



Social Determinants of Human Health: Quantitative and Qualitative Studies



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Abstract

Keywords

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healthcare system;
life expectancy;
public health;
social sphere;*

The study is devoted to the analysis of social determinants of human health, their quantitative and qualitative aspects. The analysis was carried out according to the authors' methodology, which includes a comparison of the results of the questionnaire (subjective qualitative assessment) and the correlation analysis of social determinants with the life expectancy indicator. The Republic of Tatarstan, a dynamically developing region of the Russian Federation, where life expectancy is much higher compared to other regions (75.03 years in 2019), was chosen as the territorial object of analysis. The study hypothesized that it could be proved that social determinants were the most important component of health, and without them, its formation, maintenance, and strengthening would be impossible. Based on the results of the comprehensive analysis, the hypothesis was confirmed: 1) the qualitative analysis confirmed that the respondents were aware of the impact of social determinants on their health and identified individual indicators: the level of social security, stress, ecology, as well as immediate environment and working conditions; 2) the results of the quantitative analysis made it possible to state that health was affected by the following social determinants: divorce rates, environmental pollution, provision of medical services, construction rates and housing costs.

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1 Introduction

The area under study is the sphere of public and individual health and the problems of studying the factors that influence them (Batniji et al., 2006). These problems are of concern to the scientific community both in Russia and at the international level. The World Health Organization (WHO) is an organization coordinating work in the field of health at the international level, carrying out its activities within the United Nations system (World Health Organization, 2006). According to their data, among the factors affecting the health of an individual, more than 50% belong to a person's lifestyle and habits, one-fifth of the factors to genetic predisposition and environmental influences, and only 10% are related to the healthcare system. This is what sparked our interest in calculating and analyzing the social determinants of health.

In general, one can understand the importance and priority of social determinants of health by analyzing the definition of health adopted by the WHO. In its Constitution, the WHO interprets health as a state of complete physical, mental and social well-being, and not only as of the absence of disease and physical defects. Based on this definition, human health is a multifactorial concept and its aspects are considered not only within the framework of the health care system. Although the definition does not include specific indicators for assessing health, there is a reference to many social determinants that will be analyzed below.

The conducted content analysis revealed the absence of a single comprehensive method for assessing the contribution of social determinants to individual and public health (Wang & Luo, 2005). The first, fundamentally important and, as a rule, problematic stage in the analysis of the influence of social determinants and their inequality concerning health is the choice and substantiation of factors and indicators (Haines et al., 2006; Rahmadeni et al., 2020).

There are a lot of indicators, which makes it difficult to choose them. For example, S. Albert-Ballestar and A. García-Altés identified 691 indicators grouped by 120 topics. The most important and most common of those are life expectancy, infant mortality, obesity and excess weight, population mortality, substance abuse, self-evaluation of health, unemployment, mental well-being, hypertension (Laursen, 2011; Lee et al., 2012). The authors note that each country has its specific indicators, statistics on which at the level of other countries may not even be collected (Albert-Ballestar & García-Altés, 2021).

Navas Martín et al. conducted multivariate scaling and cluster analysis of the impact of social inequality on mortality in Spain in the context of rural and urban populations using regression models and determinants from various areas of life in 2007-2013 and concluded that efforts to understand the underlying public health mechanisms were far from complete, and the current state of research on this topic was poor. The authors noted the priority of simultaneously taking into account comprehensive, non-standard factors and using the most comprehensive method for assessing the health of the population (Martín, 2020).

The same conclusion was reached by V. Varbanova and P. Beutels. Having selected 60 studies, they determined that a relatively narrow core of social determinants of health received a lot of attention as the main indicators, while most other determinants were studied very limitedly. We agree with the authors in the aspect of the need for future studies of social determinants of health to simultaneously take into account various factors and use a more comprehensive methodology (Varbanova & Beutels, 2020;).

