Reproductive health and environment at the Russian Far East: objective conditions and subjective assessments

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Abstract. The quality of the living environment of the population as an external, objective factor, determines the level of comfort, affects its quality, health, reproduction and decision-making on migration. The quality of the environment is of a potential nature, serving as a basis for the socio-economic development of the region; it has a comparative nature in its original content and assumes a comparison of the specific indicators in spatial terms. Given the significant contrasts in environment at the Russian Far East (RFE), even small changes in natural and climatic conditions are crucial for determining quality of life of the population. Differences of environmental: natural, demographic, economic and social quality – were studied for regions at the southern part of the RFE. Sociological survey of women of reproductive age (17-45 years old) within both urban in rural areas in the Nanai District of Khabarovsk Krai, and Smidovichsky District of the Jewish Autonomous Region, gives a whole picture of their self-assessment of ecological, social and economic environment. Disproportions in the development, the main issues specific to individual areas, and spatial behavior of the residents are analyzed. Social and economic divergences are reflected in subjective estimates of native and non-indigenous women of reproductive age.

1. Introduction
The quality of life (QoL) as a system of relations between the population and its environment in a specific area characterized by certain conditions of natural, demographic, social and economic quality, is used to give a quantitative and qualitative assessment of the population's life activity [1, 2]. QoL is closely related to the daily biological, ecological, and socio-economic life of people [3]. The comfort of the living environment of the population, as an external, objective factor, determines the level of comfort of a person's existence, affects his quality, health, reproduction and decision-making on migration [4]. The quality of the environment is potential, setting the basis for the socio-economic development of the region [5, 6]. The methodological assessment of QoL in the system “environmental quality – quality of life – reproductive health of the population” allows us to consider the quality of the environment in natural, economic and social aspects [2].

In the Russian Far East, where natural contrasts are quite significant, even the smallest changes in natural and climatic conditions are of decisive importance for determining the QoL of the population. In natural environment, differences are expressed in various concentrations of pollutants in drinking water, snow and soil, in landscape diversity, in climatic conditions [7]. The analysis of the historically formed area of settlement at the Far East shows that the general character of setting corresponds to the specifics of natural conditions, with the exception of the centers of mining and processing of minerals in the northern and mountainous parts of the District. The “optimum” in quality zone covers about
10% of the entire area of the Far Eastern Federal District along the Trans-Siberian Railway, which is considered to be the main area of population settlement with the most comfortable natural conditions for human life, and where up to 55% of the population is concentrated \[8, 9\].

The aim of the study is to identify whether the disproportions in objective environment: natural, demographic, social and economic conditions in Priamurye at the Russian Far East, are reflected in subjective estimates of the population, based on a survey of women of reproductive age, both native and non-indigenous.

2. Materials and methods
At macro-level, to assess the current state of natural, demographic, social and economic development in the southern regions at the Russian Far East, namely Amur Region and Jewish Autonomous Region, Khabarovsky Krai and Primorsky Krai; the QoL indices were calculated for the period 2010-2018. The calculation was based on private assessments of the quality of the environment (the degree of comfort of the area, pollution, the state of life, social and economic environment), and the quality of the population. To integrate all data, the linear scaling method is used, which brings all indicators to a single measurement scale. The method is based on determining the reference points (maximum and minimum values of indicators), and thus shows the actual position of the indicator for each specific region \[9, 10\].

Calculations were performed using the formula (1), if the relationship is positive, and using the formula (2), if the relationship is negative:

\[
Y = \frac{X_{\text{fact}} - X_{\text{min}}}{X_{\text{max}} - X_{\text{min}}}
\]

\[
Y = \frac{X_{\text{max}} - X_{\text{fact}}}{X_{\text{max}} - X_{\text{min}}}
\]

where Y is a private index, X_{\text{fact}} is an indicator of a particular region, X_{\text{min}} and X_{\text{max}} are reference points. The best (worst) values of indicators used for the analysis of the Russian Federation in the period 2010-2018 were taken as reference points. The value of Y varies from “0” to “1”, where “0” corresponds to the worst estimates, and “1” – to the best ones.

At micro level, sociological survey was conducted in rural and urban areas of Khabarovsky Krai (Troitskoe) and the JAR (Smidovich, Nikolaevka, Volochaevka, Aur, and Peschanoe) during 2018–2020 (figure 1).

