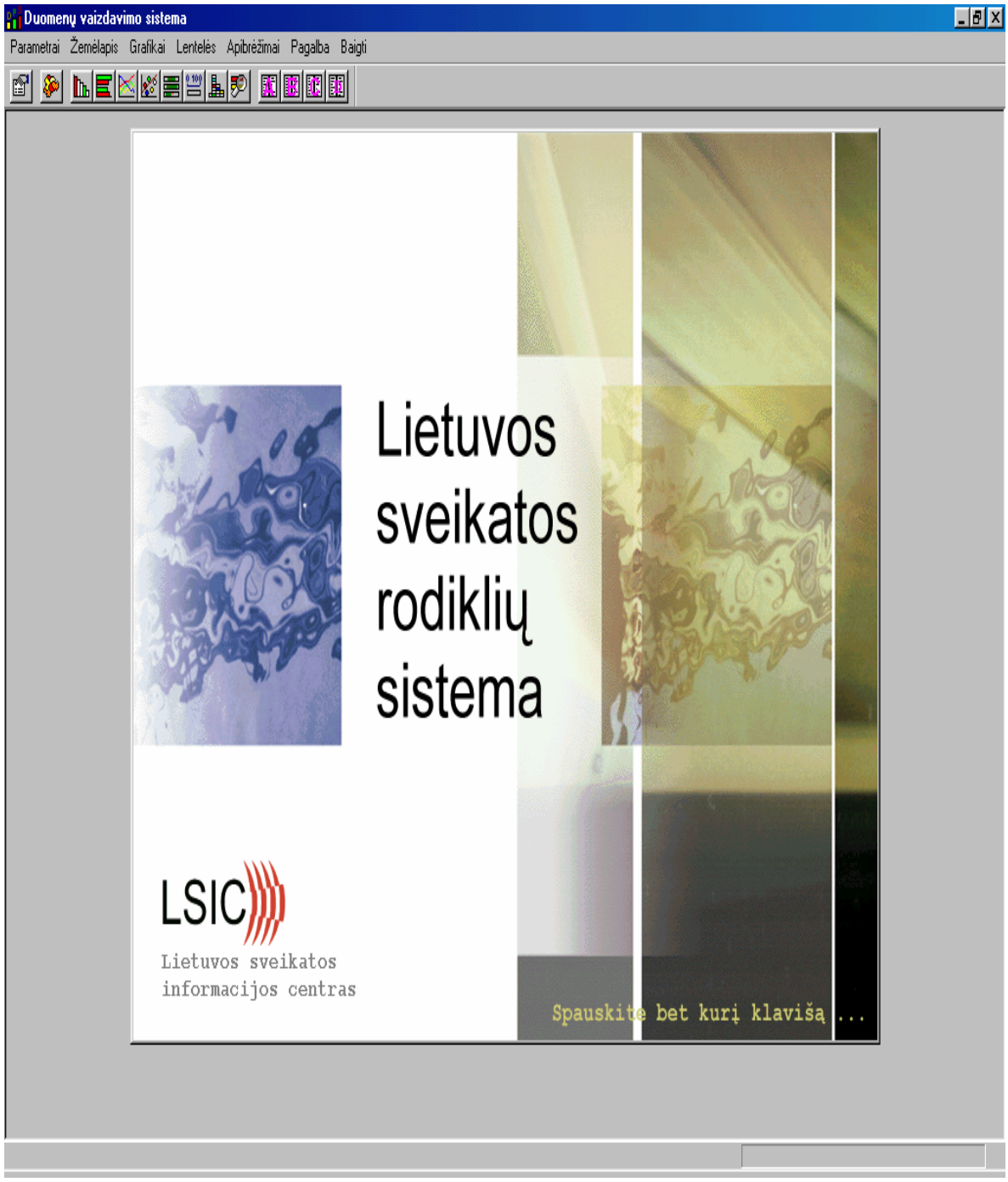
Methods. User survey method was applied. Literature search was performed and the questionnaire was constructed after interview with four respondents and clarification of questions. Totally 100 of respondents from different health care institutions were interviewed. Data was analysed using normal statistical methods, using MS Excel 2000 and statistical package SPSS 10.0 as tools.

Main results. Concerning the awareness about the existing of LCHIS, 68% of the respondents said they have heard about it and 15% said they have been using this system daily. As many as 68% of respondents didn't really take care about the existence of LCHIS, while the size of respondents being satisfied and not was pretty the same. The number of satisfied with the structure was rather small if comparing with those partially satisfied. As many as 76% of the respondents said they haven't been using the system at all. 24% of the respondents were satisfied with the certain groups of health indicators within the system. Group of morbidity indicators and group of hospital activity indicators were among the mostly used (17% together). Almost 20% of the respondents said it was easy for them to use LCHIS; the same number of health care administrators trusted the information coming from LCHIS and they have experienced the situation, where they have used LCHIS for planning or management in current situation. As many as 82% of health care managers agreed heads or administrative staff of hospitals supposed to be the key members, who must encourage them to use the system.

Conclusions. About two thirds of health care administrators interviewed knew about LCHIS and the rest had been or were users. In the comments this group claimed they were supporting their decisions by using the system and indicators in it. As many as 96% of the respondents stated there was a need for statistical information and skills for daily decision - making and managerial activities. The respondents, who used LCHIS, trusted the information in the system and found it useful in their daily work as health managers. The main comments, why respondents didn't use the system or didn't know about it, was lack of information technologies in work place, lack of computer skills and lack of support from hospital authorities.

Key words

health care administration, health data, evaluation, decision – making, health indicators



LITHUANIAN COMPUTERIZED HEALTH INFORMATION SYSTEM. GENERAL VIEW

Use and Perceptions of Lithuanian Computerized Health Information System

Žilvinas Darulis

Master of Public Health
Essay

CONTENTS

INTRODUCTION

Background

Good management is a prerequisite for increasing the efficiency and effectiveness of health care services. World Health Organization (WHO) has long identified health information systems as critical for achieving health for all by the year 2000. For information to influence management in an optimal way, it has to be used by decision – makers at each point of the management spiral. Information is crucial at all management levels of the health services, from the periphery to the center. It is crucial for patient/client management, for health unit management, as well as for health system planning and management. This means that not only policymakers and managers need to make use of information in decision - making but also care providers. According to WHO, one of the main parts in information's cycle is evaluation, which is needed in order to help in planning further developing and restructuring of the health information systems (1).

Despite enormous investment worldwide in computerized health information systems their overall usefulness and costs have rarely been fully assessed. The overall goal of health information system is to improve the efficiency and effectiveness of health services through the creation and use of information for clinical, administrative and monitoring purposes. In the field of health care very few would deny the value of information for planning, implementing and monitoring health systems. Only in the administrative systems the greatest changes were made because here the need of accurate data was the biggest. However, the balance between the cost and usefulness of computerized system is still unclear. Most countries provide the systems, which not necessarily meet the expectations (2). The performance of any system can be measured as the ratio between the usefulness, which it confers, and the costs, which it incurs (3).