Despite only 10% of the contribution of the health care system to the health of an individual, on the whole, the interconnection of these spheres is undeniable. In their scientific works Counts et al. (2021), examine and

analyze this relationship through the prism of the need and interest of healthcare professionals to invest in solving social determinants of health (Hallin et al., 2013; Ermatov & Abdulkhakov, 2021). The investment, in their opinion, is driven by the desire to improve performance indicators in the field of health care, as well as to reduce the overall costs of the industry. Policies shape the social determinants of health to a large extent, and lobbying by health authorities, health insurance organizations, and health care providers on the social determinants of health can make a big difference.

In our opinion, it is important to understand what is the motivation for representatives of health systems. Their behavior depends on the mentality, the adopted philosophy concerning public health, and the answer to the question of what values do they adhere to, i.e. to make money on socially significant services or still focus on the priority of public health (Leigh-Hunt et al., 2017; Ling et al., 2011). Practicing physicians and health researchers require the active participation of modern society in maintaining individual health and the environment. Adding incentive tools and activities to this participation can have a positive impact on the development of the industry (Gallagher et al., 2021).

Several authors, realizing that the population living in poverty has the worst health indicators, and also that this inequality is the main driving force of social policy of any state, conduct additional gender analysis, with the aim of the most qualitative approach (Mishbahuddin et al., 2021). In one such study, Ingleby et al. (2021), modeling mortality by age, sex, and socioeconomic status using Poisson regression and summarizing the differences in mortality using life expectancy, concluded that 1) despite the large disparities in life expectancy between groups of different socioeconomic status, the differences between them were smaller for women than for men; 2) despite this conclusion, gender differences were present and they had to be taken into account when implementing social policies and planning the allocation of funds for their improvement.

Heller et al. (2021), in their recently published study "The association between social needs and chronic conditions in a large, urban primary care population" analyze the relationship between social conditions, needs, and specific chronic conditions recorded in the medical records of 33,550 adult patients. Studies have shown a positive cumulative relationship between social needs and each of the outcomes: in other words, healthcare systems need to develop strategic plans and specific interventions to meet the social needs of all categories of citizens to optimize outcomes in general (Heller et al., 2021). Medical tourism is also an effective tool for improving public health, and access to it should be unlimited for all categories of citizens (Bunakov et al., 2020).

Poor health outcomes disproportionately affect certain populations in the United States of America due to the inequitable distribution of social determinants of health, as concluded by Lund et al. (2021), in the study "The association between three key social determinants of health and life dissatisfaction: A 2017 behavioral risk factor surveillance system analysis". They analyzed the relationship between such factors as housing insecurity, food insecurity, financial instability, and life dissatisfaction (Kurtieva et al., 2021). The study also brought up evidence that social determinants could not only affect physical health but also influence the psychological well-being of an individual (Lund et al., 2021).

In addition to quantitative research, in our opinion, a qualitative assessment of health is also needed. Here we are in solidarity with Vafaei & Phillips (2021), who believe that self-assessment of health is a widely tested and reliable indicator of people's health status. They conducted an analysis aimed at finding factors that shaped individual perceptions of health among older people, taking into account gender aspects. According to the results of multilevel analysis, gender and social factors had a systemic influence on the perception of health (Vafaei & Phillips, 2021; Widana et al., 2021).

2 Materials and Methods

The main purpose of the study is to conduct a qualitative and quantitative assessment of the social determinants of health. To achieve this goal, it is necessary to reach the following objectives:

- To study the theoretical approach to the concepts of health, determinants of health, and social determinants of health (content analysis);
- To develop a methodology for the qualitative assessment of the contribution of social determinants to

the health of an individual (questionnaire method);

- To develop a methodology for quantifying the contribution of social determinants to public health, based on statistical data from the Federal State Statistics Service (correlation analysis);
- To carry out a qualitative and quantitative assessment on the example of one territorial unit (we chose the Republic of Tatarstan);
- To compare the results of the studies (systematization of the results).

