The population life quality related to health as the basis from human capital formation in Kazakhstan

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Abstract: Population-based studies related to the health of the population and the definition of the life quality on the basis of the questionnaire SF - 36 are held in many countries around the world. However in Kazakhstan such a study was conducted for the first time. The aim of the present work was to study the life quality of the population of 6 regions. The method for the population life quality assessment on the basis of the subjective perception of the individual was used (J. Ware, 1988). The basis of this technique is the questionnaire MOS SF-36 that consists of 36 questions for assessing the quality of life based on the health of eight scales. All in all more than 4,000 people were interviewed. The paper presents the results of the study on the women's life quality. The implementation of this methodology for studying the quality of life in Kazakhstan opens up new opportunities for integrated assessment of health status, satisfaction with various aspects of life that will develop programs to improve the quality of life at the municipal and regional levels that in its turn will contribute to the qualitative growth of human capital.

1. Introduction

In his message to the people of Kazakhstan from January 29, 2010 N.A. Nazarbayev noted that the success of the strategy for country modernization depends primarily on the knowledge of the Kazakhstani, their social and physical well-being. And the main task of the coming decade is to improve the life quality of all the citizens of Kazakhstan, and the strengthening of social stability and security [1]. To date the study of life quality and the search for ways to improve it in a market economy remains one of the priorities of the economic analysis.

The most important criterion of the life quality is the health of the population. Health characteristics, the level of medical care, as well as the state of the environment give an idea of fundamental indicators that define the conditions and the quality of life. Preston [2], Rogers [3] and Wilkinson [4] were among the first to get evidence of a negative relationship between the income and the health of the population. S. Preston and later Rodgers found that those who have low incomes have a stronger effect on their health if they have an extra income (the measure of which served as the mortality). Later their conclusions are confirmed by Wagstaff A., E. van Doorslaer in 2000 [5], Lynch and etc. in 2004 [6].

Studying the issues of inequality in income distribution and the health of population on the example of Russia Kislitsina O.A. [7] proved the existence of the close link between the surge in income inequality and the catastrophic deterioration

in health. In her opinion the main factor determining the potential of the health is a socio-economic inequality. If the individual is in good health then he is more likely to earn and get a better return. That is universal access to quality health care can reduce the degree of inequality in society and improve the quality and the life standard of the population. Thus the state that creates an affordable health care system that could provide the public with timely and quality health care promotes the creation of unified starting conditions for the entire population, reduces disparities in health care and as a result reduces income inequality.

At the same time according to A.A. Akanov, T.A. Germanyuk, N.V. Sirina [8], D.S. Isayev et al [9] socio-economic changes that have taken place in Kazakhstan recently have the negative impact on the health and the quality of life. In numerous studies conducted by O.P. Golyeva, N.A.Zakorkina et al [10], Y.P. Boyko, O.V. Dobriden [11] A.A. Akanov, K.A. Tulebayev, T.I. Slazhnyeva et al [12] have shown that the most people do not take efforts to promote health and healthy way of lifestyle.

Recently health gains not only the status of social values but also the most important economic resource of society, a source of economic growth. Public health is the main factor determining the employment potential of the country, and only then it is followed by the level of education, skills, creativity, and the level of spiritual culture. The value and importance of maintaining health is steadily increasing with the growth of the influence of man-made environmental changes on the human body.

Health represents a social good, serves as an essential condition of active, creative and complete human life, and therefore plays a major role in the formation of human capital.

The study of life quality using a questionnaire MOS SF-36 in the international practice is common method for assessing the health of the population as a whole, and individual social groups [13]. In this case it is quite highly informative, sensitive and cost-effective method to quantify the main characteristics of human life - physical, psychological and social functioning.

Population-based studies related to the health of the population and the definition of the life quality on the basis of the questionnaire SF - 36 held in many countries around the world. However in Kazakhstan such a study was conducted for the first time. The aim of the present work was to study the life quality of the population of 6 regions. All in all more than 4,000 people were interviewed. The paper presents the results of the study on the women's life quality. The implementation of this methodology for studying the quality of life in Kazakhstan opens from our point of view new opportunities for integrated assessment of health status, satisfaction with various aspects of life that will in its turn develop programs to improve the quality of life for both the municipal and regional levels.

