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TECHNIQUES OF ENSURING THE DURATION AND QUALITY OF BIOLOGICAL LIFE AT THE PRESENT STAGE OF THE HUMANITY DEVELOPMENT

Peer-reviewed materials digest (collective monograph) published
following the results of the XCII International Research and Practice
Conference and III stage of the Championship in Medicine and
Pharmaceutics, Biology, Veterinary Medicine and Agriculture
(London, November 05-November 10, 2014)



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In the digest original texts of scientific works by the participants of the XCII International Scientific and Practical Conference and the III stage of Research Analytics Championship in Medicine and Pharmaceutics, Biology, Veterinary Medicine and Agriculture are presented.

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HYGIENIC SUBSTANTIATION OF BOTTLED WATER USEAGE AMONG RURAL AND URBAN POPULATION

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Introduction. Directive 2000/60/EC of the European Union sets out fundamental principles to guide sustainable water policies. Directive comprises all water bodies (surface and ground waters) including all inland waters, transitional waters and coastal waters up to one nautical mile. Aims of the Directive are protecting and improving water resources and preventing the deterioration of quality; ensuring a water use which is sustainable, balanced and fair for long-term protection of water resources; protecting aquatic ecosystems and ensuring their improvement through special measures such as ensuring reduction in the discharge of priority hazardous substances or abolishing their use; reducing the pollution of ground waters and preventing their further pollution and contributing to mitigation of the impacts created by floods and droughts. Main objective of the Directive is to prevent deterioration of the status of all surface water bodies and reach «good status» for surface waters is ensured when they reach «good ecological status» and «good chemical status». Problem of providing drinking water guaranteed quality is widely inspread not only for European population, but also in many regions of Ukraine especially in the rural settlements of Dnepropetrovsk region. Mostly, purification of drinking water is acute problem in rural areas, where negative tendency to select filters by peasants is carried out on the point of view “quality of drinking water depends on the numerous indicators, change under the influence of drinking water purifiers”.

Materials and Methods. In our study was used standardized “Questionnaire survey about quality of piped drinking water, which enters to the building (apartment)”, which contained 25 questions. In the sociological survey were participated 150 respondents (75 – peasants and 75 city – dwellers). The basic criteria were: age of adult population (men and women), varied from 35 to 55 years; period of residence in this region – from 5 to 10 years and over 10 years; exposition of drinking water – from 5 to 10 years and over 10 years. Long – term period of residence (more than 10 years) was observed at the 23.93 ± 0.35 % of peasants and 22.37 ± 0.19 % of city – dwellers ($p < 0.05$). Most of our studies found that the quantity of respondents with up to 10 years period of water exposition was higher in both groups and varied from 78.03 ± 0.52 % to 74.87 ± 2.28 %. Retrospective study covered 2012 – 2014 years. In our research was used such methods as retrospective studies, sociological, statistical. Statistical procedure carried out at the standard programs Microsoft Office Excel 2003 and SPSS [4]. Statistical indicators were: number of observations (n), average means (M), standard error (m), relative values (%). The critical level of statistical significance (p) for testing of statistical hypotheses were accepted by the criteria of Manna-Whitney, t – criterion student as well as $p \leq 0.05$, $p \leq 0.001$.

Study Findings and Discussion. Our findings have been shown, that every 37 of 75 peasants, i.e. 48.93 ± 0.23 % of respondents were drinking mainly bottled water, as compared to the city – dwellers: 55.80 ± 0.15 % ($p < 0.001$). On the other hand, majority of peasants 50.77 ± 0.22 % weren't use bottled water ($p < 0.05$). Rural population rarely used mineral water for drinking purposes, as shown 47.63 ± 6.34 % of peasants; the minority of peasants – 33.63 ± 2.03 % used mineral water for treatment purposes. Among city – dwellers only 50.23 ± 6.35 % didn't use mineral water for therapeutic purposes. The second stage of our sociological survey was ranking adult population in both groups in order to study their point of view towards different types of bottled water and drinking water purifiers. On the first rank was 22.20 ± 0.82 % of peasants, which were used for drinking and cooking purposes bottled water, as compared to 22.73 ± 2.48 % of city – dwellers. On the second rank was 18.27 ± 0.28 % of peasants, who prefer to use domestic filters ($p < 0.05$); 11.27 ± 1.03 % of respondents used unboiled tap water ($p < 0.05$, $t = 3.962$).