Possible methodological limitations are associated with an unrepresentative sample of qualitative analysis and the lack of the necessary statistical indicators for correlation analysis. Taking this into account, a careful selection of respondents was carried out (as a result, we selected people of different age categories, living in different cities and regions of the republic, with different levels of income and health), as well as objective social determinants, the statistics of which are publicly available over the past 5 years. All this allows us to conclude that these methodological limitations did not affect the integrity and validity of the results obtained.

3 Results and Discussions

3.1 Results

Health issues remain a priority for society at different stages of its development. The increase in mortality rates, the trend of mortality growth due to non-communicable diseases, the low life expectancy of the population are factors that actualize the need to develop an effective policy to improve the citizens' health. At the end of the 20th century, the scientific community realized that health was influenced not only by the economic and managerial indicators of the healthcare system but also by social factors.

The first international Health Promotion conference, held in 1986 in Ottawa, was a significant event. The participants focused on the social determinants of health, such as social well-being, the prioritization of the value of individual health, and an individual's awareness of responsibility for their health. Today, the available scientific concepts allow us to structure three strategic approaches to the analysis of the determinants of health: hierarchical, structural, and behavioral.

Hierarchical illustrates the analysis of health indicators at the macro, meso, and micro levels. The structural approach is a comprehensive study of the causes of morbidity and mortality. The goal of studying health issues in the behavioral approach is to systematize the social aspects of a person's life: their living conditions, quality of life, stress level, attitude to their health, etc. Thus, each of the approaches, considering aspects of health, provides for a socio-demographic aspect.

What are the social determinants of health? Within the framework of this study, we will assume that these are the living conditions of people that are formed under the influence of the distribution of material and non-material resources. Health can be viewed at several levels:

- Individual (the health of a particular person);
- Public (the health of the population).

Public health refers to trends and tendencies in changing the health, not of a specific individual, but the population of a certain territory, such as a country, region, city, etc., formed under the influence of several factors. Accordingly, the social determinants of health can also be considered at two levels. It can be stated that they represent a global cause of injustice concerning health.

To implement the goals and objectives in the field of social determinants of health, the WHO created a specialized commission, the purpose of which is to formulate proposals on ways to address discrimination in this area. As early as 2005, the commission identified the following indicators: financial security, social communication, psychological and behavioral causes, level of education, heredity, gender, and nationality.

The consistent and effective activity of this commission has not changed its original objectives for 15 years and strives to minimize the unfair distribution of resources, improve the quality of life of the population, assess the scale and effectiveness of the activities carried out. The 148th session of this committee held on January 22, 2021, was proof of that. Despite successful trends in eliminating discrimination of social

determinants, concern was expressed concerning the following: 1) the COVID-19 pandemic which had contributed to a greater increase in social inequality in the world and each country, 2) inequality in the field of health and rehabilitation issues after coronavirus infection, 3) the negative consequences of climate change, natural disasters and other environmental determinants of health are increasing.

The scientific community usually generalizes the attitude to one's health, care for it, recognition of its value into the term "self-preserving behavior". The word behavior interprets a wide range of aspects of human life that have an impact on health: the choice of certain types of goods and services, the reproductive component, biological heredity, and many others. This behavior can be positive, negative, and protective. While the first two types can be understood based on the names, protective behavior involves immunization, vitamin intake, setting life goals and objectives, and other psychological factors. Summarizing foreign materials, relying on the WHO regulatory documents, we will highlight the social determinants, the calculation, and analysis of which is applied at the macro level:

- Family, upbringing, and living conditions in childhood;
- Socialization and level of education;
- Unemployment and working conditions;
- Income level;
- Psychological well-being;
- Comfort of housing, infrastructure, and transport conditions;
- Lifestyle.