2. Material and Methods

In order to study the life quality of women in urban regions of Kazakhstan National Center for Healthy Lifestyle of the Ministry of Public Health had the research using the international questionnaire MOS SF-36 Health Status Survey [14]. Sample size composed 2,887 women with a confidence level of 95% and a confidence interval of ± 3%. Representativeness of the sample was achieved by age, ethnicity, and place of residence (urban/rural). Poll participants were women aged 18 years and older living in big towns of urbanized areas of Kazakhstan: East-Kazakhstan Oblast, Aktau, Ekibastuz, Temirtau, Taraz and Borovoye.

Methods of assessing the quality of life based on the subjective perception of the individual were first proposed by J.Ware [15]. The basis of this technique is the questionnaire MOS SF-36 that consists of 36 questions for assessing the quality of life based on the health of eight scales: physical function (PF), role-physical functioning (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), mental health (MH). The eight indicators are designed to measure the two major dimensions of health: physical and mental (Ware J.E., Davies-Avery A., Brook R.H., 1980 [16], McHorney C., Ware J., Raczek A., 1993)

[17]. Analysis of these 8 concepts showed that they are components of health characteristics including the function and dysfunction, stress and well-being, both objective and subjective evaluation, positive and negative self-assessment of overall health. The results of our study of women in urban areas have shown a high consistency with the characteristics of data quality studies conducted in other countries. SF-36 questionnaire has robust psychometric properties and is appropriate for population studies for the life quality in Kazakhstan. Each indicator ranges from 0 to 100 (or from 100 to 0) depending on whether they are less or more favorable health implications.

3. Results

The answers to all 36 questions are integrated into eight major indicators of health status after which they are formed of two parameters: the psychological and physical components of health, and then the overall indicator - the index of life quality. The general scheme of calculation of the life quality index is shown in Figure 1.

As a selection volume in the conducted research is rather great, the size of a standard mistake was small. In order to assess reliability of research results, inspection of internal coherence and reliability of applied criteria was made based on Cronbach's alpha test (Table 1) Reliability index offered by Li Cronbach of [18] in 1951 allows to define a measure of accuracy which is used testing of some factors. Results of calculations showed: reliability index of Cronbach's alpha made 0.7159 and is very high that testifies to high reliability of criteria applied in model.

For indicators «physical functioning», «role physical», «role emotional functioning» and «bodily pain» an alpha index made more than 0.8 that demonstrates good reliability of the obtained data. These indicators make an essential contribution to formation of the integrated index of life quality. Indicators «vitality» and «social functioning» are also enough reliable (above 0.7). Indicators of «mental health» and «general health» have low reliability, but as $\alpha \geq 0,5$, after all they can be used while estimating, but with some reservation.

Life quality rating in women of six regions of Kazakhstan. The general aggregated index of life quality on all selection made 71.3 points (from 100 possible). The total score according to all scales of life quality among studied group as a whole did not exceed 75 points. At the same time normalized indicators did not deviate from the norm accepted for selection in the USA more than 1 USD that is considered norm (Figure 2).
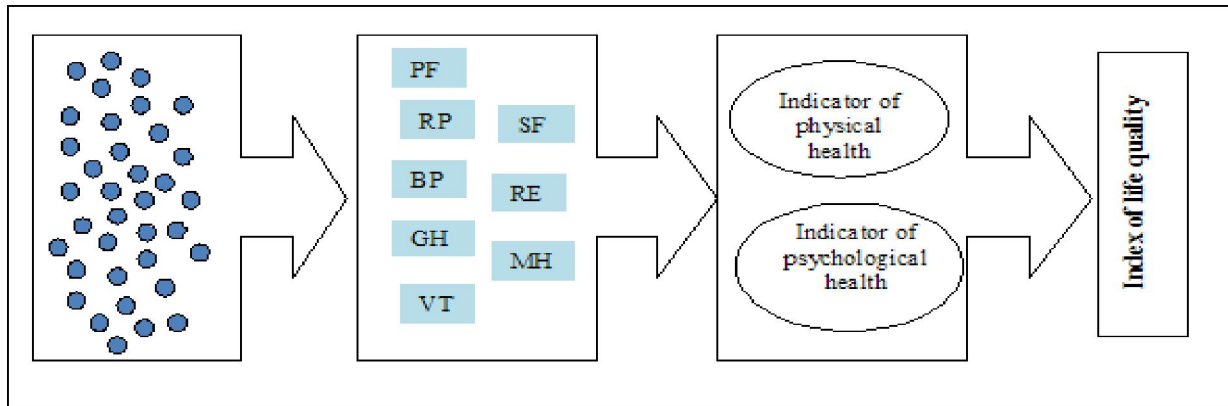
Figure 1. Calculation scheme of the life quality index*
*Compiled by the authors based on the source [15]