Respondents were proposed several answers to the question «Do You clean water immediately before using?» Our study shows that majority of peasants – 24.53 ± 1.59 % prefer to use domestic filter, 18.27 ± 0.28 % of respondents were applied bottled water ($p < 0.05$). The minority of peasants carried out traditional methods of drinking water purification: 8.83 ± 0.57 % – boiling; 8.27 ± 0.28 % drinking tap water ($p < 0.05$, $t = 3.801$); 5.27 ± 0.14 % – precipitation ($p < 0.05$). Similar trend was observed among city – dwellers. On the first rank was 33.13 ± 0.27 % of respondents, installing domestic filters; 26.33 ± 1.52 % of city – dwellers testing different types of bottled water ($p < 0.05$); the least 8.47 ± 0.08 % of city inhabitants was defined to use boiled water; 4.93 ± 0.83 % – tap water without any additional purification ($p < 0.05$, $t = 3.801$); 3.60 ± 0.21 % – drinking water after precipitation ($p < 0.05$). At the prevalence of drinking water sources, related to population of rural settlements of Dnepropetrovsk region, we include wells and their frequency of using – 15.50 ± 1.22 %. Tap water was related to use at the 14.73 ± 0.50 % of peasants ($p < 0.001$), 5.92 ± 1.33 % was recently reported from local additional sources as surface water ($p < 0.05$). Exposure of water from the given sources was reported by city – dwellers in the interview as well as: additional sources such as surface water: 45.37 ± 1.16 % ($p < 0.001$); wells – 2.58 ± 0.13 %. Most peasants were dissatisfied with following indicators of drinking water quality: 12.03 ± 0.64 % with smell, 7.45 ± 0.16 % with color ($p < 0.05$), 6.92 ± 0.44 % with rust, 6.37 ± 1.52 % with sediment, 6.15 ± 0.81 % with turbidity and suspended solids ($t = 2.437$), 5.92 ± 1.33 % with taste and aftertaste ($p < 0.05$), 5.47 ± 1.28 % with foam, poor quality and impurities. Only 10.33 ± 0.20 % of respondents were satisfied with good-quality of drinking water ($t = 3.682$) (Fig. 1).

City – dwellers were dissatisfied with such indicators of water quality as: color – 14.33 ± 1.72 % ($p < 0.05$), taste and aftertaste – 12.03 ± 0.64 % ($p < 0.05$), odor – 11.33 ± 1.09 %, sediment – 5.73 ± 1.22 %, rust – 5.0 ± 1.36 %, turbidity and suspended solids – 3.61 ± 0.65 % ($t = 2.437$), foam and impurities – 2.74 ± 0.32 % of respondents. Only 4.78 ± 1.49 % of city – dwellers do not indicate deterioration of drinking water quality ($t = 3.682$).

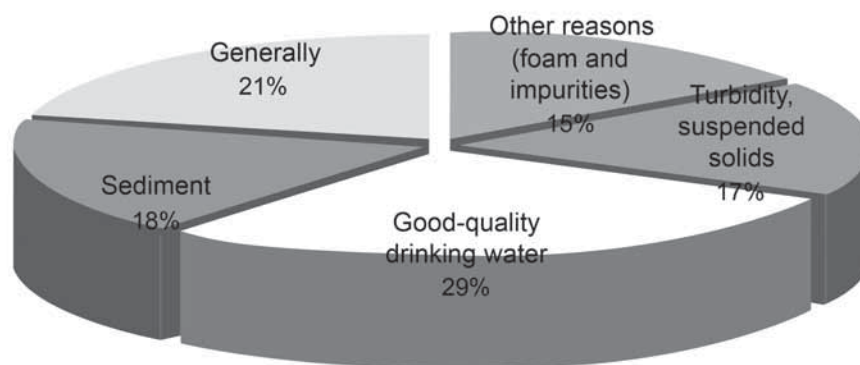


Fig. 1. Main reasons, why peasants of Dnepropetrovsk region dissatisfied with quality of piped drinking water.

On the following step of our research we carried out household conditions for residents in both groups of supervision. It was established that most of the peasants having good sanitary conditions and were provided with centralized system of water supply and centralized sewage system – $32.13 \pm 0.84\%$ ($p < 0.05$). Another $15.20 \pm 1.30\%$ of peasants were residents of the suburban houses ($p < 0.001$) and $2.42 \pm 0.12\%$ – detached houses ($p < 0.001$). The household conditions of city-dwellers can be described as follows: $37.73 \pm 1.29\%$ lived in apartments ($p < 0.05$), $7.48 \pm 0.14\%$ – in the detached houses ($p < 0.001$) and $2.92 \pm 0.44\%$ – in suburban houses ($p < 0.001$).