Within the framework of this study, we will rely on a methodology that determines that the main indicator characterizing people's health is life expectancy. The inequality in the level of life expectancy reflects the inequality in the state of health, which is recorded in the international ratings of the effectiveness of health systems (Razymovskaya & Valeeva, 2019). If we look globally, over the past 200 years life expectancy has been growing and we can talk about its twofold increase, but this increase is uneven: for example, in recent years in Swaziland it was 49 years, while in Hong Kong it was 87 years; in the United States of America the life expectancy of population groups with high and low status differs by 14 years, and in London by 17 years.

The hypothesis of the study is to verify by the qualitative and quantitative method the postulate that social determinants, that is, the conditions surrounding a person, have a significant impact on their main value, i.e. health. Is it true that the better the social position of an individual and their family, the better their health? To implement the practical purpose of the study, the interrelation of social determinants and human health was comprehensively assessed with the help of methodology developed by us, which involves qualitative and quantitative assessment:

- Mini-questionnaire dedicated to the issues of individual health, attitude to one's health. It was conducted among residents of the Republic of Tatarstan and included a representative sample of 1081 people of different ages and social groups. The survey was conducted online and included only 15 complex questions, which contributed to the respondents' ability to pass it quickly and, accordingly, attracted a larger number of respondents. The respondents were asked to write a comment on the topic of the study at the end of the survey if they wanted.
- Correlation analysis of indicators of social determinants of health and the life expectancy indicator. As it was written earlier, in our opinion, this indicator is the key in characterizing the health of the population, that is, public health. To compare quantitative and qualitative results, the analysis was carried out on the example of one region of the Russian Federation, the Republic of Tatarstan. We selected the indicators presented in Table 1 and characterizing the social determinants, which were analyzed from 2015 to 2019.

For the general characteristics of the life expectancy indicator and its dynamics in the Republic of Tatarstan, we will build a diagram (Figure 1).

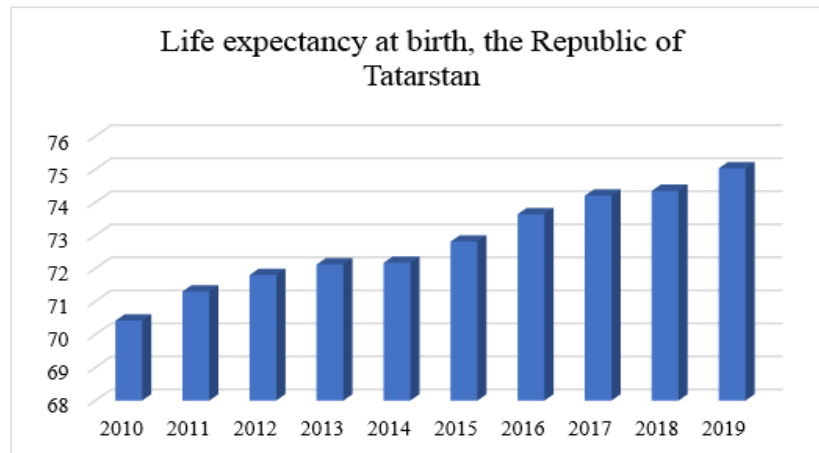


Figure 1. Changes of the life expectancy indicator in the Republic of Tatarstan over time, 2010-2019
Source: Federal State Statistics Service (n.d.)

As can be seen from the figure, this indicator has an upward trend and from 2010-2019, life expectancy at birth in the Republic of Tatarstan has increased by almost 5 years. Let's move on to a comprehensive assessment of the social determinants of health. Let's analyze the results of a qualitative study. According to the gender criterion, among 1,081 respondents there were 622 women and 459 men; according to the age qualification, the gradation was as follows: 0-18 years: 216 respondents, 19-35 years: 563 respondents, 36-55 years: 244 respondents, 56-70 years: 37 respondents, and 71 years and older: 21 respondents.