Table 1. Indicators of life quality in women of six urban regions of Kazakhstan

| Women		N	Mean	Std. Error of Mean	Std. Deviation	Alpha	Items
1.Physical functioning	PF	2625	79,6	0,37	19,1	0,874	10
2. Role physical	RP	2794	76,2	0,70	37,0	0,893	4
3.Role emotional functioning	RE	2772	76,7	0,73	38,2	0,854	3
4. Vitality	VT	2701	56,9	0,30	15,4	0,722	4
5. Mental health	MH	2676	64,1	0,26	13,4	0,533	5
6. Social functioning	SF	2776	83,3	0,40	21,2	0,699	2
7. Bodily pain	BP	2808	79,3	0,48	25,2	0,889	2
8. General health	GH	2732	61,8	0,37	19,5	0,553	5
9. Health changes	HC	2887	48,6	0,33	17,8	-	1
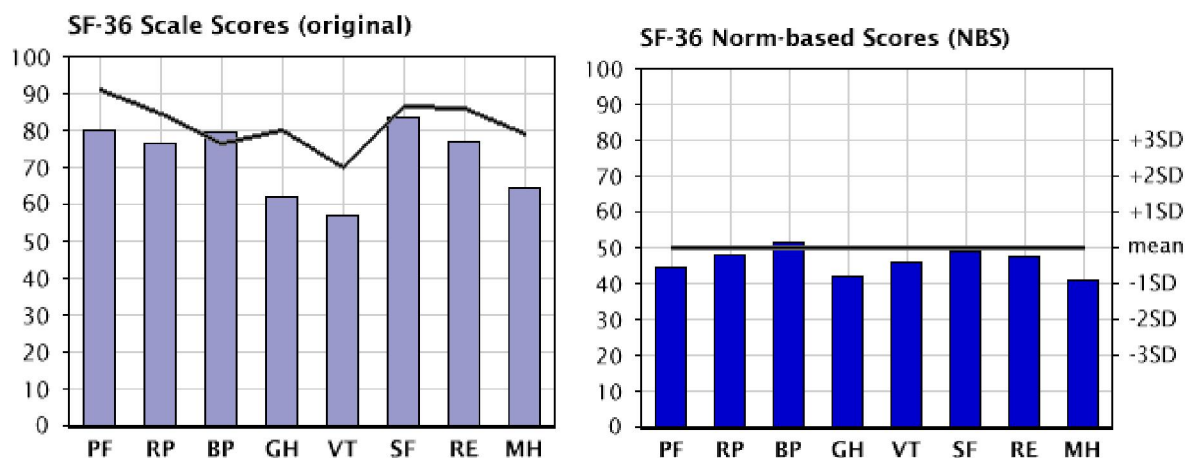
Figure 2. Indicators of life quality among women of 6 urban areas of Kazakhstan*.
* Source: calculations are carried out by authors using the analysis of SPSS 11.0 and a source [19]

Distribution of average life quality ratings was the following:

1. Physical Functioning, PF - a scale which allows estimating physical activity of the individual. The indicator is higher; the higher physical activity a person can perform. If low points are got physical activity is considerably limited due to a health state (V.N. Amirdzhanova, etc., 2008) [20]. On the whole 79.6 points are received, on studied selection, it means that the physical condition of the interrogated women to a small degree limits them in performance of physical activities (self-service, walking, climbing a ladder, carrying weights, etc.).

