TRENDS OF MATERNAL MORTALITY IN UKRAINE AND IT'S MAIN CAUSES

N. Ya. Zhylka¹, A. V. Kudria² (Kyiv, Ukraine)¹Shupyk National Medical Academy of Postgraduate Education;²The Committee On Healthcare Issues of the Verkhovna Rada of Ukraine Secretariat

The indicator of maternal mortality (MS) is considered to be an integrated indicator of women's reproductive health, which reflects not only the state of general health, the quality of medical care for pregnant women and the level of organizational work of maternity hospitals, but also the interaction of these factors with economic, environmental, sanitary, social, hygienic and other factors. Today, the indicator of maternal mortality is an emerging problem of the domestic health care system: according to the Ministry of Healthcare of Ukraine in 2016, 77 women died, whose death is associated with pregnancy. The maternal mortality rate is 14.5 per 100,000 live births. According to the United Nations Maternal Mortality Estimation Inter-agency Group (MMEIG), which takes into account the fertility rate and the economic situation of the country, the ratio of MM in Ukraine is 5 times (32 per 100 thousand live births in 2010) higher than in the European Union (6 per 100 thousand live births in 2010). There is a negative stable tendency of the maternal mortality level in Ukraine, the main reasons for which are insufficient access to family planning services; high level of pathology of pregnant women; an imperfect system for standardizing medical care; insufficient monitoring of maternal deaths; insufficient state support of the planning and birth of a child. The implementation of the Global Strategy and the goal of stopping maternal mortality by 2030 will contribute to the reduction of MM: to overcome inequalities in the availability and quality of health services in the areas of reproductive health, maternal and newborn health; to ensure universal coverage of health services for comprehensive health and sanitary assistance in reproductive health; to overcome all causes of maternal mortality, reproductive and maternal morbidity and related disabilities; to strengthen health systems by collecting reliable data in order to respond to the needs and priorities of women and girls; to ensure accountability for improving of the quality of care and justice.

Key words: maternal mortality, standardization, pathology, family planning, WHO, trends, globalization, strategy.

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V. HORACHUK, V. BUGRO (Kyiv, Ukraine)

RESEARCH OF GEOGRAPHICAL ACCESSIBILITY OF SECONDARY HEALTH CARE TO THE POPULATION IN SOME REGION OF UKRAINE

Department of Health Management (Chair – MD V. Mykhalchuk) Shupyk National Medical Academy of Postgraduate Education <gorachuk@ukr.net>

We studied the geographic accessibility of secondary health care excluding emergency interventions. Methods of the system approach and system analysis, medical-statistical, medical-geographic were used; sectoral statistical forms No. 20 for 2015 (4 units), Internet resources of health departments (3 items), satellite cartographic data were studied. It was found that the arrival time of the car on the bypass routes from settlements to central district hospitals in regions ranging from 1 hour 10 min. to 2 hours 21 min. unlike the standard time delivery of patient is 60 min. This limits the geographical accessibility of secondary health care were noticed to 4942 residents of Ivano-Frankivsk, 6874 people in Cherkasy and most of the population of Chernigiv region. Increasing accessibility might possible through the joint action of local communities united to restructure the existing network of secondary health care, the creation of sub-clinical and diagnostic centers, specialized hospitals and consolidated their offices.

Key words: population, secondary health care, geographical accessibility, local communities.

Introduction. In the “Regulations on access to health care” adopted by the 40th World Medical Assembly in Vienna (Austria) in September 1988, territorial

(geographical) accessibility was defined as one of the components of the availability of medical care. The strategic goal of the health care system, declared by the state policy in the sphere of Healthcare of Ukraine, is provision of accessibility and quality of health care [4, 10].

However, a sufficiently large area of the territory of Ukraine (603,628 km²), features of the geographic location and landscape of separate territories, the number and density of the population and the location area of health care resources have an impact on the geographical accessibility of health care to all who need it [1, 3].

The raised problem is particularly urgent during the health care reform, when the separation of the health care sector into primary (GP), secondary (specialized), tertiary (highly specialized), emergency, hospice care and rehabilitation was made [6, 8].

In particular, the approach of medical care to the consumer (patient) within the competence of general practitioners is provided by the creation of primary health care institutions based on family medicine during the reformation.

