

Original article

A methodological approach to organizational evaluation of inpatient, medical social and pharmaceutical care institutions that assist seniors (on the example of the Moscow boarding house for labor veterans)

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Abstract

Objective: This study aims to develop methodological bases of medical social and pharmaceutical care for elderly with systemic diseases in inpatient institutions. **Materials and methods:** The study was done by using system, comparative, logical and retrospective analyses, as well as through content analysis and with the help of the survey method. Based on the research findings, a methodological approach was developed. **Results and Discussion:** This study examined the organizational structure and living environment of the Moscow boarding house for labor veterans and determined the distribution of diagnoses in the population of boarding house residents. The paper also provides information on gender and age differences in cardiovascular morbidity among older adults. **Conclusion:** The paper presents patient satisfaction ratings with the quality of medical, social and pharmaceutical services provided in the examined boarding house against 6 criteria. The satisfaction survey results suggested high quality of care delivery.

Keywords: health monitoring system; inpatient institutions; patients; quality of life.

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Introduction

The aging global population is becoming increasingly recognized as a problem. In the European Union (EU), the percentage of people aged over 65 years in 2018 averaged 19.7%,¹ with the highest shares observed in Italy (22.6%), Greece (21.8%), and Portugal (21.5%).² In general, those aged over 65 years make up more than 10% of the country's population.³ The population of adults in retirement age (65 years or over) is projected to reach 1 billion people in 2025 and then double between 2025 and

2050.⁴ These numbers show that the older population grows on a global scale. Advancing age, however, is a risk factor for a number of chronic diseases, typically cardiovascular or nervous system disorders, and cancer.⁵ Therefore, older people are more vulnerable than younger populations and require high quality medical care to participate in socio-cultural processes. Developed countries, such as China, Japan, South Korea, the USA, the EU member states, provide seniors (65 years or over) with such care through health insurance programs.⁶

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The recent technical and technological progress came with structural changes, in particular to the population health monitoring system.⁷ For example, the recent computerization of medical records helps doctors to save time on paperwork. Another advantage of moving to electronic health records is that healthcare providers can give authorized patients access to their records via online portals, improving patient care and satisfaction.⁸ Technological innovation has affected all levels of medical care. For instance, patients can now schedule their appointments online. This feature enables them to avoid queues that may not be safe during a health crisis,⁹ such as the Covid-19 pandemic. With Internet technology, patients can share their thoughts about healthcare services rendered online and choose their healthcare provider on the grounds of good publicity and recalls, regardless of their place of residence.¹⁰ Despite the fact that older population is less open to change, seniors in many countries increasingly accept healthcare services that are provided online, such as e-pharmacies. Online pharmacies offer an easy and convenient way to purchase drugs over the internet, and they also show if drugs are available for purchase and how much they cost.¹¹

The healthcare applications for Android, iOS, and Windows that provide necessary information about healthcare providers, help users book an appointment with a doctor, order drugs, and more are a new frontier in digital healthcare.¹² The volunteer movement has blended seamlessly into the healthcare reform, and there is also a tendency towards establishing special centers with the view of helping older people harness technology and various applications, including medical ones.¹³

Russia is characterized by a substantial proportion of elderly population, up to 25%, according to Rosstat. The highest shares of seniors are seen in different parts of the Central Federal District: Tula region (30.6%), Vladimir region (29.6%), Moscow region (27.2%), etc.¹⁴ In the 2015 Global Age Watch Index, the focus of which is on older people's quality of life and wellbeing, Russia ranked 65th on health status and no improvement has been seen since the 2015 evaluation. In 2019 Bloomberg Global Health Index, Russia ranked 95th out of 169 countries.

Statistical reports and previous pilot studies reveal that the main reasons behind the low quality of life and wellbeing that older people experience in Russia are decrease in the material wealth of the population and inadequate healthcare spending (3.7% of GDP

on average, which is significantly lower than in European countries). To change the current situation, the Government of the Russian Federation is taking measures to improve the quality of medical and social care for seniors, upgrade older adults' living environments, and create favorable conditions to increase life expectancy. An important step in this direction was the approval of the Strategy of Actions in the Interests of the Citizens of the Older Generation in the Russian Federation until 2025 (Order No. 164-r of the Government of the Russian Federation of February 5, 2016). The Strategy lays out the priority tasks that need to be completed, among which are the improvement of the health care system, the development of gerontological and medical social services, and more.

