Public Health Research 2014, 4(4): 129-135
DOI: 10.5923/j.phr.20140404.04

Medical and Social Efficiency of Outpatient Service at the Regional Level

Ludmila Gerasimova*, Andrey Ivanov

Postgraduate Doctors' Training Institute, 428032, the Russian Federation

Abstract According to the Russian and foreign experts public health protection entirely depends on medical and organizational factors, as morbidity and mortality rates of the population are connected with organization and quality of medical care. The indicators of medical facilities' efficiency are criteria of social and economic importance of healthcare in the society. The efficiency of the healthcare system and medical facilities is estimated by a set of statistical indicators, each of which describes some components of medical activity. The effectiveness of outpatient's and inpatient's care in the administrative-territorial districts of the Chuvash Republic was evaluated according to our methods.

Keywords Morbidity, Mortality, Evaluation of Healthcare System's Efficiency

1. Introduction

Public health is an essential component of the economic, social and cultural development of the country [1-4].

Depopulation of the Russian Federation resulted in annual population declining by 0,7-0,8 million people is considered to be an acute state problem [5-6]. Nation's health deterioration and super mortality doubt the possibility of the economic growth needed to return Russia to the developed countries' list [7-8].

One of the main problems is poor management of healthcare system due to lack of strategic planning and responsibility of the leaders at all the levels for achieving results and also insufficient use of cost-effective management tools and low scientific validity of decisions. This causes inefficient expenditure of state resources and reduction of respect to the state authorities [9]. In WHO materials it is represented the only possible way "to guarantee health for everyone" in healthcare system it means to return to the resolutions of Almaty international conference (1978) concerning development of primary healthcare as the most available and significant component of public health protection. Within development of primary healthcare the outpatient service is considered to be a basic element of public healthcare [10-14]. However the legal framework of outpatient's service is not adapted to the peculiarities and requirements of the modern society that led to serious contradictions in the work of this part of healthcare system, including the following inconsistency: of outdated labor standards and the population demands for the outpatient's services; the increased volume of work and decreased number of medical personnel; the required quality of the medical service and level of financial support [15-20]. These contradictions at the level of primary healthcare have diminished social protection, as well as reduced availability and quality of medical service, led to positive dynamics in public healthcare and deep structural crisis in healthcare system [21].

* Corresponding author:
oxanushkaa@rambler.ru (Ludmila Gerasimova)
Published online at http://journal.sapub.org/phr

2. Main Body

It is necessary to find reasonable resolution of the contradictions, taking into account all the factors affecting the development of social institutions. Under these conditions, there's a need of the regional analysis of the processes associated with morbidity and mortality of the population considering the public, social, economic, ecological and hygienic features of administrative and municipal subjects of the Russian Federation with the extensive involvement of modern information technology [22-23].

The objective is to develop a method of estimating the effectiveness of outpatient's service at the level of the subject of the Russian Federation (in case of the Chuvash Republic).

Materials and Methods: Medical and statistical analysis of the dynamics and structure of morbidity and mortality rates in the Chuvash Republic within 2001-2011 based on statistics submitted by the State Committee on Statistics of the Chuvash Republic.

On the basis of cartographical analysis the administrative districts of the Chuvash Republic have been grouped according to the morbidity and mortality rates [24]:

1) The following has been calculated: arithmetic mean of relative indicators for the regions and towns in the Ch R per every year under analysis (the average national data - M1-10) by the formula

$$M=\Sigma V/n,$$

where M – the arithmetic mean ;

V – relative indicators of regions and towns of the Ch R;

n – number of observations;

2) it is determined by the standard deviation of a statistic series variations of the average national data per year by the formula

$$\delta=\sqrt{\Sigma d^2/n-1},$$

where d - deviation (difference between the mean and each variation);

n - number of observations;

3) it is determined the intervals to group the districts according to disability rate:

$M-0,5\delta \le M^1 \le M+0,5\delta$ - index within the average national data (middle) in the Chuvash Republic;

$M+0,5\delta < M^1 \le M+1,5\delta$ - rate above the average national data (high) in the Chuvash Republic;

$M-1,5\delta \le M^1 < M-0,5\delta$ - rate lower than the average national data (low) in the Chuvash Republic;

$M^1 > M+1,5\delta$ - ultra-high rate;