2. Role Physical, RP shows how physical health limits performance of usual work: the indicator is higher, the less, according to the respondent or the patient, health problems limit their daily activity. As a result of research, 76.2 points were received for physical functioning, which means that respondents don't suffer from considerable influence of a physical condition on daily role activity (work, performance of daily duties).

3. Role Emotional, RE suggests an assessment of that, how emotional condition disturbs work performance or other usual daily activity, including an increase of time spending on their performance, reduction of volume of the made work, decrease in its quality. This indicator made 76.7 points that testifies that the emotional condition doesn't considerably disturb the interrogated women in performance of daily work.

4. The respondents gave 56.9 points for vitality (VT) and this extremely low index testifies to exhaustion lowering of vital activity among the polled women.

5. Mental Health, MH characterizes mood, existence of depression and alarm, evaluates the overall level of positive emotions. If this index was high respondents felt quiet and pacified during the last month. According to the research made, this index made 64.1 points which testify to existence of depression, disturbing experiences, mental trouble among women.

6. Social Functioning (SF) evaluates the respondents' satisfaction with the level of social activity (communication, spending time with friends and family, etc.). This index proved to be rather high – 83.3 points, and it means that women communicate a lot, they have a lot of social contacts and they are not restricted in communication because of their physical or emotional status.

7. Bodily Pain (BP) evaluates pain syndrome intensity and its impact on ability to be engaged in normal activities. The received index is equal to 79.3 points. Therefore influence of felt pain on ability to be engaged in daily activities, including housework and out-of-door activities is low among the polled women.

8. General Health (GH) equals to 61.8 points. In the course of inquiry the respondents were not of a high opinion with regard to their health state, perspectives of treatment and resistance to diseases. Shared state of health (General Health, GH) - 61,8 point.
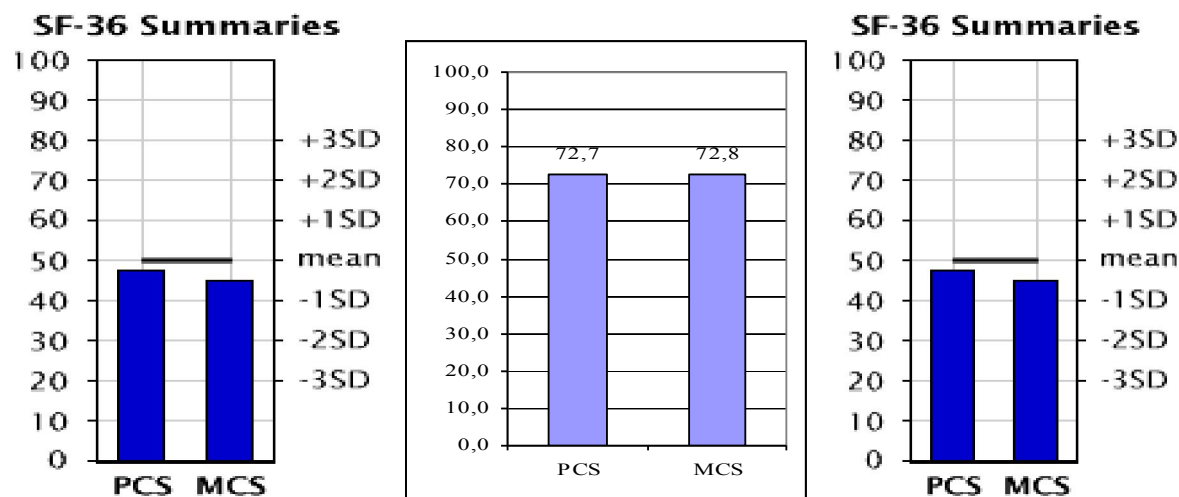

Figure 3. Normalized and integral indexes of physical and mental health of women*
*Source: calculations are made by the authors using SPSS 11.0 analysis and the source [19]

The aggregated indexes of physical and mental health did not exceed 73 points from 100 possible and made 72.4 and 72.1 respectively. The normalized indexes of physical and mental health of women of the researched regions are a bit lower than the standard accepted in the USA (Figure 3).