Most specialists point out the need to improve the physical and psychological health of older people.^{1,3,5,10} As older people who live alone and low-income families may have the limited ability to maintain the necessary level of medical social care at home, particular attention is paid to medical social institutions that provide inpatient services, such as nursing homes, assisted living facilities and boarding houses for labor veterans, houses of mercy, geriatric and gerontological centers.¹¹⁻¹³ According to multiple sources, elderly patients typically have 3 to 5 chronic conditions.^{3,7,8} In the structure of general morbidity, disorders of the circulatory system, musculoskeletal system and digestive system prevail.¹⁵ The major biomedical and pharmaceutical issues were reported to be polymorbidity, polypharmacy, and the need to provide person-centered care. Many studies focus on the analysis and assessment of the quality of social services provided to older adults in inpatient facilities,^{7,8,16,17} whereas the promising directions and methodological foundations of rational pharmacotherapy, gender and age differences in age-related diseases, and healthy aging programs received little attention. For this reason, the evaluation of medical and pharmaceutical care aimed at increasing healthy longevity is an urgent area of research.

This study aims to develop methodological bases of medical social and pharmaceutical care for elderly with systemic diseases in inpatient institutions. The objectives of the study are (1) to analyze administration and maintenance activity of the Moscow Boarding House for labor veterans for compliance with the existing provisions; (2) to examine case histories of senior patients with the view of evaluating and selecting systemic diseases

on the grounds of gender and age; (3) to identify the predominant cardiovascular disorders;(4) to explore the assortment of medicines used for the treatment of the chosen diseases and their supply; (5) to look at treatment regimens and the frequency of prescriptions; and (6) to determine patients' perceptions of their health.

Materials and Methods

The study looks at the Moscow Boarding House for Labor Veterans No. 6, chosen among top 25 medical social institutions based on the results from an independent assessment of inpatient service providers carried out by the Public Council under the Moscow Department of Labor and Social Protection of the Population in 2017.

The study was done by using system, comparative, logical and retrospective analyses, as well as through content analysis and with the help of the survey method. Based on the research findings, a methodological approach was developed.

The study examines the gender- and age-specific cardiovascular morbidity among seniors and their treatment regimens by investigating 178 case histories. The focus was on the most common conditions. The perceived success rate of treatment was 91%. The study investigates the senior citizen demographic during the period between 2015 and 2017 by examining the state demographics reports. It also evaluates the performance of the Moscow's boarding houses for labor veterans during the 2017/2018 period by exploring their performance reports.

Patient satisfaction with the quality of medical social and pharmaceutical care was determined through a survey of 170 boarding house residents, 63 men and 107 women aged 60 years and older (mean age, 79 years). For this, a specially developed questionnaire was used, which included 6 blocks with questions asking about demographic details, health status, physical activity participation, leisure activity engagement, and satisfaction with services. Participants for the survey were selected using purposive sampling. The survey took place in November 2018 - February 2019.

All patients were divided into groups by gender and age, according to the WHO classification (Table 1). Among them, old-age women predominate with the share of 42%. The long-living patients account for 12% of the total sample.

Table 1. Gender and age distribution of senior patients enrolled in Boarding House No. 6, people

Sex Age	Female	Male
60-74 (Elderly)	30 (16.9%)	22 (12.4%)
75 -89 (Old age)	75 (42%)	29 (16.3%)
90+ (Long liver)	4 (2.2%)	18 (10.2%)

Findings are displayed using absolute and relative values. Statistical data processing was performed in Microsoft Excel.

Ethical clearance: The authors declare that the work is written with due consideration of ethical standards. The study was conducted in accordance with the ethical principles approved by the Ethics Committee of I.M. Sechenov First Moscow State Medical University

Results

The Moscow Boarding House for Labor Veterans No. 6 is a state-funded in patient facility that provides residential care and medical services for permanent and temporary (up to 6 months) senior residents and individuals with disabilities aged over 18 years in accordance with Federal Law No. 442-FZ of December 28, 2013 On the Foundations of Providing Social Services to Citizens in the Russian Federation (hereinafter referred to as Federal Law No. 442-FZ). The boarding house is located in an ecologically clean area in the city of Moscow.