$M^1 < M-1,5\delta$ - extremely low rate

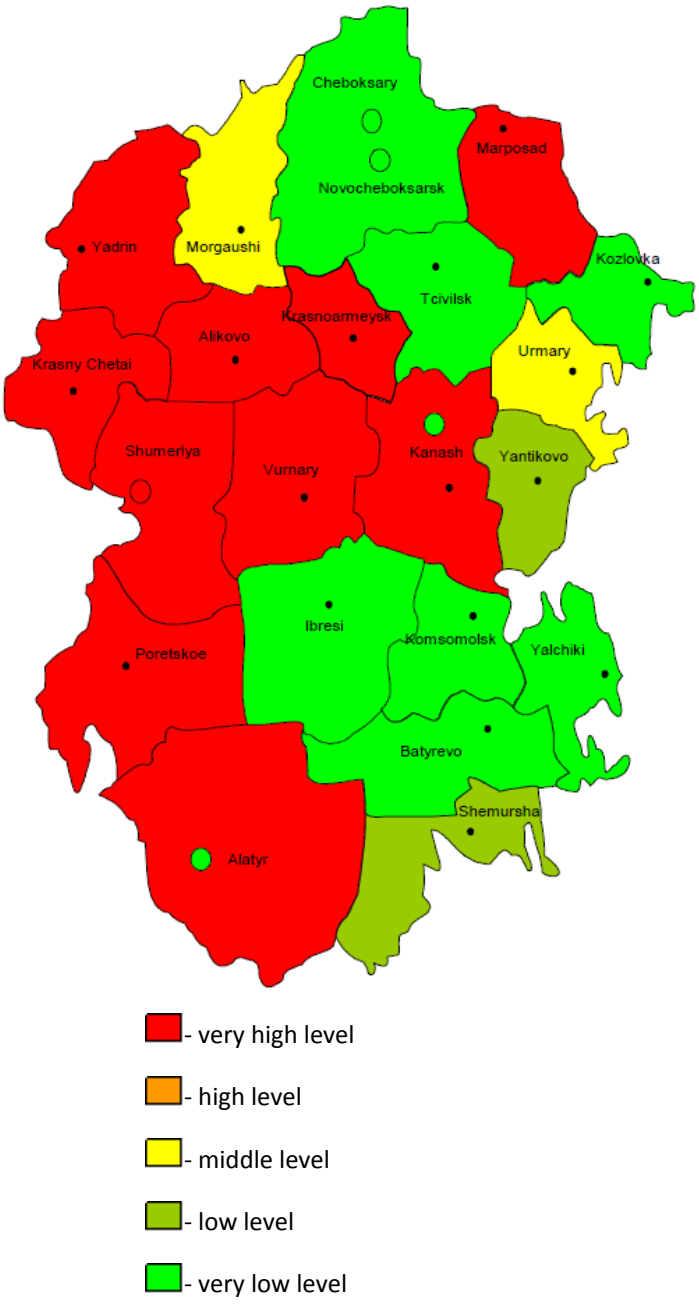

Figure 1. The overall public mortality rate in administrative-territorial districts of the Chuvah Republic in 2001-2011 (per 1 thousand of people)

4) it is determined the average of the districts per decade M11- M123 by formula of the arithmetic mean;

5) districts and towns were grouped by distribution M11-M123 according to the corresponding intervals.

The efficiency of rendered outpatient's and inpatient's care for different administrative-territorial districts have been estimated according to the method developed by us. [25-26].

The map analysis of the overall mortality rate reveals the following: significant territorial differences of the indicators and distribution peculiarities of the average indicators of overall mortality in the Chuvash Republic within analyzed period (Fig. 1).

In the southern districts of the Chuvash Republic such as Ibresinsky, Batyrevo, Yalchiki, Komsomolsky, on the one hand, and Poretsky and Alatyrsky, on the other hand there are similar ecological and biogeochemical conditions but the overall mortality rates are different within the analyzed period. In addition, the average annual overall mortality rates in the northern districts (Cheboksarsky, on the one hand, and Yadrinsky, Marposadsky, on the other hand), with similar living conditions for the population are different. Thus, when analyzing the mortality rates it is necessary to consider a number of medical, social and organizational risk factors.