The estimates of equality of average values made using t-criterion show that among women average values of physical and mental health are equal (or very close), which means that we can make a conclusion that these two types of health are to the same extent important for them (Table 2).

Table 1. Statistics of t-criterion for MCS and PCS indexes on SF-36

	N	Mean	Standard deviation	Standard error of means
Physical health	2520	72,8	21,48	0,43
Mental health	2513	72,7	14,85	0,29

	t	ст.св.	Significance (two-sided)	Difference of means	95% confidential interval of means difference	
					Lower bound	Upper bound
Physical health	170,2	2519	,000	72,82	71,99	73,67
Mental health	245,6	2512	,000	72,75	72,17	73,34

Source: calculations are made by the authors using SPSS 11.0 analysis SPSS 11.0

It is necessary to mention that no correlation has been found between the generalized indexes of physical and mental health as well as indexes of quality of life and place of residence, marital status of women and their educational level.

Currently we observe in Kazakhstan obvious economic differentiation between the regions: different levels of economic development in the regions, serious differences with regard to poverty level, different indexes of health care, different levels of the development of infrastructure providing population with a normal way of life. Therefore of interest is study of indexes relating to quality of life of women inhabiting the regions under survey. As we already mentioned, 6 regions have been selected for the research: large settlements of the East Kazakhstan Region, Aktau, Ekibastuz, Temirtau, Taraz and Borovoye.

Assessment of physical health. The highest indexes of physical health were received in Ekibastuz City (78.9), Aktau City (74.9), the lowest indexes we observe in Temirtau (64.1) and Borovoye (76.8). It means that in Temirtau the polled women have poor quality of life due to their state of health.

Assessment of mental health. The highest indexes of mental health were received in Aktau City (79.5) and Ekibastuz City (77.3), the lowest indexes we observe in East Kazakhstan Region (65.7%), Borovoye (66.4%) and Temirtau (67.0).

Assessment of quality of life of women. The highest rates of integral indicator of quality of life and health were received in Aktau and Ekibastuz Cities (78.1 and 77.4 respectively), the lowest in the East Kazakhstan Region, Borovoye and Temirtau (68.3; 67.3; 65.7).
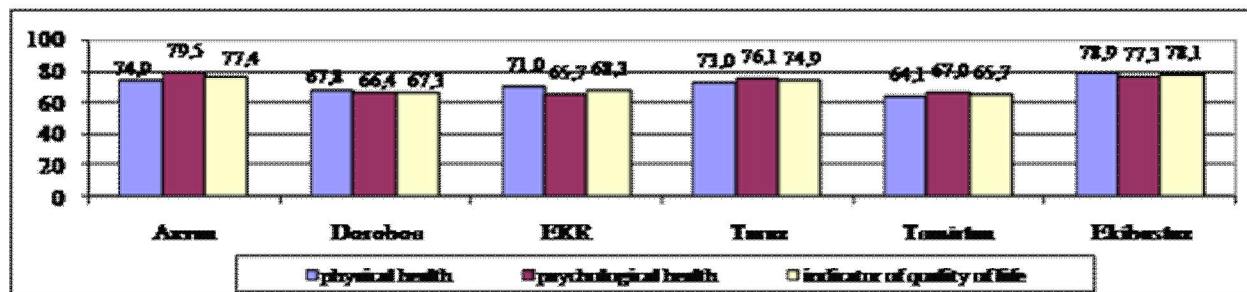

Figure 4. Indexes of quality of life of women by regions
Source: calculations are made by the authors using SPSS 11.0 analysis

The analysis of «physical functioning» index by regions showed that the greatest physical activity according to respondents self-assessment can be managed by women living in Ekibastuz (85.8 points). The lowest index is typical of women-respondents in the City of Temirtau which means that in this city women are restricted, to the greatest extent, in physical activity due to health state (the figures below).