We are always judging the value or importance of things, or of what others and we do. In everyday language, when we evaluate something we usually mean we judge its value (4). Evaluating health information system should be focused not only on hardware and software but also it should move into assessing the day-to-day utility of the system, the clinical and managerial environment in which it's situated and ultimately its effects on the quality of patient care. The database and the indicators, which are being used in practice, should be clearly understood, what does this or this mean. Computerized health information systems help to get information about the needs and utilization with the affected communities. This is perceived as the most cost-effective method of achieving this. But implementation of such a system is difficult both in human and in technical sense (2).

Before considering the use of any application of software package, health services organizations should develop a detailed statement of functional requirement. A detailed list of functions and features should be prepared (5).

Clinical systems are embedded social systems with different people, institutions, providers, settings, and so on. While it is important that we search for causal mechanisms that lead to clinical outcomes, the investigation and, possibly, classification of such contexts is essential. This will help us to understand and predict the behavior of systems and provide important knowledge to inform further developments (6). There are in hospitals four kinds of basic data: activity, financial, manpower and clinical. Each is important in its own right, and when brought together form a powerful managerial tool (7).

Because all technologies have adverse effects and data systems certainly have a cost, we must evaluate them objectively. Unfortunately, evaluation is a challenge to which system developers seldom rise: there is a tacit assumption that their system must work-a high-technology placebo effect. The difficulties in evaluation fall into three areas: defining appropriate measures of benefit, disentangling the effects of the system from other factors, and bias (8).

There were very few references found which would deal with the evaluation of computerized health information system covering the whole network of health policy and its issues. In most articles researchers were investigating certain health information systems applied for local hospital networks (2,9-17). The mostly common scientific approach for evaluation of health information systems was interview method using questionnaires and selecting respondents, usually key – users of the systems.

WHO (1) suggests some basic steps for evaluation of health information systems – it is necessary to evaluate data input and analysis (efficiency, completeness, presentation, etc.), use of information (decisions and actions in various administrative activities), resources of information systems (availability, training, storage, etc.) and information system management. Interviews and questionnaires could be used for this purpose.

The main need to evaluate the computerized health information systems comes from the doubtings:

Is the use of information system adequate?
Is the administrative staff in health care institutions aware how to use the tools addressed for them and their decision – making?
Is the information gathered relevant and has good quality? (1).

In Soviet times data was collected in centralized way, with almost absence of feedback with the institutions providing the data. Because of the centralized health policy at that time, only the “safe for state” information could be obtained, but mostly used in the top – level centralized decision – making. Getting the independency, the overall situation has dramatically changed, including health system, where health information became important tool for managing the processes. After getting the independence in three Baltic countries (Lithuania, Latvia and Estonia) health care systems became so called “in transition”. It were essentially changes in almost all areas of health care performed, including health care

information and its circulation, gathering, etc. The main task for health information was to present the health situation for different authorities, institutions and services using personal computers (18). Central Statistical Bureau of Latvia is responsible for health information in Latvia (19) and Statistical Office of Estonia is one, who is responsible for health data collection and analysis in Estonia (20). In Lithuania's case the computerized health information system (LCHIS) was created about ten years ago and Lithuanian health information center was in charge of it. The question of that time was how proper was the data and data collection. Now we face quite lot of problems while using the system, for instance not all the indicators have proper confidence intervals and other statistical parameters, some of them don't actually show the trends, etc. There were different opinions about the system. It might also be, that a large number of hospital administrators or chief doctors even have never heard about the system at all.

LCHIS was particularly addressed to administrators, managers of variety of health care institutions, statisticians, epidemiologists and other specialists, who were involved in management and organizing of different kind of activities of health care institutions in both national and local levels (18).

Aims of the study

- To describe LCHIS, its inputs and potential use.
- To account for a survey of potential users, health care administrators.
- To discuss the need for improvement of the system and its use.

Lithuanian computerized health information system

The system

Reliable and valid health information is a prerequisite for health policy – making and management of health care system in a rational way. It is being stressed in the new program of Public Health for the year 2001 – 2006 of the European Union, that health data must be user – friendly. In the mentioned program improvement of information and knowledge was one among the three main priorities. It is also important to note, that the program claims about the necessity of establishing health information system, which would be reliable, easy acceptable for politicians, health care professional and society.

Since WHO has a great experience in this area, in the 90s there was the system of health care indicators established. Later on, WHO Regional Office for Europe has initiated projects, the aims of which were to improve the content of health information system mentioned and to apply it in health care systems of countries of Central and Eastern Europe. LCHIS has started its development from 1991. It was provided by Lithuanian

health information center, which was carrying out the main responsibilities for it, in collaboration with WHO and UK experts. The system at first was able to proceed in DOS environment and only couple of years ago it was transformed into the Windows operating system and numbering of use occasions was included, but it doesn't show the number, when LCHIS exactly is used. The number shows the entering into the website of Lithuanian health information center and this is of shortage. This system is functioning, and the data is used in the Baltic, Nordic and former Soviet countries' context (21,22).

Regarding Lithuanian health information center, which was the establisher of LCHIS, there is six employers' staff in Lithuanian health information center working with the system and sharing the responsibilities. The center itself is under the subordination of Lithuanian Health Ministry and is financed proportionally as a part of institutions, which belong to the ministry. The head of the center has a background of medical doctor; other staff mostly deals with gathering and analyzing of data, providing technical support for users and data presenters and have their background as health statisticians and IT workers. The center is responsible for the implication of new methods of data gathering and analysis, as they do exist in European Union countries. LCHIS could be freely downloaded from the homepage of Lithuanian health information center (21,22).

Lithuanian computerized health information system is the system for data analysis and presentation, primarily addressed to the heads of health care institutions, health care administrators, statisticians, epidemiologists and other specialists, who are involved in the organization and management of the activities within health care both in national and local levels. The system is useful for public health specialists, who are interesting in health and health related factors, also for the writing and publishing different kind of scientific papers, thesis, etc. It also serves as an educational tool for students. This system is designed to display statistical data in a user-friendly way; there are any health-related or other statistical data available from geographical or administrative areas or units, to identify issues, where interventions may be needed.

The main features of LCHIS:

- LCHIS covers demographical, morbidity and mortality, emergency help, hospital activity and some other specific social and financial indicators;
- Possibility to analyze a particular problem, using at the same time up to five indicators related to the issue, comparing as many as five similar regions over the years;
- Indicators are divided into the groups and two levels (in order to make the orientation between indicators easier);
- Possibility to create temporary indicators, by using the already existing ones;
- Possibility to choose printer or data export to graphical files;
- Possibility to use mouse, to make LCHIS user-friendly to unskilled users;
- Possibility to present data in geographical form;

- Possibility to present data in different graphical forms: line chart, bar chart, scattergram, histogram, etc.;
- Possibility to make prognosis in line chart;
- Possibility to present data in traditional tables.

Data analysis, according to LCHIS, is based on the comparing of indicators of different regions and years. So-called extreme data makes to analyze the territory or the activity of health care institution in more detailed way. Comparing several related indicators helps to describe and analyze the situation more specifically. LCHIS is used:

- For situation analysis, when it is necessary to clarify the problem (what's going on?)
- For searching of exact reasons of the problem (why is it so?)
- For possible scenarios of decision-making (how to behave further?)