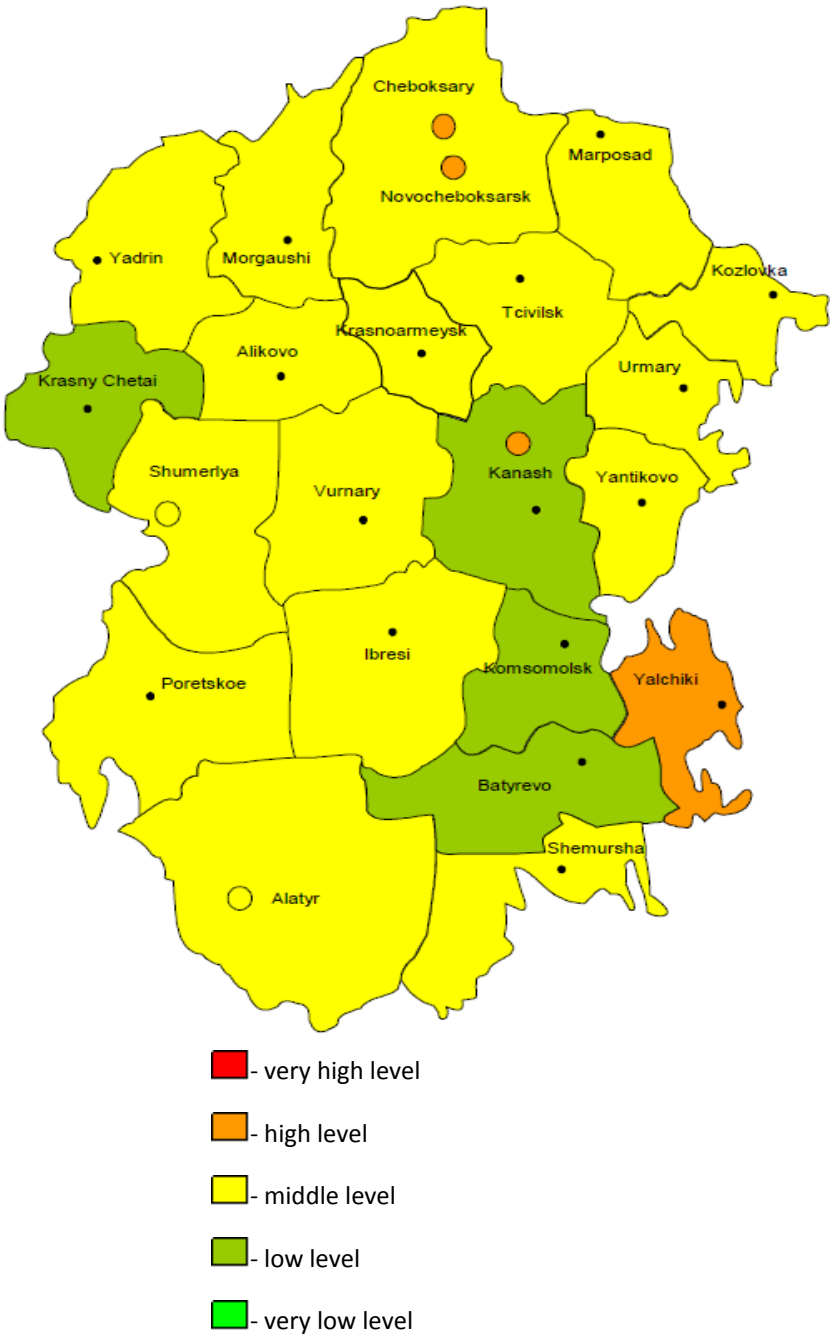

Figure 2. The overall morbidity in administrative-territorial districts of the Chuvash Republic in 2001-2011 (per 1 thousand of people)

We have compared the map features of the overall morbidity and mortality rates. Fig. 2 demonstrates the features of the total incidence over past 11 years in administrative-territorial districts of the Chuvash Republic, it is high in Cheboksary, Kanash, Novocheboksarsk and Yalchiksky districts for the rest of the districts the overall incidence rates are low or middle.

It is well- known that the strength of a chain is determined by the strength of the weakest link, and therefore it is necessary to identify this link to make it stronger. It is impossible to find solutions to strengthen the weakest link in the chain of medical care at the regional level for health care managers if we analyze the map features independently (the overall mortality and overall morbidity rates). We suggest the following algorithm of decision-making.

On comparing the numerical indicators of overall morbidity and mortality in the Chuvash Republic (Figure 3), we can clearly see the disproportions between high level of the overall mortality rate and low level of the morbidity rate in certain administrative-territorial districts.