Dispersion by regions in terms of «role physical health» is not so strong as by index «physical functioning». Nevertheless in two regions -

Temirtau and Borovoye -these indexes made less than 70 points that is the polled women of these regions in their daily activities are limited by their physical status.

In the cities of Borovoye and Temirtau low ratings (66.8 and 6.4) of the index «role emotional» were obtained which means that the emotional state prevents the women from these regions interviewed to carry out work or other usual everyday activity, and probably they need the professional help.
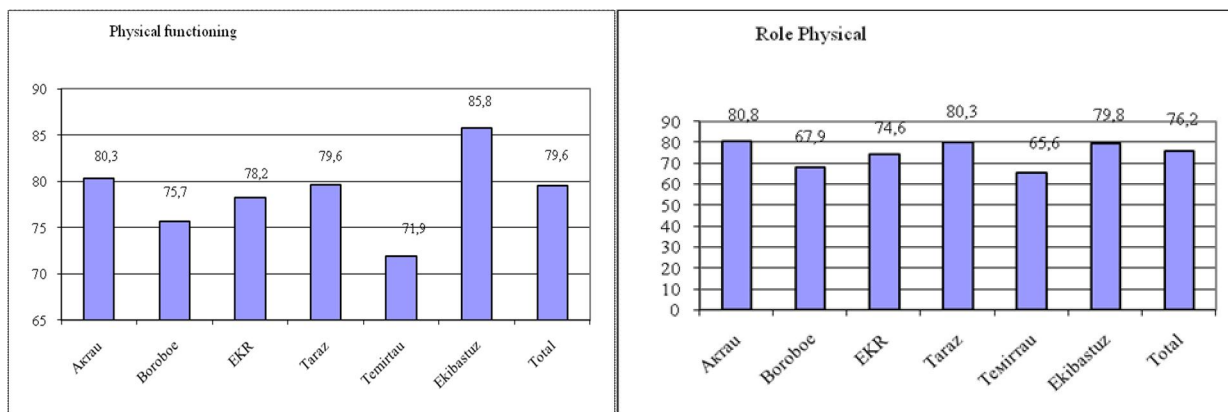

Figure 5. Indexes "physical functioning" and "role physical health" of women in terms of region
A source: calculations are carried out by the author when using a package of the analysis of SPSS 11.0

Unfortunately we have to state that the women interviewed do not feel full of strength and energy. This index did not exceed 60 points in all regions, and in Taraz the minimum rate is 54.3

points. It is a disturbing signal as the psychological perception by the individual of his health both psychological and physical is an important factor affecting his condition.
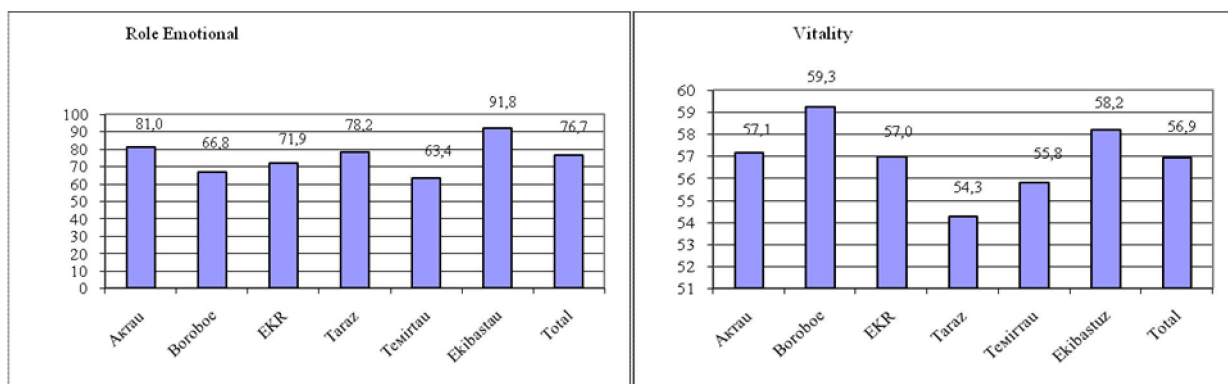