The system helps to answer:

- How effective is local health care system of certain region in comparison with other or others?
- How local health services are accessible in comparison with other or others?
- How sufficient are the resources allocated for certain region in comparison with other or others?

It is important to remember, that this system doesn't provide any help to solve the problems. It is only the tool for determining, identifying possible difficulties in health care and ways of tackling them. However, not all of indicators are valid, because it is not possible sometimes to gather all the necessary data from all the sources, furthermore, there are lots of side effects, which can't be set in the system. The final conclusion depends on mentioned above. This system is enough for the monitoring of status and services of health care; it gives the tendencies and possible ways of solving the problems (18, 21–22).

If talking about the quality of data gathered, it's very important to mention, that since there are different sources of data collection, the requirements for methods of gathering and analyzing are strictly about the same. It is crucial to make the data be comparable and reliable (21). The staff of Lithuanian health information center develops the requirements and recommendations for institutions, which provide data and are responsible for gathering. There are seminars and technical support being provided for different key – members in order to acquaint them with general methodological issues. Lithuanian health information center has its accountability for the Parliament of Lithuania, Government, different kind of ministries, other institutions, which are seeking for certain health information.

Health indicators

The system of indicators represents all areas of life, which are related to health of the population and affect it directly or indirectly. Data is being gathered from different sources: Department of Statistics, Department of Social Security (SODRA), Commission of Medical and Social Expertise, services of specialized health care, reports of registries. The most data come from the computerized data basis of annual statistical reports in Lithuanian health information center. There are approximately 1400 health indicators divided into ten groups:

- Indicators of demography (structure of the population, natural movement of inhabitants, etc.);
- Indicators of risk factors (data is not accessible at the moment);
- Indicators of morbidity (general morbidity rates, morbidity with certain diseases, traumas, vaccinations, etc.);
- Indicators of temporary unemployment and disability;
- Indicators of mortality (general and standardized mortality according to groups of diseases, age, sex, etc.);
- Indicators of resources (human resources, beds, etc.);
- Indicators of finances (health care expenses and their structure, etc.);
- Indicators of hospital activity (hospital morbidity, indicators of bed activity, tests, procedures, etc.);
- Indicators of emergency help (admissions, dispanserizations, tests and procedures, emergency help, etc.);
- Indicators of local institutions' activity (it's a special group of indicators addressed for the health care institutions, which are under subordination of municipalities and counties. It helps to compare indicators of the activity of health care institutions according to regions in more detailed way apart health care institutions, which are under subordination of Health ministry, where the majority of patients are being treated).

LCHIS includes all 44 Lithuanian districts, set in alphabetical order, 12 state cities, 13 additional regions – averages of Lithuania, counties, rural and urban areas. The list of regions could be modified according to the changes in administrative setting of the territory of Lithuania. The data in the system comes from the year 1981, 1985 and from the year 1989 the system is being updated annually (18,21). The user may choose up to five health indicators to work with, up to five regions and no more then five years the mostly interesting. It is possible to screen data in different ways – charts, diagrams, histograms, region profiles, tables (Appendix 1).

There are a lot of considerations, that this system should be changed. It contains huge number of indicators, which have never been in use or some of them were not informative, however, it's possible that not everybody for whom the system was addressed know about it. Before starting making some changes evaluation of Lithuanian computerized health information system should be made.

Since the evaluation of LCHIS hasn't been done any before, it came interesting about the views and attitudes of the supposed main users of the system towards it. Mainly health care administrators are the supposed key – users of it, whom this system is addressed for and who might use it, because they act as decision-makers in hospitals about the quality and availability of health care and outcomes of treatment as well as the common health of population. The system was created to help chief doctors and health care administrators in hospitals to develop health policy in both local and national levels.

The user survey

The objectives of the user survey were:

- To identify and develop suitable criteria and tools for user's evaluation of Lithuanian computerized health information system.
- To use these criteria for an evaluation by health care administrators and find out, whether they use LCHIS, whether they trust the information in it, is there a need for information at all.
- To offer recommendations for chief doctors and health care administrators.

The following questions were addressed in the survey:

What it is available from today's computerized health information system in Lithuania?
What do health care administrators think about the usefulness of health information system in Lithuania?
What is the attitude towards the use of information for decision - making among health care administrators?
What are they missing in Lithuanian health information system?
What do health care administrators think about the quality of information?
What knowledge do health care administrators have about health information systems and information in general?

USER SURVEY METHOD

Literature search was performed to support this research and for clarifying the problem further. Lithuanian computerized health information system was analyzed in relation to the literature findings. Interview method has been chosen as most appropriate tool for evaluation of LCHIS since it helped to promote different types of questions (23-28). This method was the mostly common among majority of articles found (9-18).

Four health care administrators were interviewed at the beginning in order to clarify the structure of the questionnaire. Questions were asked about advantages, disadvantages,

usefulness, quality, etc of LCHIS. These preliminary interviews helped to construct the questionnaire that was used to obtain information from the health care administrators to evaluate the system.

The survey was conducted in September – December 2003. The questionnaire was prepared and 100 health care administrators (30 in Kaunas university clinics, 30 in Vilnius university clinics, 30 in two county hospitals, 15 in each, and ten in municipal hospital) were asked to complete it. The distribution of the respondents was made according to the decentralized administration approach of health care services in Lithuania, covering three main levels of health care. Three hospitals were selected – two county hospitals, one of which was in Panevezys city, located closer to the center of the state, another in Utena, located northeast of the state, and the third was municipal hospital in Anyksciai, located in the eastern part. The hospitals were selected randomly from all Lithuanian hospitals of particular level in the list.

The questionnaire (in Appendix 2) broadly covered:

- Characteristics of the respondents (age, sex and work experience).
- Evaluation of the hardware and software of the system (are all needed data gathered, simplicity, availability, etc.).
- Evaluation of parameters of the system.
- Evaluation of reliability of the system.
- Evaluation of informativeness of the system, does the system help for health care administrators in decision-making.
- Evaluation of knowledge of health care administrators about the information.
- Attitude of health care administrators to information systems and data basis.

Questionnaires were sent out to health care administrators using fax, e-mail or ordinary mail, majority of them were interviewed directly using interview face – to – face method. Data was analyzed using normal statistical methods, using MS Excel 2000 and statistical package SPSS 10.0 as tools (29-31).

Ethical considerations of the study were discussed in the Bioethical Commission of Kaunas University of Medicine and Lithuanian Committee of Ethics and Human Rights; the plan was approved and the permission for the study was obtained. All the respondents were informed about the aim and objectives of the study before the questioning. Chief doctors and administrators were informed, that the completing of questionnaire was fully voluntary, anonymous and confidential and they were also informed their input would be valuable for the future development of LCHIS.

USER SURVEY RESULTS

From the respondents interviewed 61% of them were men and 39% women; as many as 56% of interviewers were at the age group of 41 – 50. There were very few respondents at the age group of 24 – 30 (2%) and at the age group of 31 – 40 (14%). Rests of the respondents were at the age of 51 and above (28%).