As shown in Figure 3, the ratio of the overall morbidity and overall mortality in the towns of Cheboksary, Novocheboksarsk, Kanash and Alatyr, as well as Yalchiksky, Cheboksarsky, Komsomolsky, Ibressinsky Yantikovsky districts is better than in Poretsky, Shumerlinsky, Kanashsky and Krasnochetaysky districts where the overall mortality rates are apparently high and overall incidence rates are low, that proves poor efficiency of outpatient service in these districts and need of a differentiated approach to appropriate managerial decision-making. We have calculated the ratio of overall mortality rate and overall morbidity rate ($K_{S/M}$), which will allow us to make the conclusion about the features of medical care rendering at the regional level and to make the relevant administrative decisions.

Dividing morbidity rate ($X_{ЗБ}$) by mortality rate ($X_{СМ}$) at the same scale (1 thousand population), we obtain quotient that is number which is greater or less than unity :

$$K_{З/С}= (X_{ЗБ}) / (X_{СМ}),$$

where $K_{З/С}\geq 1$ or $K_{З/С}\leq 1$

If the result is greater than unity, then these regions we refer to the favorable indicators of efficiency of outpatient's healthcare. In cases where the result is less than unity, these regions we refer to the zone of inadequate screening and therapy. Hereafter, in these regions it is necessary to analyze risk factors of diseases and adequacy of the measurements public health protection.

For distribution of areas for $K_{З/С} \leq 1$ in administrative districts of the Ch R the following grouping has been used, where the range of the interval is determined by the formula:

$$\Delta= \frac{k_{max} - k_{min}}{4},$$

The coefficient of KS/M calculated by us on the territory of the Chuvash Republic, allowed to identify the districts, where disproportion of low overall morbidity rate and high mortality rate is higher than the average republican mean. (Poretskiy, Shumerlinskiy, Kanashskiy and Krasnochetajskiy districts) (Figure 4).