Reformation of emergency medical care has allowed to improve timeliness of care for patients requiring this type of medical intervention. The centralization of the emergency medical care management, by integrating the existing structural ambulance units into a general network with regional budget funding, has allowed, in particular, to ensure the arrival of healthcare worker on the scene of the accident or the occurrence of the emergency within 10 min. in urban areas and 20 min. in the countryside. It was decided to send emergency medical care to the place where the patient is located, from the nearest point of their deployment and, if necessary, hospitalization in the nearest suitable medical institution [9].

However, the provision of secondary (specialized) medical care in the absence of emergency indications is still provided by territorial principle – in the central district hospitals of the appropriate administrative areas that do not always meet the criteria of geographical accessibility in the time dimension [3, 6]. At the same time, in Ukraine, the legislation on the decentralization of public administration was adopted [2, 5, 7], which could be used for changing the configuration of the network of secondary health care institutions in order to increase the availability of secondary health care by geographical criterion.

Purpose of the study. Purpose of the study was to research the geographic accessibility of secondary health care, excluding emergency interventions (in Ivano-Frankivsk, Cherkasy, Chernigiv regions located accordingly in the west, in the centre and north of Ukraine) considering regional features of territorial access to health care.

Materials and Methods. Materials of the research are represented by the sectorial statistical accounting reporting forms № 20 of 2015 (4 units); the satellite mapping data (<https://www.google.com.ua/maps/>); Internet resources of health departments of Ivano-Frankivsk, Cherkasy, Chernigiv regions (3 units). This made it possible to obtain information on the number of people in Ukraine and the regions studied, the administrative characteristics of the regions, the network of medical institutions, the routes of communication, the distances between settlements and the central district hospitals of the respective administrative areas, arrival time from each locality to the administrative center by car.

Classical methods of social medicine were used: system approach and system analysis, health statistics, medical-geographical. Methods of the system approach and system analysis were used for ensure the complexity of the research, to identify and analyze the problem and to determine approaches to its solution. The medical-statistical method was used for calculation and comparison of absolute and relative values. The medical-geographic method was used for studying the spatial characteristics of the territories of the studied regions.

Results and discussion. Some demographic and administrative characteristics of the regions under study (Table) were established by the analysis of research materials. Their distinctive features of geographical location and relief were identified. The actual distance between each locality of appropriate administrative territory and administrative center on existing road routes with the possible minimum time of arrival were defined.

**Some demographic and administrative characteristics
of regions under study (2015)**

Region	Population (human)	Population density (persons per km ²)	Number of administrative districts	The number of locality/including rural
Ivano-Frankivsk	1 379 370	99,2	14	804/765
Cherkasy	1 256 328	59,7	20	855/824
Chernigiv	1 058 284	33,25	22	1533/1488

Larger population was established in the Ivano-Frankivsk region in comparison to other studied regions. The highest density of population, the smallest area of the region and the least number of settlements were determined there.

The opposite situation is observed in the Cherkasy and Chernigov regions. This represents a significant dispersal of the population in Cherkasy and, especially, in Chernigiv region, on the territories, that increases the downside risks of geographic accessibility of health care.

The Ivano-Frankivsk region is located in the Western part of Ukraine, at the junction of the East European Plain and the Carpathian Mountains. The area of the region is 13 928 km², or 2.3 % of the country, where 1 379 370 people lived in 2015, or 3.2 % of Ukraine's population (12th place among the 25 regions). The population density was 99.21 persons/km². It is considered that the main factor influencing the geographic accessibility of health care to people in this region is the relief features of the southwest of the territory occupied by the Carpathian Mountains: in Verkhovyna district, located in the highest part of the Ukrainian Carpathians, only 30 079 people lived, the population density was 23.98 persons/km². At the same time population varied from 105 940 people in Kolomyia district to 44 866 person in the Halych district with a corresponding density of 103.22 persons/km² and 85.2 persons/km² in districts of the Podniestrovya (the forest-steppe part) and Prykarpattia (piedmont plains, more favorable in relief).

The Cherkasy region is located in the central forest-steppe part of Ukraine. The area of the region is 20.9 thousand km², or 3.46 % of the entire state territory. Number of residing population in the region was 1 256 328 persons, or 2.9 % of the population of Ukraine (15th place among all regions) in 2015. The average density of population was 59.7 person/km².