To the question, if they have compared their hospital or department activity indicators with the similar ones of their district's, county's or Lithuania's, 76% of the respondents said they have and 24% stated they haven't. 79% of the respondents had to take the decisions, which did require statistical knowledge or statistical comparing, while 21% said they have never done this. As many as 66% of interviewers agreed they have been using statistical comparative data in policy – making in their own hospital or department and 96% of the respondents agreed, that at least minimal statistical information or statistical competence was necessary for their daily decision - making.

61% of the respondents said they have been participating in the conferences or practical seminars for chief doctors and health care administrators in both Lithuania and abroad.

Concerning the awareness about the existing of LCHIS, 68% of the respondents said they have heard about it and 15% said they have been using this system daily.

As many as 68% of respondents didn't really take care about the existence of LCHIS, while the size of respondents being satisfied and not was pretty the same (Figure 1).

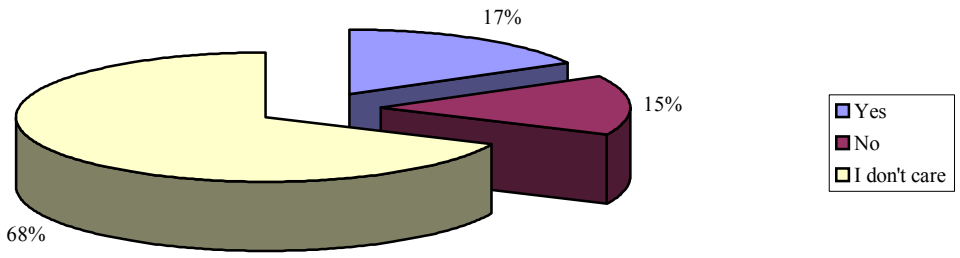


Figure 1. Happiness about the existing Lithuanian health information system

Further developing the quality issues of LCHIS and the happiness of health care administrators about the structure of LCHIS, the number of satisfied with the structure was rather small if compare with those partially satisfied. As many as 76% of the respondents said they haven't been using the system. (Figure 2).

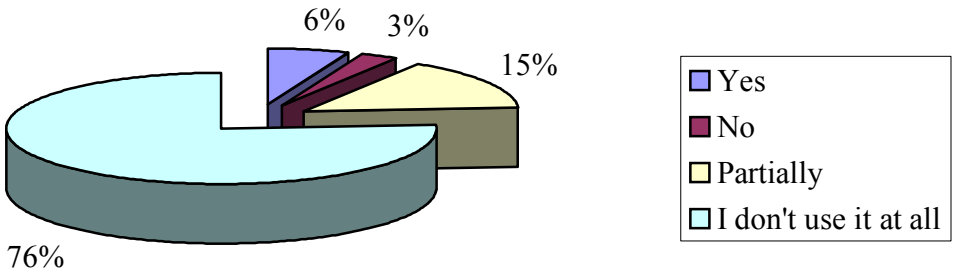


Figure 2. Happiness about the structure of LCHIS.

Elaborating the use of certain health indicators of the system, 24% of the respondents were satisfied with the certain groups of health indicators within the system, while 76% said they haven't used the system at all. Group of morbidity indicators and group of hospital activity indicators were among the mostly used (17% together), and the group of finances' indicators was as the third mostly used. (Figure 3).

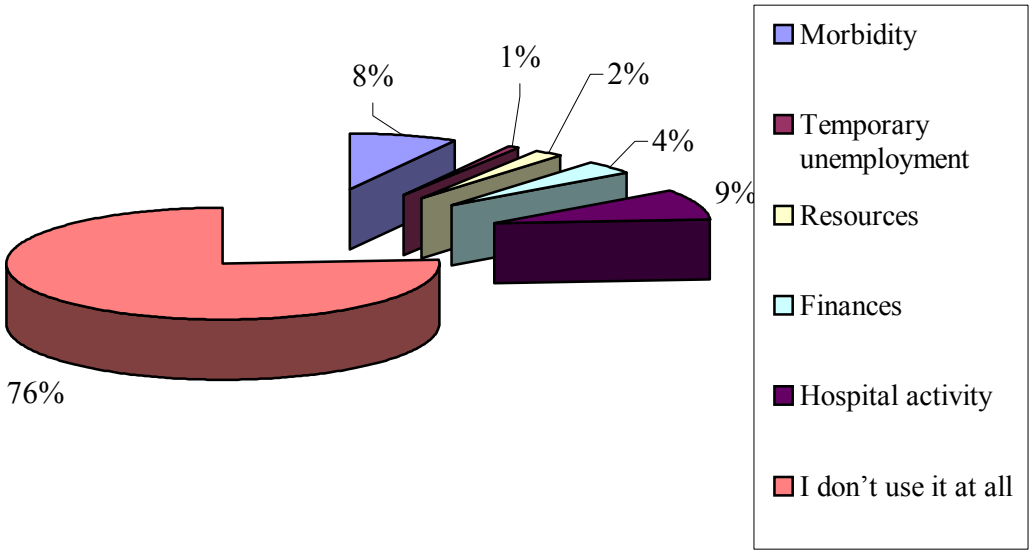


Figure 3. The mostly often - used groups of health indicators.

Exploring the results about the quality of LCHIS further it was found, that almost 20% of the respondents said it was easy for them to use LCHIS; the same number of health care administrators trusted the information coming from LCHIS and they have experienced the situation, where they have used LCHIS for planning or management in current situation.

As many as 82% of health care managers agreed heads or administrative staff of hospitals supposed to be the key members, who must encourage them to use the system. Almost all of the respondents saw administrative and health care information to be as the mostly important tool for their decision – making or daily work activities (Figure 4).

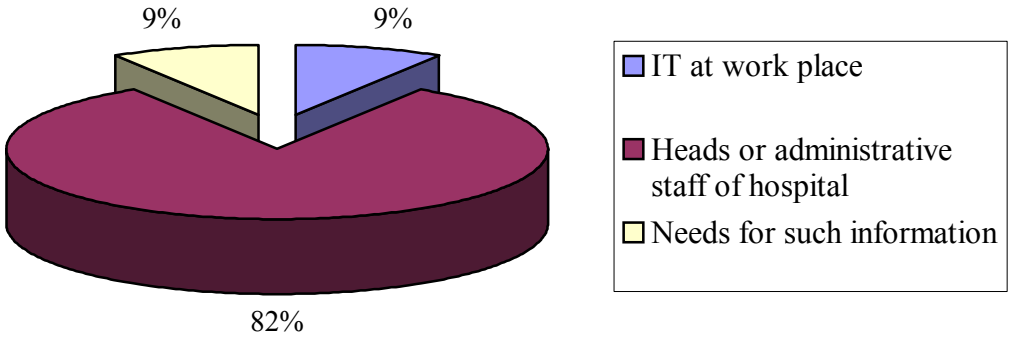


Figure 4. The ranking of supposed the mostly important actors in encouraging of using the system.