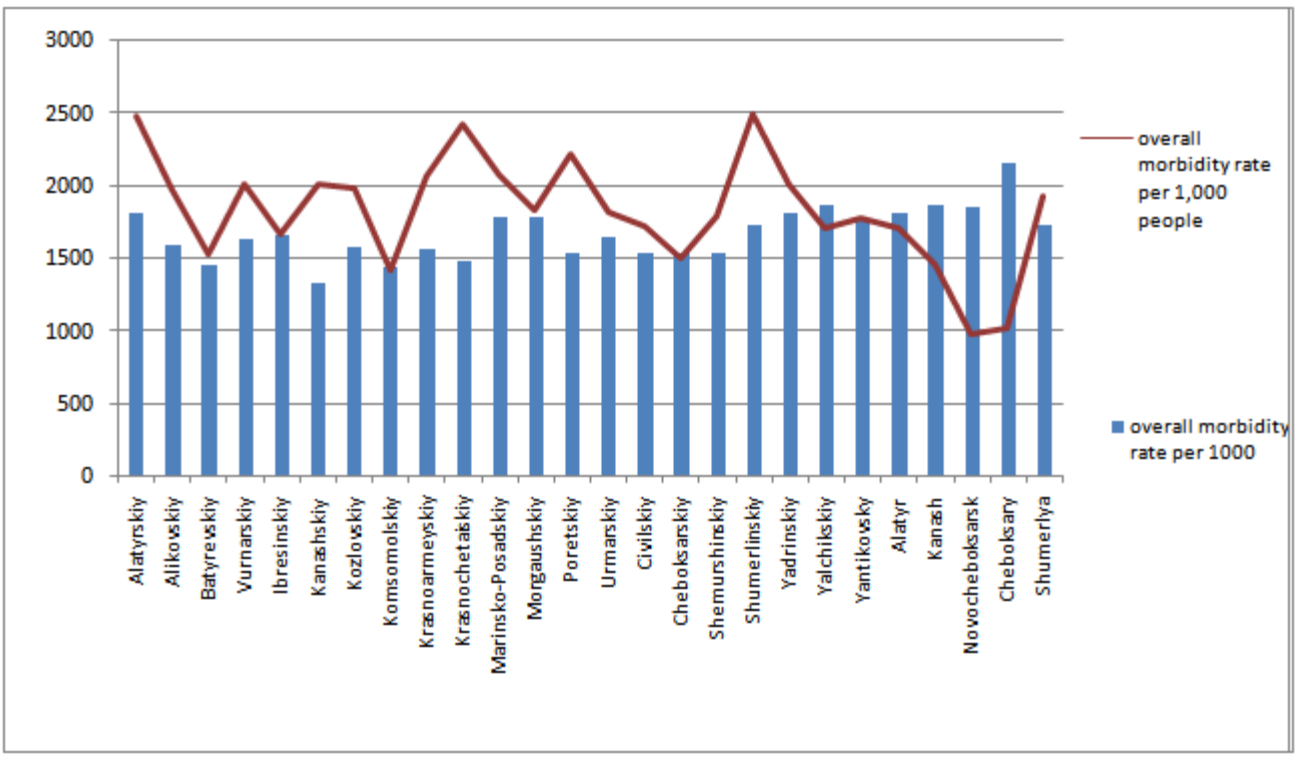

Figure 3. The average indicators of the overall morbidity and mortality rates in the Chuvash Republic for 2001-2011

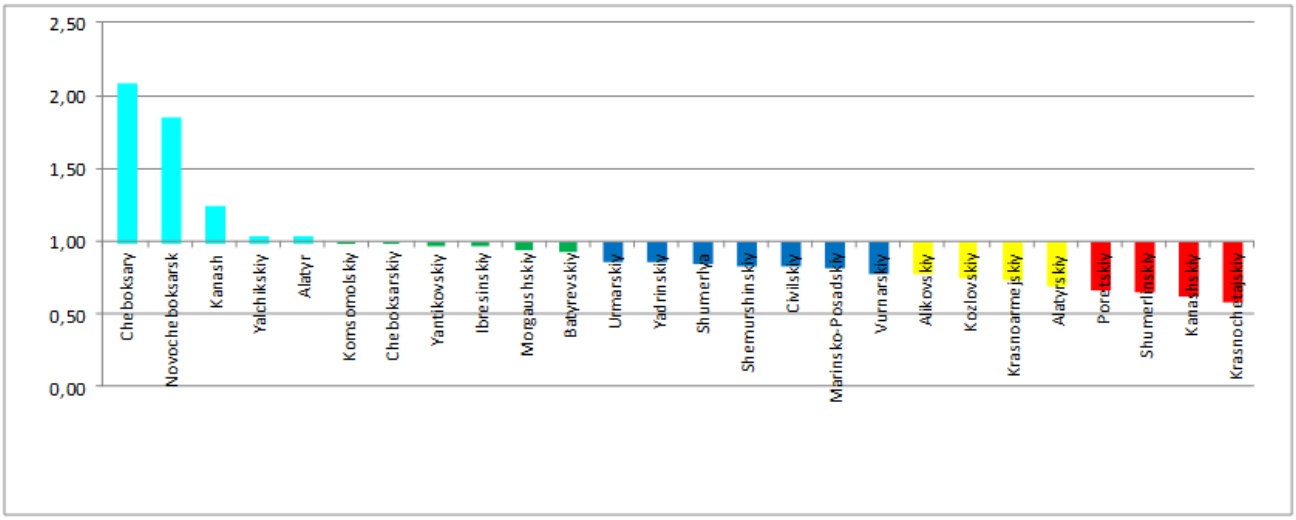

Figure 4. The coefficient $K_{з/с}$ of the overall morbidity and mortality rates in administrative territorial districts of the Chuvash Republic (2001-2010)

