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Medical and Social Significance of Water Supply, Sanitation and Hygiene in Human Activity

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Annotation: This article presents the analytical survey of scientific publications by native and foreign authors' in the field of studying the role of water supply, sanitation and hygiene in reduction of water-related diseases and rise in the living standards and quality of life of population. The reviewed sources revealed that measures in the field of water supply, sanitation and hygiene are the most cost-effective way to prevent most of the devastating burden of water-related diseases, as well as they play a direct role in ensuring the right to sufficient living standards and rising the quality of life of population.

Keywords: water supply, sanitation, hygiene, water-related diseases, living standards, quality of life

Introduction.

Sustainable development of national economy depends on availability and condition of water resources [1]. Water supply, sanitation and hygiene are basic human needs that influence on health, the living standards and quality of life of population [2-4]. Unimproved hygiene and inferior sanitary conditions, as well as insufficient and unsafe drinking water are responsible for 7% of the total disease burden and 19% of child mortality worldwide [5-6].

According to the World Bank [7-8], low water supply, sanitation and hygiene lead to about 675,000 cases of premature death every year; annual economic losses of some countries are estimated in up to 7% of GDP (Gross Domestic Product). In view of this, the objective was a review of literature that deals with study of the role of water supply, sanitation and hygiene in reduction of water-related diseases and rise in the living standards and quality of life of population. Methods. The publications of findings of both foreign and domestic researchers were analyzed. Literature sources were searched in the PubMed, Scopus, GoogleScholar и eLibrary databases. Out of 123 literature sources, 48 were selected as the analytical material of the article. The depth of the search was from 1972 to 2017. Criteria for the inclusion of publications in this review are the following: publications in Russian and English languages that are in open full-text access and bear statistically verified conclusions. Exclusion criteria are as follows: summary reports, newspaper articles and personal messages.

Results and Discussion.

1. Basic Concepts. Medical and Social Significance of Water. Water is a key factor in human health [9-12]. Almost all of its sources are exposed to anthropogenic and technogenic influence of varying intensity [9]. Tap water is used for different purposes and the range of its

application is expanding with increasing social standards of living. It is used for drinking, bathing, washing, watering plants or lawns, replenishment of swimming pools and many other activities that expand as the country develops. Alternative water use imply different requirements to water characteristics, in other words, when it comes to drinking water, its quality is important but it is of less importance when water is used for other purposes [3]. In terms of physical, chemical and bacteriological parameters, the water of acceptable quality, which is safe to drink and can be used in cooking, is defined as drinking water. According to common values, the rate of daily water consumption is 2 liters per person weighing 60 kg. [14].

However, the actual water consumption varies with climate, physical activity and culture. When the air temperature exceeds 25 ± C, water consumption rises sharply. As compared to the adult population, infants and children consume more water [5]. National water consumption standard in rural areas is 30 liters per capita per day and 48%-44% access to safe water and sanitation [6]. Water supply means 30 liters of safe water per capita per day within 250 meters where one point serves about 250-500 people; safe water is water that meets national requirements for drinking water quality [7]. Water supply includes the delivery of water for domestic use, apart from irrigation or stockbreeding. Sanitation is used in a strict sense of sanitary disposal, except for other environmental health activities such as management of domestic solid waste and surface drainage [8]. Access to water is defined as “the presence of water, at least 20 liters per person per day from a source within a kilometer from the user” [19]. Improved drinking water sources are "a drinking water source or a delivery point, which protects the water source from outside contamination, particularly faeces, by virtue of its construction and design" [20].

According to the World Health Organization [9], water contains 13 thousand potentially toxic elements. Over the past few decades, the problem of contamination of water sources, such as lakes, rivers and ground water, has become very acute [2]. Harmful substances can accumulate in the body causing a variety of diseases up to malignant neoplasms [2,3-7]. The direct health benefits from the improvement of water supply and sanitary conditions in rural areas are well known. These activities involve the safe disposal of human waste, efficient use of water for sanitary purposes (washing, cleaning, etc.) and satisfaction of basic needs with quality drinking water [7,8]. High-quality water supply exerts a considerable impact on reduction of water-related diseases and rise in the living standards and quality of life of population [1,2.3].