The place of residence of the majority of respondents was the capital of the republic, Kazan (41%), or other large cities (32%). Other answer options (district center, village, settlement, and others) were distributed approximately equally, which makes the survey results more reliable. To the question "How can you characterize your health at this point?", 61% of respondents gave the answer "satisfactory", 10% "excellent", 25.2% "good", and 3.8% rated their health as "bad". Respondents named the main factors shaping their health: lifestyle (32.5%), external factors (living conditions, education, ecology, etc.) (13%), quality and timeliness of medical care (31.5%), heredity (8%). When asked about the reasons that prevent them from leading a "self-preserving" lifestyle, the survey participants identified the following factors (Figure 2).

Respondents' answers about the reasons impeding them from leading a "self-preserving lifestyle"

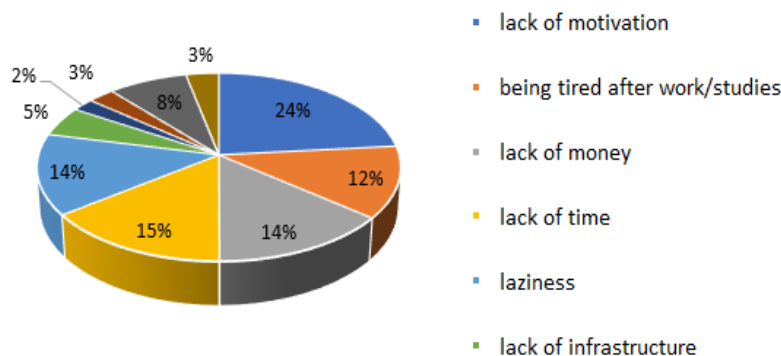


Figure 2. The respondents' answer to the question about the reasons that prevented them from leading a "self-preserving" lifestyle
Source: compiled by the authors

At the same time, being aware of all these factors of "self-preservation", the main one of which is motivation, most of the respondents (77%) believe that the state is responsible for their health. Analyzing the questions specifying the factors in the formulation of the question, it can be stated that only 21% of respondents answered that one's education and its level had an important influence on the level of health, 12% mentioned the importance of the influence of housing conditions, 43% wrote about social security, 81% about income level, 70% about stress level and psychological profile, 80% mentioned the ecological conditions, 41% the immediate environment, and 39% wrote about working conditions. Practically none of the respondents who passed the survey adhered to a healthy lifestyle (only 13%), only a few of them exercised (8%), or controlled the quality of food and water (3%).

Less than a quarter of respondents mentioned undergoing periodic medical preventive examinations 23%.

Systematizing comments after the survey, it should be noted that many respondents were generally aware of the value and their responsibility for their health, but "routine" and other external factors did not allow them to monitor their health. The need to eliminate private medicine and improve the quality of services in budget polyclinics was noted. Let's move on to the analysis of quantitative data. Below we have listed the indicators for which the calculation was made (from 2015 to 2019) and presented the calculations for the correlation coefficient with the life expectancy indicator (Table 1).

Table 1
Indicators for calculating the correlation with the life expectancy indicator in the Republic of Tatarstan over time; the calculation results

	2015	2016	2017	2018	2019	Correlation
Life expectancy at birth	72.81	73.64	74.2	74.35	75.03	
Real accrued wages of employees (in % compared to the previous year)	91.3	98.3	104	106.2	102.2	0.831
Migration growth rates per 10,000 people	9	15	12	7	11	-0.025
Total divorce rates per 1,000 people	3.5	3.5	3.5	3.5	3.4	-0.688
The number of unemployed, thousand people	16.5	14.6	11.8	10.2	10.9	-0.917
The average size of granted pensions	11,963	16,963	12,873	13,727	14,572	0.255
Meat and dairy consumption per capita (per year; kg.)	79	81	81	81	81	0.803
Provision of preschool children with places in educational organizations, places for 1,000 children	688	713	685	694	731	0.562
The total area of residential premises per 1 inhabitant (sq.m.)	25.2	25.7	26.2	26.7	27.3	0.977
Patient population per doctor	89.4	89.5	89.9	90.9	90.4	0.763
The number of cars per 1,000 people	266	272	293	314	287	0.661
The number of people with incomes below the subsistence rate (in % of the total number of population)	7.1	7.5	7.2	7	6.9	-0.477
Average prices on the primary housing market (rubles per square meter)	54,874	52,816	55,906	59,834	68,330	0.805
Use of fresh water (million cubic meters)	720	744	691	663	648	-0.891
The share of air pollutants in the total amount of waste pollutants in (%)	59.8	59.4	61.8	49.9	47.4	-0.711
Emissions of pollutants into the atmospheric air (thousands of tons)	294	338	286	394	290	0.082