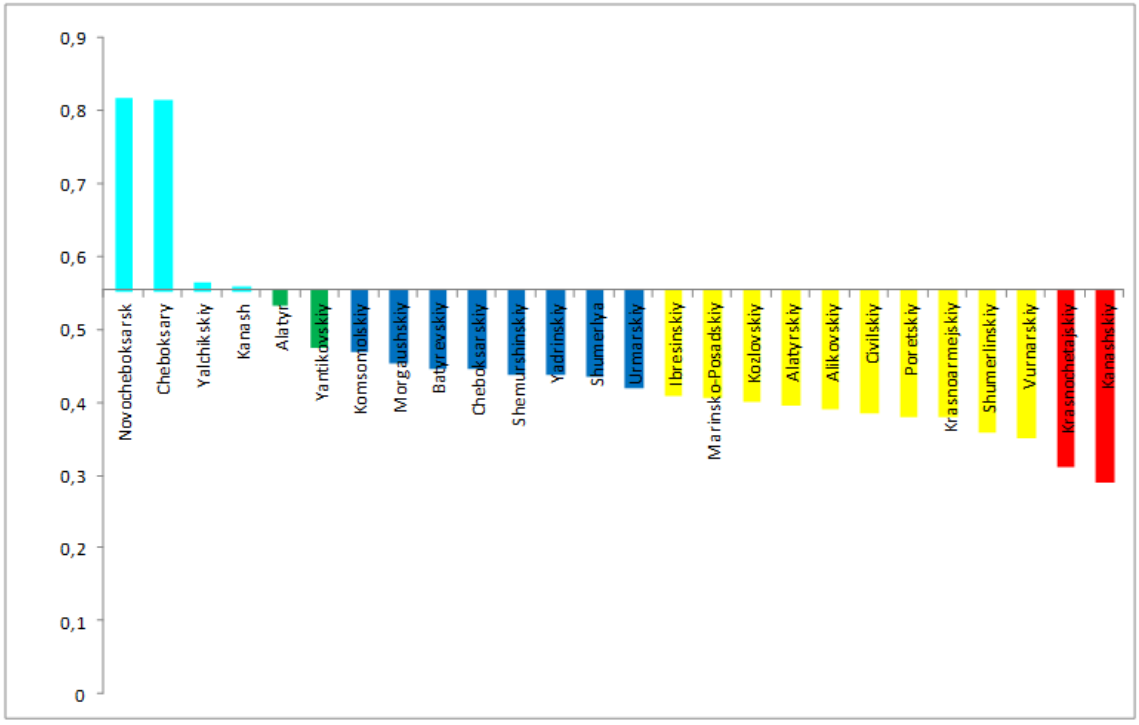

Figure 5. Analytical data of $K_{з/с}$ ratio of the overall morbidity and mortality rates in administrative-territorial districts of the Chuvash Republic

Thus coefficient of the morbidity and mortality rates' ratio will allow us to estimate the level of rendered out-patient's care and inpatient care for different diseases in the administrative-territorial districts of the Chuvash Republic.

In the dissertations of T.Y. Vinokur and V.Y. Malenkova [27] it's shown that the morbidity and mortality rates at the regional level in 89-92% of cases are accounted for by population aged over 40. Thereby, the share of the population aged over 40, living in administrative-territorial districts, can be one of the main indicators which can seriously influence the mortality and morbidity rates in the region. In order to evaluate the significant risk factors that may influence the mortality rate in the administrative-erritorial districts, it is necessary to introduce an additional correcting factor, considering age peculiarities of the population.

In this regard, we have developed the method for analyzing the efficiency of health care institutions at the regional level, taking into account the age of the population living in the area. [28] Therefore, we have calculated a special correcting coefficient of the age (K_{age}): it determines ratio of the total population and the population over 40 years in the Chuvash Republic.

$$\text{Kage} = \frac{\text{population over 40 years}}{\text{the total population}}$$

Using the K_{age} coefficient, we established the analytical indicator of the effectiveness of health care institutions at the

regional level (Fig. 3).

$$K_{analysis} = K_{(3/C)} \times K_{age}$$

For distribution of the areas of the analytical indicator of $K_{analysis}$ in administrative districts of the Chuvash Republic, we used the grouping where the range of interval is determined by formula:

$$\Delta = \frac{k_{max} - k_{min}}{4},$$

Figure 5 demonstrates the distribution of $K_{анализ}$, for administrative districts where it was less than unity, taking into account age as a major risk factor for circulatory diseases. When comparing the results presented in Fig. 4 in Figure 5, it is obvious that adjustment for age let us detect districts with inappropriate efficiency of outpatient's healthcare services of public health protection more accurately.

3. Conclusions

Now therefore, the analytical indicator considering age allows to estimate more accurately effectiveness of both outpatient and inpatient healthcare services and work quality of public healthcare system in every region and make relevant managerial decisions.

REFERENCES

[1] Путин В.В., Послание Президента Российской Федерации Федеральному Собранию Российской Федерации от 25 апреля 2005.

[2] Медик В.А., Роль здравоохранения в реализации концепции демографической политики на региональном уровне : Пробл. соц. гиг., здравоохр. и истории мед. 2009, vol.2 p. 3-7.

[3] Онищенко Г.Г., Актуальные проблемы обеспечения санитарно-пидемиологического благополучия Российской Федерации: Здравоохр. Рос. Фед. 2009, p. 7-12.

[4] B. Peleteiro, Salt intake and gastric cancer risk according to Helicobacter pylori infection, smoking, tumour site and histological type: British Journal of Cancer, 2011, vol.104, p.198 – 207.