![Figure 1. Study region and local settlements within the JAR and Khabarovsky Krai.](image-url)
Women of reproductive age were asked to express their subjective opinion on the impact of natural, medical, social and environmental factors on their health, quality of life; pregnant women were invited to determine the causes of the negative impact of socio-economic and behavioral factors on the QoL of expectant mothers, and their health status. To assess and self-assess women’s well-being and quality of life, author’s questionnaire “Medical and social passport of future parents” was developed taking into account domestic and foreign experience of social and medical researchers, including closed, open, semi-closed, personal questions, specially. The respondents were also asked to answer some questions concerning their specific health problems (the presence of symptoms of depression, bad habits, etc.) [2].

As a whole, 116 pregnant women were surveyed, including 16 indigenous Nanai women in Troitskoe; and 538 women of reproductive age, 56 of them were native women. The statistical significance of differences in the analyzed features between the compared groups was assessed using the Pearson's $\chi^2$ criterion.

3. Results and discussion

3.1. The southern part of the Russian Far East: objective situation

There are three types of regions of the district for the period 2010–2018 with a differentiation from “higher than medium” to “lower than medium”, differing in the sum of factors affecting the formation of QoL (figure 2). Khabarovsk Krai, which has above-average levels of population quality and environmental quality compared to other regions, is classified as a type with a “higher than medium” QoL. The “medium” type of QoL is typical for the population of Primorsky Krai and Amur Region, which are characterized in different years by levels of quality of the population and the natural environment “lower than medium” or “medium”, with a “stable medium” level of the social environment. As a whole, these regions belong to “regional optimum”. The type with the “below medium” quality of life of the population includes the Jewish Autonomous Region (2.6% of the population at the RFE) with consistently “low” levels of quality of the population and socio-economic environment, while the level of quality of the natural environment is “higher than medium”.

Analysis of the socio-economic situation showed that currently more than 70% of the population in the study area lives in small towns and villages, characterized by the socio-economic environment which is the worst within the RFE [9]. A significant polarization of municipalities in terms of social development due to their functional specialization is revealed. In contrast, the city of Khabarovsk with a diversified structure of industry and services, Smidovichsky District in the JAR is characterized by agricultural specialization of farms (horticulture and livestock); in Nanai District of Khabarovsk Krai, forestry and fishing, harvesting of non-timber resources are the leading industries. The dependence of locations on weak economic diversification indicates a risky situation in long-term socio-economic development.

3.2. Subjective estimations of environment by women of reproductive

As a whole, the representative sample size was 704 women of reproductive age, including pregnant women, with an average age 36.3±0.3 years, of which 10.2% were indigenous women. The majority of women surveyed have special secondary education (37% of native women and 49% of non-indigenous women). The percentage of non-employees is 31% and 21%, respectively. In our opinion, the main cause for the high unemployment of Nanai women is the traditional lifestyle. A number of reasons (natural, geographical and historical) should be noted, for which the family of the indigenous peoples of the Lower Amur is characterized by a complex structure and long-term preservation and stability of household traditions. In the traditional Nanai family, the role of each member was determined not so much by his personal character, but by the hierarchy of relationships that was established in accordance with the customs. On this basis, the rights and obligations of family members, both by age and gender, were formed. The position of a woman was regulated by old customs and depended on her family role as daughter, wife, and mother. The status of a woman in a traditional family varied and
was determined by many factors, depending on what place she occupied at the moment in the system of family relations, within what society she carried out her activities and with whom of the members of the family or community she contacted [11]. At the same time, despite their unequal status, women in traditional society and the family are not passive members, but actively participate in the social and industrial life of society, which is confirmed by the answers about their type of activity (12% are an employee of a state institution, 11.2% are students, 8% are workers in local enterprises).

A significant portion of respondents (62%) are satisfied with their health status, with statistically significant differences for pregnant women (p=0.74) and women of reproductive age (p=0.54). Every fifth woman-respondent rated her health as “good and very good” (40% and 23%, respectively). The percentage of indigenous women in both study categories who rated their health as “poor” was 21.5% and 19%, respectively. Social insecurity indicates a decrease in the perceived control over various aspects of women’s lives and can indirectly, for example, through unemployment and, as a result, poor nutrition, provoke a risk to reduce their health.