Rodnyansky, D. V., Valeeva, G. F., Abramov, R. A., & Makarov, I. N. (2021). Social determinants of human health: Quantitative and qualitative studies. *International Journal of Health Sciences*, 5(3), 649-660. <https://doi.org/10.53730/ijhs.v5n3.2809>

Actual household consumption per capita (rub)	306,501	308,159	319,848	337,088	366,343	0.891
Opening of hospital organizations and facilities (beds), per 100,000 people	0.9	5.1	0	0	1.8	-0.156
Opening of educational organizations, places	2,570	2,023	5,581	5,885	6,135	0.848
New apartments on the market per 1,000 people	8	8.6	8.4	8.4	9.9	0.802

Source: compiled by the authors based on Federal service state statistics

Based on the results of calculating the correlation with the life expectancy indicator, we will build a rating and structure it into a diagram, using the relationships that have a connection-level above 0.7; according to the Chaddock scale, this level is the boundary that characterizes a high correlation. There were 12 such indicators in our calculations (Table 2).

Table 2
Rating based on correlation analysis

Indicator	Correlation
Total divorce rates per 1,000 people	0.68802
The proportion of captured and neutralized air pollutants	0.7171
Patient population per doctor	0.763217
New apartments on the market per 1,000 people	0.802727
Consumption of meat, meat products, and dairy	0.80358
Average prices in the primary market	0.805315
Real accrued wages of employees of organizations	0.831016
Commissioning of educational organizations, places	0.848249
Using fresh water	0.89112
Household consumption per capita	0.891413
Number of unemployed	0.91707
The area of residential premises, on average per inhabitant	0.977763

Source: compiled by the authors.

Thus, it can be stated that the social determinants of health have a significant contribution to its quality and dynamism.

3.2 Discussion

Based on the results of qualitative analysis, it can be concluded that the population is aware of the impact of social determinants on their health, but at the same time, they consider it almost impossible for an individual to contribute to the increase of these social factors, shifting this obligation to the state. The main factors that prevent respondents from leading a "self-preserving" lifestyle concerning health are 1) individual: lack of motivation, time, money, laziness, 2) global: the level of social security, income level, stress, ecology, as well as the immediate environment and working conditions.

Quantitative correlation analysis has shown that the following social determinants affect health: total divorce rates per 1,000 people, the share of captured and neutralized pollutants, the patient population per doctor, the new apartments on the market per 1,000 people, consumption of meat and meat products, dairy, average prices in the primary market, real accrued wages, the opening of educational organizations, the use of fresh water, household consumption per capita, the number of unemployed and the area of residential premises, on average per inhabitant.

4 Conclusion

The theoretical content analysis made it possible to identify the problem that this study was aimed at solving, i.e. the absence of a comprehensive assessment of the impact of social determinants on individual and public health. We proposed to evaluate this effect systematically, using qualitative (questioning residents on health and social determinants) and quantitative (correlation analysis of social determinants with the life expectancy indicator) methods. The results of the study presented by us consist in confirming the hypothesis of the study on the example of the Republic of Tatarstan, which once again actualizes the WHO policy based on the importance of social determinants of health and the value of health in general.

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