DISCUSSION

Evaluation of LCHIS from the user's perspective hasn't been done before. Most of literature found on evaluation of information system (2,9-17,33), were concentrating on the evaluations of information systems applied mostly in hospital networks, but not on the health information systems as off the state level, made in accordance to meet the expectations of national health programs. There was no article found about the evaluation issues of computerized health information system, which was established under the decision – making of key – actors in the top – level of state health policy. In most of the scientific papers, prepared by Lithuanian authors very few data from Lithuanian health information center was used (mostly when prevalence or incidence of some diseases were analyzed). But administrative and managerial tools and decision – making requires wider spectrum of indicators, which must be up – to – date and would include the mostly suitable way of getting the trusted information as well. Health indicators of LCHIS have started their statistical evaluation of reliability in 2002 (33), but this mainly covered development of several indicators and had more technical purpose.

Lithuanian health care system has been re-oriented from planned economy system to the market one in early 90s. A decentralization model was applied, which gave an opportunity to divide the administrative power of health care into three levels:

- Municipalities, or primary level, responsible for primary health care, mainly covering general practice and municipal hospitals;
- Counties, or secondary level, mainly responsible for secondary, or specialized, care, covering county hospitals;

- State, or tertiary level, mainly responsible for tertiary, or very specialized care, mainly covering two clinics in Lithuania – Kaunas and Vilnius.

Totally there are approximately 200 institutions providing health care in Lithuania. All of them might benefit from using LCHIS for managerial and administrative purposes (34). It was not the purpose of this study to cover all the potential users of this system in Lithuanian health care institutions. The research was done in order to observe the views and attitudes of some principle key users. The study was planned and performed having the perspective to elaborate the bigger project, which would cover all the institutions in Lithuania, providing health care and being potential users of LCHIS and to find the attitudes towards it of the entire key – users of the system.

The main reasons for selecting health care administrators were based on the administrative approaches of health care system of Lithuania to avoid partiality. Because Kaunas and Vilnius clinics provide very specialized health care services and serve also as educational institutions, they are equipped much better with newest technologies and devices, having well-trained and qualified staff, it is rather reasonable to think health care administrators are more familiar with issues running in top-level, including LCHIS.

Almost all health care administrators claimed they were preparing the annual reports about hospital or department's activities. So, they used at least some statistical calculations and health information. Sayings, that statistical knowledge, comparing health data between hospitals and departments, came as an extra issue, sustaining the idea of need and usefulness of health information and tools for analyzing it.

But some doubts came further – according to the results, nearly two thirds of health care administrators were aware about the existence of LCHIS, but less then 20% were using it in daily work. Of course, number of respondents was too low to say about the general, but the trends could be rather similar in all the country. It is again important to emphasize, that majority of respondents, who said they were using the system, were employed in clinics, i.e. in the biggest cities, were information circulates in rather better ways if compare to periphery. They were younger (age 31 – 40), graduated from medical universities not long time ago and working primarily as health care managers.

Following the results, indicators of morbidity and hospital activity were the mostly used. Majority of the respondents, who said were using the system, were satisfied with the structure of it.

The study showed attitudes and views of health care administrators towards LCHIS. They expressed the willingness to have more statistical knowledge and use of LCHIS, but there were some obstacles to do that. According to some answers to open - ended questions, there was lack of motivation to use the system or even to be aware of it; the information sometimes didn't reach them. 40% of the respondents were not active participants in the

conferences, seminars and workshops for health care managers, where information was usually dedicated primarily for these top-level employers, covering decision-making, policy issues, statistical tools, etc.

Another reason for such low using of the system could be, that majority of health care administrators were employed full time as medical doctors, and only few of them had primary responsibilities as health care administrators. The explanation might be, that it is because of low wages in health care; so medical doctors have some extra duties as health care managers to get some extra money, but putting main efforts to the treating of patients instead of to management. This was observed, while interviewing people – many of them refused of filling in open - ended questions, motivating they were busy with patients. While those, having primary duties as health care administrators, were happy expressing their ideas in opened areas.

There were misunderstandings on what was internal data (mainly hospital activities data) and external one (mainly data from LCHIS). Being as a respectable administrator it is necessary to know, how to manipulate both of these data sources; although health care administrators thought hospital statisticians might have to take the responsibility of the statistical issues, while statisticians had primarily function to gather and analyze data and to report them for health care administrator instead of comparing or analyzing the final findings.

Since the respondents were representing public health care institutions, in some extent it would be reasonable to think, that private organizations with profit incentives use information for decisions more substantially (1). Also important factor is cultural differences between people, who gather data, and who use it for decisions.

Couple of years ago there was established an idea to proceed the survey, which would cover all health institutions in Lithuania, which are or could be the potential users of LCHIS and to find out their attitudes, opinions and perceptions towards LCHIS in order to make it client – friendly and important tool for decision – making. Since there was no study performed, this survey, on which MPH essay was based, was performed aiming to find out the usefulness of LCHIS and attitudes towards it. The questionnaire, which was used in this study, most likely is going to be used in the bigger study as well, perhaps with some possible insignificant corrections or adding. The results of this survey and the bigger one will be used for development of LCHIS and making it more useful and attractive. The bigger project is going to involve partners from Lithuanian Ministry of Health, Lithuanian Center of Health Information, Kaunas University of Medicine.

RECOMMENDATIONS

It's rather difficult to recommend people to have only one duty as health care administrator and leave responsibilities of being employed as medical doctor, so avoiding the overlapping of duties and responsibilities, where decision about prioritizing of them must be taken, but the situation in health care system as whole makes people sometimes not to have any other choices. But some other, easier to perform, recommendations are possible to make. Over 82% of respondents agreed, that heads of hospitals play the mostly important role in encouraging health care administrators to use LCHIS. Almost two thirds of respondents were for the autocratic step to make them use the system. It is necessary to make the information flow within health care institutions. Top – level managers of hospitals must be in charge of introducing LCHIS for health care administrators and organizing the seminars of awareness of working and using it. Also it is important to show health care administrators the benefits of LCHIS and the areas it could be used. The IT equipment, computers, Internet connection, etc are the basic elements for administration activities and health care administrators must have an access to them. Computer literacy and skills must be as an integral part in the training programs of health care managers. Heads of the hospitals must also take part in encouraging and ensuring health care administrators to get higher qualifications and skills in attending and participating in different conferences, seminars, workshops both in Lithuania and abroad. Constant evaluation of LCHIS could help to develop and promote it making more user – friendly and meeting the expectations of it.

CONCLUSIONS

1. About two thirds of health care administrators interviewed knew about LCHIS and the rest had been or were users. In the comments this group claimed they were supporting their decisions by using the system and indicators in it.

2. As many as 96% of the respondents stated there was a need for statistical information and skills for daily decision - making and managerial activities.

3. The respondents, who used LCHIS, trusted the information in the system and found it useful in their daily work as health managers.

4. The main comments, why respondents didn't use the system or didn't know about it, was lack of IT in work place, lack of computer skills and lack of support from hospital authorities.