Figure 6. Indexes "vitality" and "role emotional" of women in terms of region.
A source: calculations were carried out by the author when using a package of the analysis of SPSS 11.0

The index «mental health» is quite low and at that the lowest level is observed in the East Kazakhstan region, Aktau and Ekibastuz (61.7; 62.9 and 63 points respectively). It may suggest that women in these cities are prone to depressions and disturbing sense. In other regions this indicator also does not exceed 68 points. Nevertheless probably additional research on this index is required as Cronbach alpha test showed insufficient reliability of this index.

The indicators of social functioning are quite high especially in the cities of Aktau (95.7) and Ekibastuz (94.9) which suggests that women do not experience in these areas lack of social contacts, they have a high level of communication. In Temirtau this figure is low (69.9 points), and the women from Borovoye and East Kazakhstan region (EKR) are also inherent to a low level which may indicate a slight reduction in social interaction and communication as a result of physical and emotional deconditioning.
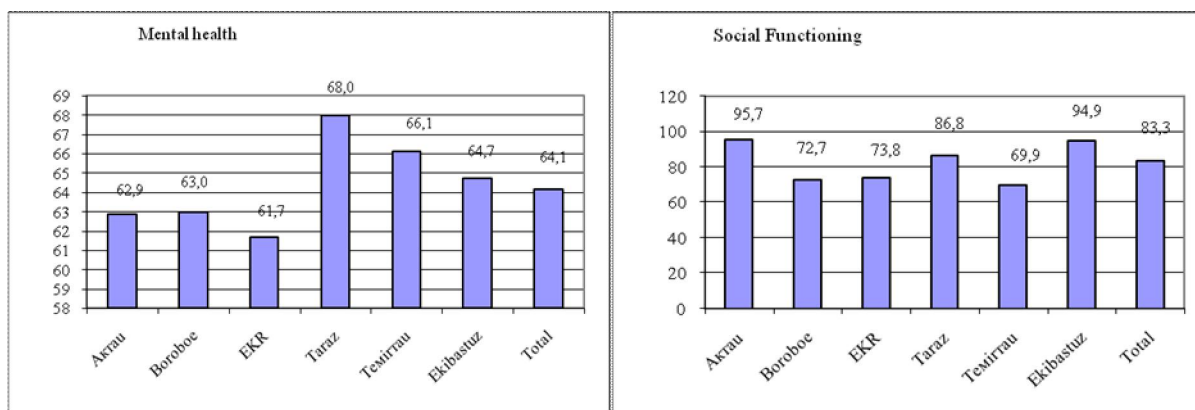

Figure 7. Indexes "mental health" and "social functioning" of women of women in terms of region.
A source: calculations were carried out by the author when using a package of the analysis of SPSS 11.0

The indicator of an assessment of the general state of health is low for all regions (in none region it gained even 70 points). In terms of «bodily pain» low marks were received in EKR and Temirtau

that is the women feel pain connected with a state of health which disturbs them in an everyday life in these areas. In other regions this index is in norm.
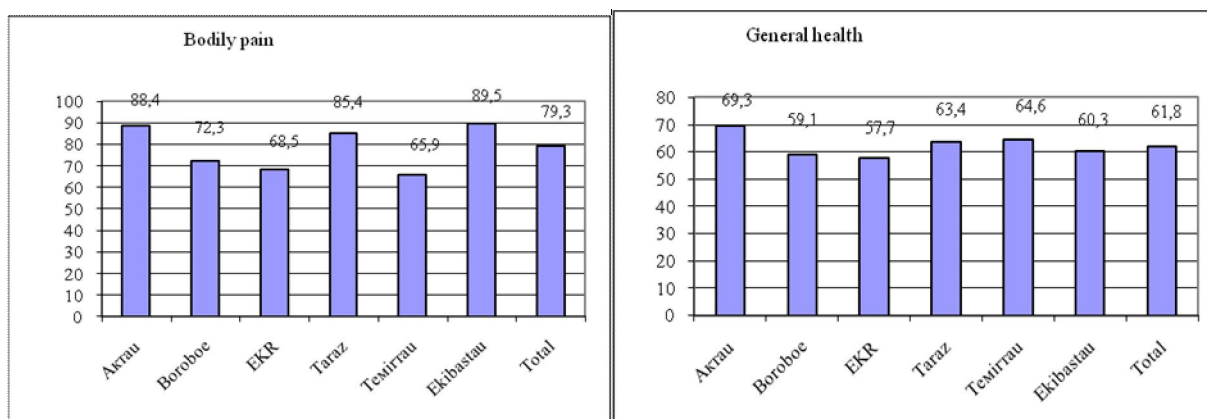