Medical and Social Implication of High-Quality Drinking Water Supply When drinking water is not available in the home, the time required to collect the water is an important factor that determines whether a households can receive a sufficient amount of water for domestic use [2-3]. When the time required to collect drinking water is 5 to 30 minutes, the amount of water collected is fairly constant and is suitable to meet the basic needs of about 20 liters per person per day [1]. Early studies have shown that if the total time spent on water collection exceeds 30 minutes, people tend to collect less water to the detriment of their basic needs [29-30]. In terms of time or distance, access to water has influence on the risk of disease. A study conducted by Wang and Hunter [2] showed a significant increase in gastrointestinal diseases in people living far away from the water source (OR = 1.45; 95% CI = 1.04-1.68). Millennium Development Goal No.7 (MDG 7) was "to halve the proportion of people without continuous access to safe drinking water and basic sanitation by 2015 (compared to 1990 level)" [2,3]. This was supposed to be achieved by increasing the

coverage of population with access to safe and reliable water and sanitation services from 40% to 55% by 2009, and thereby to reduce the incidence of diseases transmitted through water and related to sanitation by about 50% [4]. While the global progress in achieving these objectives is different, 147 countries have reached the target on drinking water, 95 countries have solved the problem of providing people with sanitation facilities and 77 countries have implemented the one and the other [5]. The difference between rural and urban areas around the world has declined, but a significant gap still remains. Throughout the entire world the proportion of rural population without access to improved drinking water sources has fallen by more than half, from 38% in 1990 to 16% in 2015 [3]. At the present time, 96% of urban population and 84% of rural one use improved drinking water sources. In addition, four out of five people living in urban areas have access to the tap drinking water, while in rural areas only one in three people can use this service [5].

Water safety is also the integral element of achievement of Sustainable Development Goals (SDG). Sustainable Development Goal No.6 (SDG 6) aims to "ensure accessibility and sustainable management of water resources and sanitation for everyone" and includes six engineering purposes relating to drinking water, health affairs, wastewater management, water use efficiency, integrated water resources management and aquatic ecosystems protection [6]. WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation has monitored drinking water and sanitation since 1990 and cooperated with partners of UN-Water to develop a basis for integrated monitoring of water and sanitation. 2. The Role of Sanitation and Hygiene in Preventing WaterRelated Diseases. Since 1990, the worldwide share of rural population without access to improved sanitation facilities has decreased by nearly a quarter. In 2015, the proportion of people who resort to open defecation was reduced from 38% to 25% in rural areas [5]. And still, almost half of people living in rural areas do not have improved sanitation facilities, and one in four people resorts to open defecation as before. In contrast, in urban areas only 18% of people have no access to improved sanitation facilities. People in rural areas, as well as those who belong to poor and marginalized groups, much less often have access to improved water sources and sanitation facilities. They are also much less likely to use tap water in dwellings. The United Nations Organization [5] reports that the gradual elimination of inequalities in access to public services and their quality will remain an important area in the agenda for the period after 2015. Adequate sanitation facilities, along with proper hygiene and safe water, are central to good health, and social and economic development [7]. Gastrointestinal diseases transmitted through water bring great economic losses, such as the billions of hours of disability among adults, as well as economic and healthcare costs [8-9].

The main factors that reduce the relevance and impact of gastrointestinal diseases in the field of public health are good sanitation conditions, abundant availability of good quality water, adequate disposal of human and animal excrements and education in sanitation and hygiene. Some literature assumes [4] that the good quality of drinking water is a necessary but not sufficient condition for elimination of gastrointestinal diseases as a public health issue. Furthermore, the amount of water used for personal and household hygiene is more important than the quality of drinking water during diarrhea [1]. This means more frequent bathing and hand washing, more thorough washing of food products, as well as the inner cleanliness [15]. For example, washing one’s hands with soap reduces the risk of endemic diarrhea, as well as respiratory and skin

infections, while face washing prevents trachoma and other eye infections. A systematic review of the literature [4] confirmed that the hygiene, especially hand washing in childbirth and postpartum period, also contributed to reducing newborn mortality. Dr. Haldan Mahler said: "The number of water taps per 1,000 people is a better indicator of health than the number of hospital beds" [15].

The diseases associated with poor sanitation particularly correlate with poverty and infancy [6]. Human feces are the most dangerous to health. One gram of fresh feces from an infected person can contain about 106 viral pathogens, 106-108 bacterial pathogens, 104 protozoan cysts and oocysts and 10-104 helminth eggs [3]. Systematic reviews [4-6] show that improvement of sanitation may reduce the level of diarrheal disease by 32% -37%. Unfortunately, the current policies in most areas of the world focus on drug treatment. In contrast to good sanitation, it is not the preferred solution because it is much more expensive [7]. Improvement of sanitation also brings some social and economic benefits. The latter include lower healthcare costs, fewer days lost from work or school due to illness or caring for a sick relative, time-saving and convenience [7]. In total, the prevention of diseases related to water and sanitation can save about $7 billion a year as health system costs; the cost of avoided deaths also adds to this amount 3.6 billion dollars per year [8].

Conclusion. Measures in the field of water supply, sanitation and hygiene are the most cost-effective way to prevent most of the devastating burden of water-related diseases, as well as they play a direct role in ensuring the right to sufficient living standards and rising the quality of life of population. Based on the above, solving problems in the field of sustainable development in the 21st century, such as human development, creating livable cities, counteraction to climate change, and ensuring food and energy security, is impossible without improvement of the control system of water resources and ensuring the access to reliable services of water supply and sewage system.