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APPENDIX 1

Examples of data presentation in Lithuanian computerized health information system

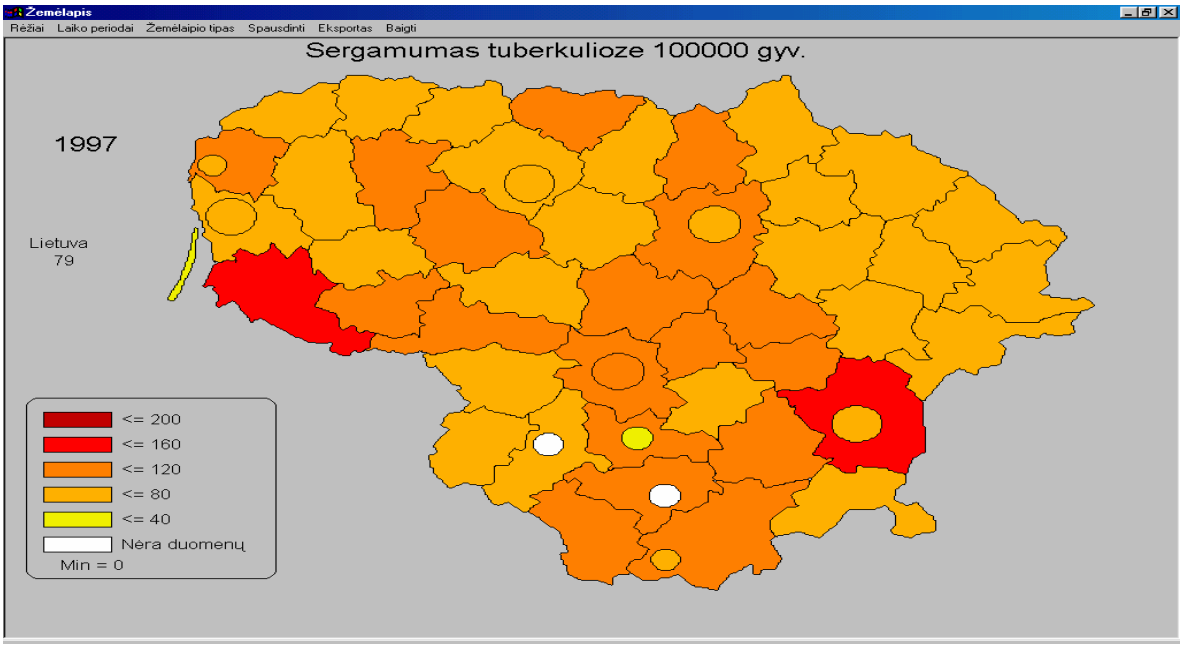


Figure 5. Example of tuberculosis morbidity in five main Lithuanian (Kaunas, Vilnius, Marijampole, Panevezys, Siauliai) cities/100000 inhabitants.

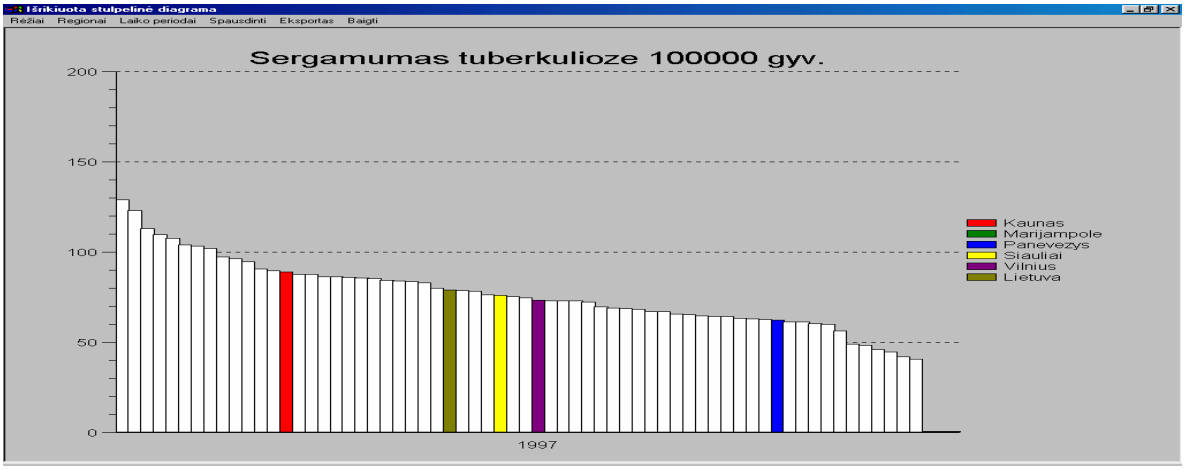


Figure 6. Example of tuberculosis morbidity in five main Lithuanian (Kaunas, Vilnius, Marijampole, Panevezys, Siauliai) cities/100000 inhabitants.