As follows from the results of the analysis of the obtained data, features of the relief, differing relative to the shore of the Dnieper River that separates the region on the left and the right bank, have an impact on the character of settlement in the Cherkasy region. The left bank is located in the Dnieper Lowland, it is boggy in some places. Most of right bank areas are located on the Dnieper Upland, with the highest point 275 meters above the sea level. The terrain on the right bank is hilly, with lots of rivers, ravines and gullies, and is swamped directly adjoining to the Dnieper River.

Population was mainly small in areas of the left bank (there is 37 200 people in Drabiv district, 42 080 people - in Zolotonosha district, 41 476 people - in Chornobai district) and the low-density settlement is observed (accordingly 31.9, 28.7 and 27.5 persons/km²).

The population density in the right-bank of district of the region increased with increasing distance from the lower reaches of the Dnieper: there is 45 000 person in Korsun-Shevchenkivskyi district, the density of settlement is 50 persons/km²; accordingly there is 43 000 people and 48 persons/km² in Horodysche district and there is 28 058 people and 40.5 persons/km² in Kamianka district. The highest population density was observed in Monastyryshe (51.9 persons/km², the number of population is 51 900 person) and in Chyhyryn district (56.4 persons/km²; 35 422 inhabitants), which are most distant from the Dnieper River.

The Chernigiv region is located in the northern part of Ukraine, on the territory of the East European Plain with appropriate relief. The area is 31,911 km², or 5.29 % of the total area of the country. This is one of the biggest regions of Ukraine, but at

the same time, it is one of the most sparsely populated area (22nd place by the number of population among 25 regions). Geographical factors influencing the quantity and density of the settlement of inhabitants of Chernigiv region are a significant share of forests (20.0 % of the territory) and a large number (1200) of rivers, swampy, rugged gullies and ravines areas.

Bakhmach (there is 45 057 people, the population density is 31.8 persons/km²), Mena (there is 39 946 people, the population density is 28.1 persons/km²), Bobrovytsia (there is 33 560 people, the population density is 24.6 persons/km²) and the least – Novhorod-Siverskyi (there is 13 757 persons, population density is 16 persons/km²) are the most populous areas in the context of administrative territories with a relatively high density of settlement for this region.

The results of the analysis of satellite map data allowed to establish the most problematic localities of administrative territories of researched regions by the criterion of geographical accessibility to healthcare facilities in which secondary health care is provided to patients with not emergency pathology. Normative documents include the following list of symptoms and syndromes: sudden fever, accompanied by a cough, runny nose, sore throat; headache, dizziness, weakness; pain in the back, joint pain associated with radiculitis, osteochondrosis, arthritis, arthrosis; high blood pressure; a painful syndrome in cancer patients; alcohol, narcotic, withdrawal abstinence syndrome; exacerbation of chronic diseases (listed) in patients under the supervision of a family doctor or local doctor [9].

Accessibility was determined by comparison of the standard arrival time (up to 60 minutes) from settlements to central district hospitals with actual ones.

It is established that the Verkhovyna district is the most problematic administrative district in the Ivano-Frankivsk region. There are necessary arrival time from the areas of Bila Rica, Burkut, Goloshina, Literotna, Grinyava, Zelena, Probinovka, Senkovsky, Cheremoshna, Yablunitsa, Yavirnik, Stovpni ranged from more than one hour to two hours 21 min. and exceeded the standard. In the amount of 4942 inhabitants of the district are under threat of late receipt for secondary medical care in case of acute or exacerbation of chronic diseases.

Zhuravka in Horodyshche district, Leninskoye in Drabiv district, Zatyshok in Uman district, Mezheryskyi Huta, Huta Stanislavchitskaya, Kumeyko, Shelepuhi, Zakrevki, Yasnozore are problem in Cherkasy region. The time of arrival to these settlements exceeds one hour, and the number of population in the area of geographical risk is 6874 humans.

Only some areas were identified settlements in the Chernigiv region, the time of the journey from which to the district hospitals corresponds to the established standards. The fluctuations of the really necessary time for the delivery of patients from the most of settlements to the district hospitals were higher than in the other areas under study and amounted to one hour 25 min. – two hours 15 min.

The results confirm the results of the studies of 2007–2010 [3].