The boarding house is a complex multifunctional institution with *two care units*: a residential care unit for seniors with 100 beds and a home of mercy for those who need round the clock care with 310 beds. The campus also has (1) a *health clinic*, staffed with a variety of healthcare professionals to provide customized care (such as cardiologists, orthopedists, therapists, dental surgeons, physiotherapists, occupational therapy practitioners, and more); (2) a *pharmacy* providing 70% of necessary drugs; (3) *agym*, where residents can take individual and group sessions of physical activity; and (4) an *entertainment space*, where residents can engage in recreational and club activities and occupational therapy.

The analysis of administrative and household reports revealed that the examined boarding house met the federal quality standards for residence providing senior living services. The boarding house is equipped with modern medical equipment, furniture and

appliances, creating a favorable living environment for older adults.

The performance of the examined boarding house was assessed from two perspectives: the morbidity and treatment perspective and the patient satisfaction perspective. The case history analysis shows that an average boarding house resident had more than 4 chronic diseases. In the structure of general morbidity, circulatory system disorders account for 78%, musculoskeletal disorders 64%, genitourinary disorders 40%, and gastrointestinal disorders 34%. Since cardiovascular disease was found to be the prevailing condition, it was decided to pick out 139 cardiovascular case histories with the view of determining the common cardiovascular disorders (Table 2), how they were treated, and what patients think about their own health.

Table 2. Cardiovascular disorders found in the examined boarding house residents

Condition	Sex Frequency	Age Group					
		60-74		75-89		90+	
		Male	Female	Male	Female	Male	Female
Coronary heart disease	125	17	11	23	53	4	17
High blood pressure (hypertension)	103	18	11	18	43	3	10
Cerebrovascular disease	47	4	7	10	19	2	5
Dyscirculatory encephalopathy	46	5	8	11	16	2	4
Atherosclerotic cardiosclerosis	45	5	4	6	24	1	5
Stable angina	26	5	0	6	10	2	3

From data in Table 2 above, the most common cardiovascular disorders were coronary heart disease or CHD (89.9%) and hypertension (74.1%). In the 60-74 age group, conditions such as CHD (77% vs 36%), hypertension (81% vs 36%) and stable angina (22% vs 0%) were more common in men than women. In the 75-89 age group, the frequency of cardiovascular disorders was higher among female patients, regardless of the type of the disease. In the 90+ age group, CHD morbidity was 100% among men and 94% among women, while hypertension morbidity was 75% and 55%, respectively.

Let us examine the drug treatment regimens for the most common conditions, CHD (89.9%) and hypertension (74.1%). The prescription analysis revealed that patients with hypertension received all four classes of standard drugs used in hypertension treatment (Table 3): angiotensin converting enzyme (ACE) inhibitors, beta-adrenergic blocking agents or beta-blockers, organic nitrates, and calcium channel blockers (CCBs).

Table 3. Medications given to patients with hypertension in the examined boarding house

Pharmaco-therapeutic group	Class of drugs	Recommended medications for treating hypertension	
		International Nonproprietary Names (INN)	Drugs used in Moscow Boarding House for Labor Veterans No.6
Drugs affecting cardiovascular system	ACE inhibitors	Captopril	
		Perindopril	+
		Lisinopril	+
		Fosinopril	
		Cilazapril	
		Ramipril	
		Enalapril	+
		Enalapril + hydrochlorothiazide	
	Beta-blockers	Atenolol	+
		Metoprolol	+
		Bisoprolol	+
		Nebivolol	+
		Carvedilol	
	Organic nitrates	Propranolol	+
		Nitroglycerin	+
		Isosorbide mononitrate	+
	Calcium channel blockers	Isosorbide dinitrate	+
		Nifedipine (extended-release form)	+
		Amlodipine	+
		Lacidipine	
		Verapamil	

From data in Table 3 above, the examined boarding house uses 3 out of 10 recommended ACE inhibitors, 5 out of 6 beta-blockers, 3 out of 3 organic nitrates, and 2 out of 4 CCBs. In addition to standard drugs, the boarding house utilizes two non-standard ones, namely diltiazem and ivabradine. All drugs prescribed were from domestic manufacturers.