Figure 8. Indexes "bodily pain" and "general health" of women in terms of region.
A source: calculations were carried out by the author when using a package of the analysis of SPSS 11.0

4. Discussions

The issues of qualimetry of life (a theory of measurement and assessment of life quality) at the present stage of economic development of Kazakhstan are crucial. The need to improve the life quality of the population is highlighted as a priority area of public policy in the Message of the President of the Republic of Kazakhstan Nursultan Nazarbayev in January 2012to the people of Kazakhstan, «Socio-economic modernization is the main direction of Kazakhstan development» [21, 22]. One of the tasks that are put by the head of the state in front of the people is the high-quality growth of the human capital in Kazakhstan. Keen interest in a problem of quality of life is connected with society understanding of global problems of the modern life caused by the expansion of threat of an economic crisis, ecological trouble, deterioration of health of the population (L.A.Terentyev, 2009) [13]. After all quality of life is the concept which plays an important role in all spheres of activity of the modern society, and an ultimate goal of activity of all institutes of society is wellbeing of the person. And here the important direction of increase of level of human potential is increase of availability and quality of rendering medical services, and also healthy lifestyle advance.

Quality of life being the integrated characteristic of physical, mental, emotional and social functioning of the individual based on his subjective perception certainly is always connected with health. The questionnaire of SF-36 is developed and tested by scientists and experts of the leading world clinical centers according to the principles of evidential medicine and requirements of Good Clinical Practice (GCP), created possibility of a quantitative assessment of this subjective concept that allowed to expand representation a state of health as the population as a whole, and separate social groups. The used method of researches allowed giving a quantitative assessment of characteristics of activity of women of six urban regions of Kazakhstan - their physical, mental and social functioning. In Kazakhstan the population researches connected with health and determination of quality of life still were not carried out. Therefore the presented experience will be interesting to a big circle of experts.

The analysis of the standardized indicators of quality of life of group of population control showed that the female population of studied regions is characterized by indicators of physical and mental health slightly below than the norms accepted for the population of the USA, but thus deviations are in admissible limits. The highest rates as a whole on all group of the interrogated women are noted on scales social functioning; the lowest - on a scale vital activity. At the same time considering sharp differentiation available in Kazakhstan in a standard of living on regions, we carried out an assessment of these indicators depending on the region of residence. In studied population of women indicators of quality of life in Aktau on all scales the highest, thus the lowest marks are received in Temirtau. In large settlements of the East Kazakhstan region and. Temirtau observes the lowest values of physical and mental health of women that most likely is explained by economic and ecological conditions of accommodation in these regions.

Application of a questionnaire of SF-36 showed possibility of use of this method for control of indicators of quality of life and an assessment of efficiency of held events for improvement of quality of life of the population. The obtained data allow drawing a conclusion that this technique of research is quite acceptable for Kazakhstan, and it opens new opportunities for a complex assessment of a state of health, satisfaction with various aspects of the life. Carrying out in the subsequent similar researches with representative selection across all Kazakhstan will allow to give a quantitative assessment of quality of life of the population of the country which then can be used when developing social and economic programs of development of regions and various social groups that in turn will allow to develop programs on increase of level and quality of the human capital.

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