REFERENCES

1. Toguzbayeva K.K., Myrzakhmetova Sh.K., Niyazbekova L.S., Zhunistayev D.D., Seiduanova L.B., Sailybekova A.K., Orakbai L.Zh., Smagulov A.B., Sumenova K.A., Sabirova G.R. Gigienicheskaya otsenka vliyania kachestva khozyaistvenno-pitievogo vodosnabzhenia na zdorovye selskogo naselenia Almatinskoi oblasti [Sanitary audit of effect of utility and drinking water system quality on the health of rural population in Almaty region] // Vestnik KazNMY. – 2014. – No.3-3.
2. Borzunova E.A., Kuzmin S.V., Akramov R.L., Kiyamova E.L. Otsenka vliyaniya kachestva vody na zdorovye naseleniya [Assessment of the impact of water quality on public health] // Gigiyena i sanitariya [Hygiene and sanitation]. – 2007. – No.3. – P. 32-34. [in Russian]
3. Vasilyeva M.V., Natarova A.A., Melikhova Y.P. Gigiyenicheskoye znacheniye pityevoy vody v zhiznedeyatelnosti cheloveka [Hygienic significance of drinking water in human life] // Simvol nauki [Symbol of Science]. – 2016. – No.3. – P. 180-181. [in Russian]
4. Ivanov A.V., Tafeyeva Ye.A., Davletova N.Kh., Vavashkin K.V. Sovremennye predstavleniya o vliyanii kachestva pityevoy vody na sostoyaniye zdorovya naseleniya [Modern ideas about the impact of drinking water quality on public health] // Khimiya i ekologiya [Chemistry and Ecology]. – 2012. – No.3. – P. 48-53. [in Russian]
5. Bartram J., Cairncross S. Hygiene, Sanitation, and Water: Forgotten Foundations of Health // PLOS Medicine. – 2010. – No.7(11). – e1000367.

6. Норова М.Б., Олимова Д.В. Соғлом болалар юз жағ морфометрик ўлчамлари олтин пропорция қонунига мутаносиблиги ва симметриклигини аниқлаш. // Тиббиётда янги кун. - 2020. - № 2. – Б. 30.
7. Хабибова Н.Н., Олимова Д.В., Норова М.Б. Лечение начальных форм кариеса методом инфильтрации. // Тиббиётда янги кун. с2020. - № 4 (32). – Б. 290-292
8. Habibova N.N., Olimova D.V. Features of clinical manifestations, diagnostics and treatment of glossalgy. // New Day in Medicine. –2021. - № 6 (38). – P. 96-98
9. Олимова Д.В. Актуальность вопросов диагностики и лечения глоссалгии в клинике терапевтической стоматологии. // ОБРАЗОВАНИЕ И НАУКА В XXI ВЕКЕ. –2021. - № 20 (том 4). – С. 172-176
10. Habibova N. N., Olimova D. V. DENTAL DISEASE UNDER GLOSSALGY. // ”Ozbekistonda ilmiy-amaliy tadqiqotlar”. Toshkent. – 2022, № 36. – B. 18-19
11. ХАБИБОВА Н.Н., ОЛИМОВА Д.В. THE EFFICIENCY OF GLOSSALGIA AND STOMATALGIA COMPLEX TREATMENT. // Электронный научный журнал «Биология и интегративная медицина» № 6 – ноябрь-декабрь (53) 2021. – С. 374-379
12. Олимова Д.В. СИНДРОМ ЖЖЕНИЯ ВО РТУ: ОБЗОР ЕГО ДИАГНОСТИЧЕСКОГО И ТЕРАПЕВТИЧЕСКОГО ПОДХОДА. // THE BEST INNOVATOR IN SCIENCE – 2022. – С. 37-43
13. Olimova D.V. DIFFERENTIAL DIAGNOSTIC METHODS GALVANOSA AND GLOSSODINIA IN AMBULATORY CONDITIONS. // GALAXY INTERNATIONAL INTERDISCIPLINARY RESEARCH JOURNAL (GIIRJ) ISSN (E): 2347-6915 Vol. 10, Issue 1, Jan. (2022). – P. 524-526
14. Olimova D.V. A COMPLEX APPROACH TO GLOSSALGIA TREATMENT BASED ON THE CURRENT DATA ON THE SPECIFICITY OF ITS ETIOPATHOGENESIS. // “BILIG – ILMIY FAOLIYAT” nashri http://bilig.academiascience.or - B. 141-146
15. Olimova D. V. USE OF MODERN METHODS IN THE TREATMENT OF GLOSSALGIA // Journal of Advanced Research and Stability ISSN: 2181-2608. - Special Issue | 2022. P – 197-200
16. Олимова Д. В. ДИАГНОСТИКИ И ЛЕЧЕНИЯ ГЛОССАЛГИИ И ГЛОССОДИНИИ // Journal of Advanced Research and Stability ISSN: 2181-2608. - Special Issue | 2022. P – 147-152