The case history analysis revealed that elderly and old-age patients with hypertension were prescribed the following regimens in decreasing order of frequency

(Table 4): ACE inhibitor plus diuretic, ACE inhibitor plus diuretic plus low calcium channel blocker (hereinafter referred to as SCCB), and ACE inhibitor plus diuretic plus beta-blocker. The least frequently prescribed regimens were diuretic plus SCCB plus beta-blocker, ACE inhibitor plus diuretic + plus SCCB plus beta-blocker, ACE inhibitors plus SCCB, and ACE inhibitor plus diuretic plus angiotensin II receptor blocker (hereinafter referred to as ARB). The regimen choice depended on patient’s age and comorbidities.

Table 4. Treatment regimens for hypertension prescribed in the examined boarding house

Regimen	Frequency
ACE inhibitor + diuretic	30%
ACE inhibitor + diuretic + slow calcium channel blocker	15.55%
ACE inhibitor + diuretic + slow calcium channel blocker + beta-blocker	5.18%
ACE inhibitor + slow calcium channel blocker	4.45%
ACE inhibitor + diuretic + angiotensin II receptor blocker	2.60%

The patient survey revealed that 93% of residents felt better after treatment, 6% had no self-perceived changes in overall health, and 1% noticed their condition worsening. The prescription analysis shows that all anti-ischemic drugs prescribed in the examined boarding house were standard drugs used in CHD treatment (Table 5): antiplatelet drugs, beta-blockers, statins, ARBs, CCBs, and organic nitrates.

Table 5. Medications given to patients with CHD in the examined boarding house

Recommended medications for treating coronary heart disease			Drugs used in Moscow Boarding House for Labor Veterans No.6
Pharmacotherapeutic group	Class of drugs	International Nonproprietary Names (INN)	

Drugs affecting cardiovascular system	Antiplatelet drugs	Acetylsalicylic acid	+
		Clopidogrel	+
	Beta-blockers	Metoprolol	+
		Atenolol	+
		Bisoprolol	+
		Carvedilol	
		Propranolol	+
	Statins	Simvastatin	+
		Atorvastatin	+
	ARBs	Perindopril	
		Enalapril	+
		Lisinopril	+
	Calcium channel blockers	Verapamil	+
		Diltiazem	+
	Organic nitrates	Nitroglycerin	+
Isosorbide mononitrate		+	
Isosorbide dinitrate		+	

From data in Table 5 above, the examined boarding house uses 2 of the 2 recommended antiplatelets, 3 out of 5 beta-blockers, all standard statins, and 3 out of 4 ARBs, and all recommended CCBs and organic nitrates. As in the case with drugs used to treat hypertension, all drugs prescribed were from domestic manufacturers.

The most frequently prescribed regimens for CHD, in decreasing order of frequency, were organic nitrate plus beta-blocker (one third of cases, Table 6), beta-blocker plus CCB, organic nitrate plus CCB, organic nitrate plus beta-blocker plus CCB, and beta-blocker plus beta-blocker. The regimen choice depended on patient’s age and disease severity.

Table 6: Treatment regimens for CHD prescribed in the examined boarding house

Regimen	Frequency
Organic nitrate + beta-blocker	28%
Beta-blocker + calcium channel blocker	18.00%
Organic nitrate + calcium channel blocker	13.00%
Beta-blocker + beta-blocker	5.00%
Organic nitrate + beta-blocker+ calcium channel blocker	14.00%

The patient survey revealed that 91% of patients had a positive viewpoint about the treatment outcomes, 7% had no self-perceived response to treatment, and 2% had a negative viewpoint.

During the study, 170 residents of the boarding house were surveyed about their satisfaction with medical social care delivery. Among them, 37% were 60–69 years old, 46% were 70–79 years old, and 17% were 80 years old and older. Of those surveyed, 42% had a higher education degree, 35% had some college education, and 23% had a high school diploma alone. The majority of respondents reported that they have been living in the boarding house for more than one year: 13% indicated that they have been boarding house residents for 1 to 3 years, 47% for 3 to 5 years; and 27% for more than 5 years. The survey asked respondents to evaluate how well the boarding house was doing in 6 areas (Table 7), 3 of which were established in the Federal Law No. 442-FZ. Each of the items was on a scale of 1–5, with 1 being ‘Not at all satisfied’ and 5 being ‘Very satisfied’.