The new legislation presents opportunities to solve the problem of geographical accessibility of secondary medical care to the population of Ukraine. Analysis of the data [5, 7] shows that the country has a basis for decentralizing power with the formation of local communities. Communities are given more powers and responsibility for organizing the provision of services to the population, including medical care. The law establishes the right of local communities to interactive cooperation. They can create joint infrastructure facilities for communal property, including health care facilities. Local communities are well aware of the geographic and administrative characteristics of the territory of their population and are interested in their medical needs satisfaction. That is why they can plan to restructure the existing network of central regional hospitals in the region. Subregional clinical diagnostic centers for specialized medical care, specialized hospitals and specialized departments of integrated functioning central district hospitals can become possible infrastructural facilities for several local communities with common borders. This will ensure the availability of secondary

health care to the public. Local communities also need to solve the problem improving the state of motorways and providing medical transport with petrol and oil.

Conclusions. 1. The problem of geographical access of secondary medical care to the population remains relevant in the regions of Ukraine, despite the implementation of health reforms. 2. The solution to this problem requires attention to the diversity of landscapes and local features of the regions' territories when planning the reform of the network of secondary health facilities. 3. The possibilities of successful solution to the problem of the geographical availability of secondary health care are founded in the law about the decentralization of power in Ukraine, since the maximum powers and responsibilities for rendering of medical services to the population are transferred to local communities which are most aware about features of these territories and are interested in secondary health care satisfaction of residents.

Perspective of future scientific researchers are the working out of technologies for planning the network of health facilities in accordance with the new opportunities presented in the legislation of Ukraine, with attention to the local geographical and administrative characteristics.

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ДОСЛІДЖЕННЯ ГЕОГРАФІЧНОЇ ДОСТУПНОСТІ ВТОРИННОЇ МЕДИЧНОЇ ДОПОМОГИ НАСЕЛЕННЮ В ДЕЯКИХ РЕГІОНАХ УКРАЇНИ

В. В. Горачук, В. І. Бугро (Київ)

Вивчали географічну доступність вторинної медичної допомоги населенню у випадках, що не потребують екстрених втручань. Використано методи системного підходу та системного аналізу, медико-статистичний, медико-географічний; опрацьовані галузеві статистичні форми № 20 за 2015 р. (4 од.), інтернет-ресурси департаментів охорони здоров'я деяких регіонів України (3 од.), супутникові картографічні дані. Встановлено, що час прибуття автомобіля по об'їзних шляхах з населених пунктів до центральних районних лікарень коливається в регіонах від 1 год 10 хв до 2 год 21 хв при нормативі доставки хворого до 60 хв, що обмежує географічну доступність вторинної медичної допомоги для 4942 жителів Івано-Франківської, 6874 осіб – Черкаської та більшої частини населення Чернігівської областей. Підвищення доступності можливе спільними діями об'єднаних територіальних громад шляхом реструктуризації мережі установ вторинної медичної допомоги із створенням субрегіональних клініко-діагностичних центрів, укрупнених спеціалізованих лікарень та їх відділень.

Ключові слова: населення, вторинна медична допомога, географічна доступність, територіальні громади.

ИССЛЕДОВАНИЕ ГЕОГРАФИЧЕСКОЙ ДОСТУПНОСТИ ВТОРИЧНОЙ МЕДИЦИНСКОЙ ПОМОЩИ НАСЕЛЕНИЮ В НЕКОТОРЫХ РЕГИОНАХ УКРАИНЫ

В. В. Горачук, В. И. Бугро (Киев)

Изучали географическую доступность вторичной медицинской помощи населению в случаях, не требующих экстренных вмешательств. Использованы методы системного подхода и системного анализа, медико-статистический, медико-географический; обработаны отраслевые статистические формы № 20 за 2015 год (4 ед.), интернет-ресурсы департаментов здравоохранения некоторых регионов Украины (3 ед.), спутниковые картографические данные. Установлено, что время прибытия автомобиля по объездным путям из населённых пунктов в центральные районные больницы колеблется в регионах от 1 ч 10 мин до 2 ч 21 мин при нормативе доставки больного до 60 мин, что ограничивает географическую доступность вторичной медицинской помощи для 4942 жителей Ивано-Франковской, 6874 жителей Черкаской и большей части населения Черниговской областей. Повышение доступности возможно совместными действиями объединённых территориальных общин путём реструктуризации сети учреждений вторичной медицинской помощи с созданием субрегиональных клиничко-диагностических центров, укрупнённых специализированных больниц и их отделений.

Ключевые слова: население, вторичная медицинская помощь, географическая доступность, территориальные общины.