The distribution of women’s self-assessments on the question “Evaluate your satisfaction with certain aspects of life” using a five-point system, determines the level of satisfaction with financial situation, housing, the environmental situation in the settlement, and life in general (table 1). All answer options were divided on a 5-point scale, where “5” corresponds to the highest (best) level of satisfaction and “1” the lowest (worst) level of satisfaction. One of the indicators of well-being of the population is satisfaction (dissatisfaction) with their housing conditions. The availability of their own housing and satisfaction with its quality is an indicator of a relatively high level of financial situation in the family and is one of the main motivators when deciding to give birth to a child.
The assessment of satisfaction with the ecological state of the locale looks different. Emotionality of self-esteem, due to the direct dependence of traditional occupations of rural native women, is marked. The reasons for the deterioration of the environmental situation in the village are caused by both natural and climatic changes, and anthropogenic (the presence of smell and yellowish color in drinking water, garbage in water reservoirs). 65% of the indigenous women noted that the combined negative effect of these changes causes a wide range of consequences, some of which are already evident in everyday life and reduces the quality of life of women and their families. At the same time, it should be noted that there is a differentiation of assessments of the perception of environmental threats by age cohorts. Young women (up to 30 years old) are more tolerant of visible natural negatives and local anthropogenic disturbances, and claim that they grew up in a living environment that allows such natural use. However, young women were in solidarity with women aged 30-45 years about the threat of flooding on the Amur River in August-September 2019 and its disastrous consequences, which were expressed in a decrease in the amount of fish as subsistence for their families.

The leading risk factors and dissatisfaction of the majority of women of reproductive age with the socio-economic development are mainly associated with low income, lack of labor opportunities, high unemployment and insufficient level of medical care. As a result of migration and high mortality, these factors lead to changes in the overall structure of the population and their QoL.

Life satisfaction with a significant number of women is rated as high. 49.1% of women of reproductive age and 58.6% of pregnant women, regardless of the type of locality (both urban and rural) and ethnicity, rate this indicator at “4” and “5” points.

High values of life satisfaction in general can be explained by the following reasons: the majority of young women under the influence of social environment tend to suppress the feeling of dissatisfaction, which is corrected by an optimistic mood (especially in pregnant women), faith in a good future and life circumstances; life in preferred conditions leads to the formation of new evaluation standards and is more favorable for positive evaluations.

Thus, self-assessments of Nanai women showed that their quality of life is evaluated from the position of priorities in preserving traditional way of life. It is necessary to strengthen and maintain the identity of the indigenous ethnic group. At the same time, the marginal group of native women was identified (31%), which is represented by unemployed, women with low levels of education, income, dissatisfaction with housing conditions, among which harmful habits (smoking, alcoholism) are most common.

4. Conclusion
A study of women's views in urban and rural areas of Smidovichsky District in the JAR, and in Troitskoe in Khabarovsk Krai, identify the presence of negative changes in the quality of life of their families and the population as a whole, which is justified by the analysis of objective natural, demographic, social and economic indicators over the past few years. The dominance of negative self-
assessments of satisfaction with financial situation is confirmed by official statistics, such as a decrease in real money income for women in the region; a slight increase in the population below the “poverty line”; decrease in the level of employment of women, etc. Low income of the population as a factor determining the low quality of life remains the main social problem for both native and non-indigenous women. In addition, the factors that determine the standard of living include: working conditions, recreation conditions, social security, social and household conditions (including environmental conditions, etc.).

We conclude that economic situation and incomes have a significant impact on the quality of life of pregnant women and women of reproductive age, in both urban and rural areas. Often it is material prosperity and welfare that serve as the factor that allows a woman to use other benefits of life, make decisions about giving birth to children and parenting, to grow in professional development.

We urge that the necessary action be taken to reduce the problems with living standards and the factors that determine its dynamics. The satisfaction of women of reproductive age with the quality of life, as well as the rate of further increase and consolidation of the population in the region, both in urban and rural areas, regardless ethnicity, largely depends on these solutions, the main goal of which would be a woman, her well-being, physical and social health.

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