Table 7. Satisfaction ratings with the quality of medical social care delivery in the examined boarding house

Area of assessment	Score
Providing access to information about services	4.57
Making living comfortable	4.76
Competence and benevolence	4.61
Managing medical and pharmaceutical care	4.39
Organizing physical activity	4.81
Leisure and entertainment	4.72

The relatively high satisfaction scores on ‘Providing access to information about service’, ‘Making living comfortable’, and ‘Competence and benevolence’ suggests the high quality of medical social care in the examined boarding house. It seems that the boarding house is perceived as having comfortable, equipped premises and skilled, friendly staff that provides enough information about the boarding house and its services on their website. The lower satisfaction score on ‘Managing medical and pharmaceutical care’ may stem from the need for some patients to buy additional drugs outside the boarding house, as well as the lack of some healthcare professionals. The high satisfaction with organization of physical activity, leisure, and entertainment suggests the diversity of exercise programs, recreational, social, and cultural activities offered in the boarding house.

Discussion

Older adults are susceptible to a wide range of dangerous diseases.¹⁵ Due to age-associated changes and poor-quality lifestyle, the majority of people may have several organ systems affected by the time

they reach old age,¹⁸ meaning that they are at risk of reducing capacity and mobility. According to estimates from the existing research, 90% of women and 50% of men have at least one chronic disease that impairs their quality of life.¹⁹ According to other studies, every third woman and every fourth man reported having 3 or more chronic diseases.²⁰ In addition to chronic diseases, older adults may suffer from the latent ones.²¹ If not properly informed about the dangers and risks of the latent disease, the patient may find himself in a situation where his health is threatened.^{22,23} In the modern digitalized world, the thousands of medical apps and compact, lightweight instruments are available, such as heart rate sensors, pedometers, and pressure meters, and more that can warn their owner about detected abnormalities.²⁴ Such innovations have the potential to significantly reduce the number of sudden deaths among older adults. Unfortunately, developing countries, such as Russia, are in the initial stage of adoption of digital health tools and it is still too early to talk about them being effective.

In Western countries, senior housing is a commonly seen service.²⁵ Although it is very important to raise awareness of disease risks and prevention methods among older population,²⁶ the awareness campaigns may not be as effective as expected. Assigning individuals who can take care of themselves to in-home care leads to more empty beds, which may be beneficial during the health crisis. For example, during the Covid-19 pandemic, keeping older adults in their own homes helped to minimize their contacts and modify empty spaces for patients with Covid-19.

In addition to health issues, there are also social ones. Some older adults may live alone, therefore virtual consultations and online ordering of medication can be the only options available to them. About a quarter of older adults have disabilities that force them to seek assistance in delivering medicine.²⁷ Particular attention should be paid to rural residents, as their disease awareness may be lower as compared to urban residents. It is also necessary to consider gender differences, since there are evidences that elderly men are more likely to rate their health as poor.²⁵ Considering all the above-mentioned features, there is a need to develop a single approach to full-fledged care to assist older adults in developing countries, such as Russia.

Conclusions

To improve the quality of life and wellbeing of

older population, the Government of the Russian Federation is currently adopting new legislative acts aimed at the improvement of medical social care. This study examined the organizational structure and living environment of the Moscow boarding house for labor veterans and determined the distribution of diagnoses in the population of boarding house residents. The paper also provides information on gender and age differences in cardiovascular morbidity among older adults. The types of drugs used in the boarding house and the frequency of treatment regimens were highlighted. In addition, the paper presents patient satisfaction ratings with the quality of medical, social and pharmaceutical services provided in the examined boarding house against 6 criteria. The satisfaction survey results suggested high quality of care delivery.

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Authors's contribution:

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Study design: SS, OZ, NC, and SC

Data gathering: NB, OZ, and SC

Writing and submitting manuscript:NB, SS, OZ, NC, SC

Editing and approval of final draft:NB, SS, OZ, NC, SC

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