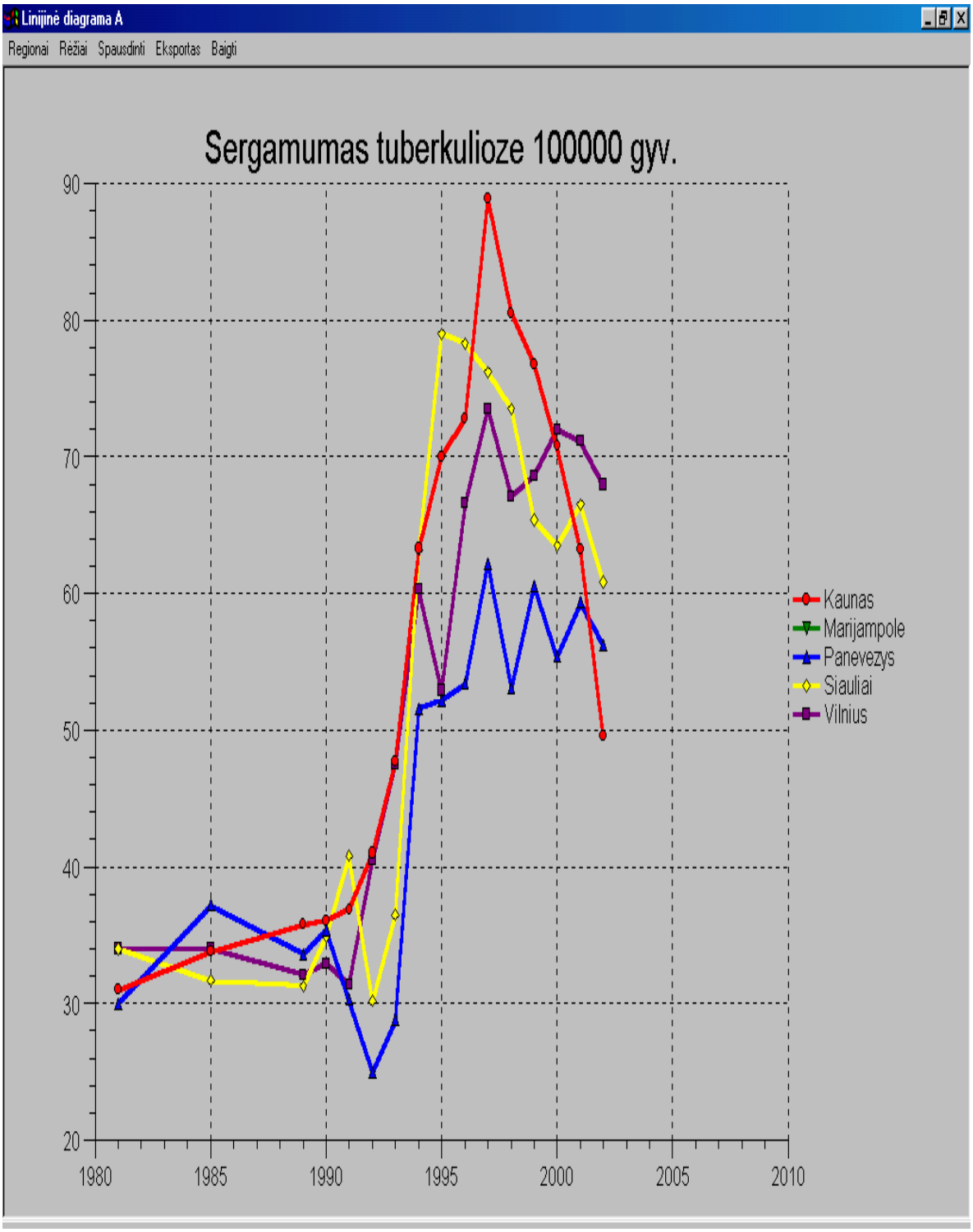
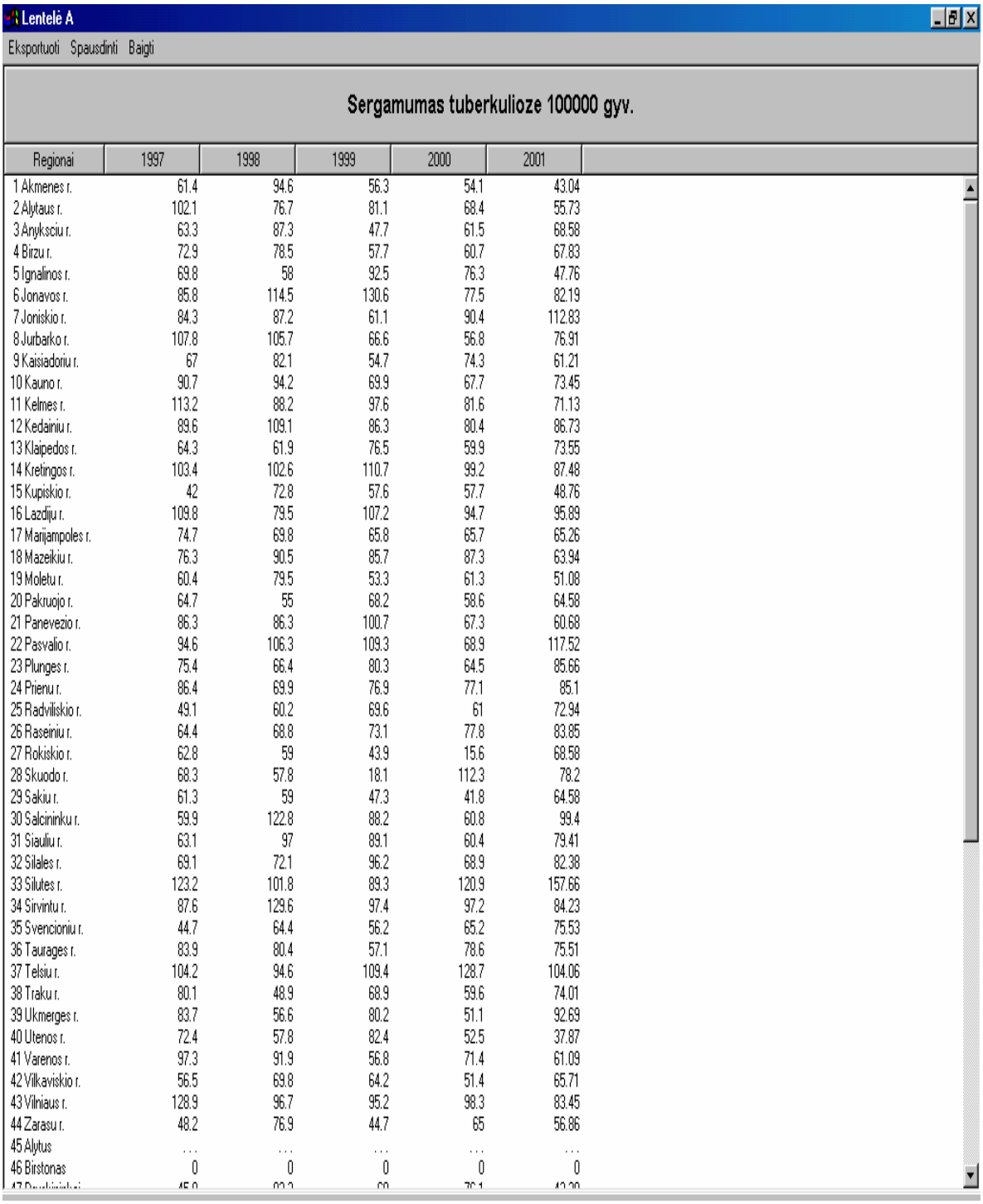


Figure 7. Example of tuberculosis morbidity in five main Lithuanian (Kaunas, Vilnius, Marijampole, Panevezys, Siauliai) cities/100000 inhabitants.



Lentelė A

Eksportuoti Spausdinti Baigti

Sergamumas tuberkulioze 100000 gyv.

Regionai	1997	1998	1999	2000	2001
1 Akmenes r.	61.4	94.6	56.3	54.1	43.04
2 Alytaus r.	102.1	76.7	81.1	68.4	55.73
3 Anyksciu r.	63.3	87.3	47.7	61.5	68.58
4 Birzu r.	72.9	78.5	57.7	60.7	67.83
5 Ignalinos r.	69.8	58	92.5	76.3	47.76
6 Jonavos r.	85.8	114.5	130.6	77.5	82.19
7 Joniskio r.	84.3	87.2	61.1	90.4	112.83
8 Jurbarko r.	107.8	105.7	66.6	56.8	76.91
9 Kaisiadoriu r.	67	82.1	54.7	74.3	61.21
10 Kauno r.	90.7	94.2	69.9	67.7	73.45
11 Kelmes r.	113.2	88.2	97.6	81.6	71.13
12 Kedainiu r.	89.6	109.1	86.3	80.4	86.73
13 Klaipedos r.	64.3	61.9	76.5	59.9	73.55
14 Kretingos r.	103.4	102.6	110.7	99.2	87.48
15 Kupiskio r.	42	72.8	57.6	57.7	48.76
16 Lazdiju r.	109.8	79.5	107.2	94.7	95.89
17 Marijampoles r.	74.7	69.8	65.8	65.7	65.26
18 Mazeikiu r.	76.3	90.5	85.7	87.3	63.94
19 Moletu r.	60.4	79.5	53.3	61.3	51.08
20 Pakruojo r.	64.7	55	68.2	58.6	64.58
21 Panevezio r.	86.3	86.3	100.7	67.3	60.68
22 Pasvalio r.	94.6	106.3	109.3	68.9	117.52
23 Plunges r.	75.4	66.4	80.3	64.5	85.66
24 Prienu r.	86.4	69.9	76.9	77.1	85.1
25 Radviliskio r.	49.1	60.2	69.6	61	72.94
26 Raseiniu r.	64.4	68.8	73.1	77.8	83.85
27 Rokiskio r.	62.8	59	43.9	15.6	68.58
28 Skuodo r.	68.3	57.8	18.1	112.3	78.2
29 Sakiu r.	61.3	59	47.3	41.8	64.58
30 Salcininku r.	59.9	122.8	88.2	60.8	99.4
31 Siauliu r.	63.1	97	89.1	60.4	79.41
32 Silales r.	69.1	72.1	96.2	68.9	82.38
33 Silutes r.	123.2	101.8	89.3	120.9	157.66
34 Sirvintu r.	87.6	129.6	97.4	97.2	84.23
35 Svencioniu r.	44.7	64.4	56.2	65.2	75.53
36 Taurages r.	83.9	80.4	57.1	78.6	75.51
37 Telsiu r.	104.2	94.6	109.4	128.7	104.06
38 Traku r.	80.1	48.9	68.9	59.6	74.01
39 Ukmerges r.	83.7	56.6	80.2	51.1	92.69
40 Utenos r.	72.4	57.8	82.4	52.5	37.87
41 Varenos r.	97.3	91.9	56.8	71.4	61.09
42 Vilkaviskio r.	56.5	69.8	64.2	51.4	65.71
43 Vilniaus r.	128.9	96.7	95.2	98.3	83.45
44 Zarasu r.	48.2	76.9	44.7	65	56.86
45 Alytus	...	...	...	...	...
46 Birstonas	0	0	0	0	0