[5] Путин В.В., Доклад «О повышении доступности и качества медицинской помощи» 11 октября 2005.

[6] Ежегодное Послание Президента Российской Федерации В.В. Путина Федеральному Собранию РФ 10 мая 2006.

[7] Щепин О.П., Общественное здоровье и здравоохранение: ГЭОТАР, Медиа, Moscow, 2011, p.92.

[8] Улумбекова Г.Э., Система здравоохранения Российской Федерации: итоги, проблемы, вызовы и пути решения: Вестник Росздравнадзора, Moscow, 2011, vol. 2, p. 33-38.

[9] Улумбекова Г.Э., Система здравоохранения Российской Федерации: итоги, проблемы, вызовы и пути решения: Вестник Росздравнадзора, Moscow, 2011, vol. 2, p. 33-40.

[10] Вартанян Ф.Е., Современные тенденции развития здравоохранения Здравоохранение, 2008, vol.1, p. 16-23.

[11] Венедиктов Д.Д,. черки системной теории и стратегии здравоохранения: Moscow, 2009, p.336.

[12] Chan M., Making investments in health work at a Time of financial susterity. Available: http://www.who.int/pmnch/media/news/2011/20111120_who_canada_forum/en/index.html

[13] Mossialos E., Dixon A., Финансирование здравоохранения: альтернативы для Европs, Весь мир, 2002.

[14] Mills A., Bennett S., Lessons on sustainability from middle and lower income countries Funding Health Care: Options in Europe, Open University Press, Buckingham, 2002.

[15] Евдаков. А., Ожидания и реалии повышения качества и доступности амбулаторно-поликлинической помощи при реализацииприоритетного проекта «Здоровье»: Бюлл. ННИИ ОЗ, 2009, vol.1, p..55-58.

[16] Научная библиотека диссертаций и авторефератов Available: http://www.dissercat.com/content/sostoyanie-i-puti-ukrepleniya-kadrovogo-obespecheniya-munitsipalnogo-zdravookhraneniya

[17] Иванов М.В., Расторгуева Т.И., Карпова О.Б,. Современные медицинские технологии в контексте развития первичной медицинской помощи: Бюллетень ННИИ общественного здоровья, Материалы международной научно-практической конференции «Роль здравоохранения в охране общественного здоровья», 12-13 апреля 2011, vol. 2, p.83-85.

[18] Иоголевич Н.И., Галюкова М.И, Анализ нормативно-равового обеспечения современной системы здравоохранения: "Медицинское право", 2011, vol. 1.

[19] Кучеренко В.З., Алексеева В.М., Дополнительная диспансеризация работающего населения как здоровьесберегающая технология: Здравоохранение: журн. для руководителя и гл. бухгалтера, 2010, vol.4, p. 15-24.

[20] Кучеренко В.З., Роль подготовки медицинских кадров в развитии здравоохранения: Экономика здравоохранения, 2011 vol 5-6, p.5-11.

[21] Улумбекова Г.Э., Здравоохранение России. Что делать: научное обоснование «Стратегия развития здравоохранения до 2020», ГЭОТАР, Медиа, 2010.

[22] Низамов И.Г., Вопросы последипломного обучения и аттестации руководителей здравоохранения: Moscow, Медпресс-информ, 2011.

[23] Распространенность злокачественных новообразований: докл. науч. группы, ВОЗ, 2010.

[24] Герасимова Л.И., Методика создания картограмм для анализа медико-демографических показателей: рац. предложение No. 8 05.09.2001 , Чебоксары, 2001.

[25] Герасимова Л.И., Способ оценки уровня оказания амбулаторно-поликлинической и стационарной помощи по отдельным видам заболевания в административно-ерриториальных районах: рац. предложение No. 30 от

19.08.2011, Чебоксары, 2011.

[26] Герасимова Л.И., Способ анализа эффективности деятельности лечебно-профилактических учреждений на региональном уровне: рац. предложение No. 31 от 19.08.2011, Чебоксары, 2011.

[27] Маленкова В.Ю., Клинико-эпидемиологические аспекты хронической сердечной недостаточности в Чувашской Республике, Санкт-Петербург, 2008.

[28] Герасимова Л.И., Способ оценки уровня оказания амбулаторно-поликлинической и стационарной помощи по отдельным видам заболевания в административно - территориальных районах: рац. предложение No. 30 от 19.08.2011 , Чебоксары, 2011.