Figure 8. Example of tuberculosis morbidity in five main Lithuanian (Kaunas, Vilnius, Marijampole, Panevezys, Siauliai) cities/100000 inhabitants.

APPENDIX 2

Questionnaire of the evaluation of Lithuanian computerized health information system

Dear Health Manager,
this questionnaire was prepared in accordance to find out the attitudes of Lithuania's health care managers towards the Lithuanian computerized health information system (LCHIS). The questionnaire is totally anonymous. Please, complete it all very carefully.

1. Sex — Male □ / Female □

2. My age is — 24 – 30 □ / 31 – 40 □ / 41 – 50 □ / 51 and above □

3. I was graduated from — Kaunas University of Medicine □ / Vilnius University □ / Other □ (needs to be clarified)

……

4. I'm health manager in the — city hospital (clinics) □ / county hospital □ / municipality hospital (PHC, outpatient clinic) □

5. I am — chief – doctor □ administrator (chief of department) □

6. Is it your responsibility to prepare annual reports about Your hospital (department) and its activity?

Yes □
No □

7. Do You compare Your hospital (department) activity indicators with similar indicators of Your district, county's or Lithuania's?

Yes □
No □

8. Do You have to take decisions, which do require any statistical knowledge or statistical comparing?

Yes □
No □

9. Are You participating in conferences or practical seminars for chief doctors and administrators both in Lithuania and in abroad?

Yes □
No □

10. Are You participating in policy – making at any level within health care?

Yes □
No □

11. Are You using any statistical comparative data in policy – making at Your own hospital (department)?

Yes □
No □

12. Have You ever heard about Lithuanian computerized health information system?

Yes □
No □

13. Are You using this system in Your daily work?

Yes □
No □

14. Have You any collaborations with Lithuanian health information center or Statistical department of Lithuania?

Yes □
No □

15. In Your opinion, is minimal statistical information or statistical competence necessary for Your daily decision – making?

Yes □
No □

16. Are You happy about the existing Lithuanian health information system?

Yes □
No □
I don't care □

17. Are You happy with the structure of LCHIS?

Yes □
No □
Partially □
I don't use it at all □

18. Are You satisfied with:

a) group of indicators of demography? Yes □ No □ Partially □
b) group of indicators of risk factors? Yes □ No □ Partially □
c) group of indicators of morbidity? Yes □ No □ Partially □
d) group of indicators of temporary unemployment? Yes □ No □ Partially □
e) group of indicators of mortality? Yes □ No □ Partially □
f) group of indicators of resources? Yes □ No □ Partially □
g) group of indicators of finances? Yes □ No □ Partially □
h) group of indicators of hospital activity? Yes □ No □ Partially □
i) group of indicators of emergency help? Yes □ No □ Partially □
j) group of indicators of local institutions' activity? Yes □ No □ Partially □
k) I don't use it at all □

19. What group (or groups) of indicators are You using the mostly often?

a) group of indicators of demography □
b) group of indicators of risk factors □
c) group of indicators of morbidity □
d) group of indicators of temporary unemployment □
e) group of indicators of mortality □
f) group of indicators of resources □
g) group of indicators of finances □
h) group of indicators of hospital activity □

i) group of indicators of emergency help □
j) group of indicators of local institutions' activity □
k) I don't use it at all □

20. Is it familiar and easy enough for You to use the LCHIS?

Yes □
No, it's difficult, complicated and confusing □
I don't use it at all □

21. Do You trust the information coming from LCHIS?

Yes □
No □
I don't use it at all □

22. Have You experienced a situation where You have used the LCHIS for planning or in current management?

Yes □
No □

If YES, please, describe the situation
……
……
……
……
……
……
……
……

23. Did You find the information You needed?

Yes □
No □

24. If NO, how did You solve the problem?

……
……
……
……

25. Have You experienced a situation where You would have liked to have information that was not available?

Yes □
No □

If YES, please, describe the situation

……
……
……
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……
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……

26. How would You suggest making the information available?

……
……
……
……
……

27. In what way do You, according to Your situation, contribute to the information in the LCHIS?

……
……
……
……
……
……
……
……

28. What is Your view on these activities?

Take too much time □
Prioritized □
Not prioritized □
Necessary □

Not necessary □

29. In Your opinion, what plays the main role for encouraging of using LCHIS and statistical data as well?

IT at work place □
Heads or administrative staff of hospital □
Needs for such information □
Other (need to be clarified)

……
……
……
……

30. Do You think chief-doctors and administrators (head of departments) do need special forces, encourages or reports for using statistical data and LCHIS?

Yes □
No □
Other (need to be clarified)

……
……
……
……

31. In Your opinion, how can statistical data and LCHIS particularly improve the performance and quality of health services or hospital performance?

……
……
……
……
……
……
……
……

32. What kind of information do You see as necessary for Your decision – making or in daily work to support Your actions?

Administrative information □

Epidemiological information □
Health care information □
Prevention coverage □
Demographic information □
Socio – economic information □
Environment information □
Other (need to be clarified)

……
……
……

33. Please, feel free making Your suggestions for improvement of LCHIS and use rest of area for writing down Your opinions about LCHIS.

Thank You for answers and the time spent on this.
Expressing Your ideas towards the LCHIS will help us to moderate it and make it more comfortable meeting the expectations of users.

Nordic School of Public Health • Box 12133 • SE-402 42 Göteborg
Visiting address: Nya Varvet • Building 25 • Phone: +46 (0)31 69 39 00 • Fax: +46 (0)31 69 17 77
E-mail: administration@nhv.se • www.nhv.se