We carried out hygienic estimation residents' apartment by the quantity of floors. The majority of peasants lived in the high-style apartments: from 6 – 16 storeys ($20.77 \pm 1.27\%$) to 1 – 5 storeys flats ($15.50 \pm 1.27\%$). Another $15.20 \pm 1.30\%$ of peasants were residents of the comfortable 1 – 5 storeys suburban houses ($p < 0.001$); $2.92 \pm 0.44\%$ of peasants lived in the cottages ($p < 0.001$). City-dwellers were provided with comfortable housing with centralized water system. Mostly, city-dwellers were located in the 6 – 16 storeys flats: $25.67 \pm 1.28\%$; cottages – $7.44 \pm 0.17\%$ ($p < 0.001$); $2.59 \pm 0.13\%$ – suburban houses ($p < 0.001$).

Results of sociological survey have been shown, that distribution by the quantity of respondents per 1 flat was following: 2 peasants per 1 flat ($15.0 \pm 1.36\%$); 3 peasants per 1 flat ($13.17 \pm 0.35\%$); 4 peasants per 1 flat ($12.37 \pm 0.58\%$); 5 – 6 peasants per 1 flat ($6.15 \pm 1.41\%$); 1 peasant per 1 flat ($4.36 \pm 0.72\%$) ($p < 0.05$, $t = 3.858$). Most of city-dwellers lived on 2 people, as shown $16.83 \pm 0.68\%$ of respondents; 3 city-dwellers per 1 flat ($14.10 \pm 0.49\%$); 4 city-dwellers per 1 flat ($13.43 \pm 0.38\%$); 5 – 6 city-dwellers per 1 flat ($3.96 \pm 0.64\%$); single respondents – $1.53 \pm 0.13\%$ ($p < 0.05$, $t = 3.858$). From hygienic point of view, we carried out analyze quantity of water sinks in the apartments: $30.83 \pm 2.92\%$ of peasants have been provided with 2 sinks; $5.75 \pm 1.22\%$ – with 1 sink; $4.80 \pm 0.76\%$ – 3 sinks ($p < 0.001$). Minority of population in Dnepropetrovsk settlements having 5–6 sinks ($2.49 \pm 0.09\%$). Analogical trend was observed among city-dwellers: $31.83 \pm 0.73\%$ were provided with 2 sinks; another $11.77 \pm 0.79\%$ of respondents used 3 sinks ($p < 0.001$). On average 1 sink was located in the apartments of $5.99 \pm 1.25\%$ of respondents in the control group.

First rank position among city-dwellers carried out $25.00 \pm 1.36\%$ of respondents, using drinking water 2 – 5 liters per day on average ($p < 0.05$). Second rank takes the following $7.44 \pm 0.17\%$ of respondents, consuming from 6 to 10 liters of water ($p < 0.001$). On the third place, as shown $5.65 \pm 1.29\%$ of city-dwellers, drinking per day up to 50-100 liters of water. Only $4.31 \pm 0.21\%$ of respondents consumes 200-300 litres of drinking water ($p < 0.001$). Probably, peasants consumed 20–45 litres of drinking water per day ($24.20 \pm 1.59\%$) ($p < 0.001$) (Figure 2).

Daily intake of drinking water from 2 to 5 liters have been shown $15.80 \pm 1.27\%$ of peasants' population ($p < 0.05$); 6–10 liters per day were drinking $10.87 \pm 0.22\%$ ($p < 0.001$); from 50 to 100 liters – $5.67 \pm 1.08\%$. Daily consumption of drinking water was varied at the minority of peasants: 1.5 liters per day ($3.25 \pm 2.27\%$); 200-300 liters consumed $1.30 \pm 0.03\%$ of respondents ($p < 0.001$). It was statistically significant that about $18.57 \pm 0.55\%$ of peasants used drinking-water every day ($p < 0.05$); $14.87 \pm 0.92\%$ – once a week; 2–3 times a week and more: $14.17 \pm 1.84\%$ ($p < 0.05$). Once a month – $13.13 \pm 2.09\%$ respondents from Dnepropetrovsk region settlements ($p < 0.05$); 2-3 times a month – $6.08 \pm 0.93\%$, 5 – 6 times a month: $7.85 \pm 0.33\%$ ($p < 0.001$).

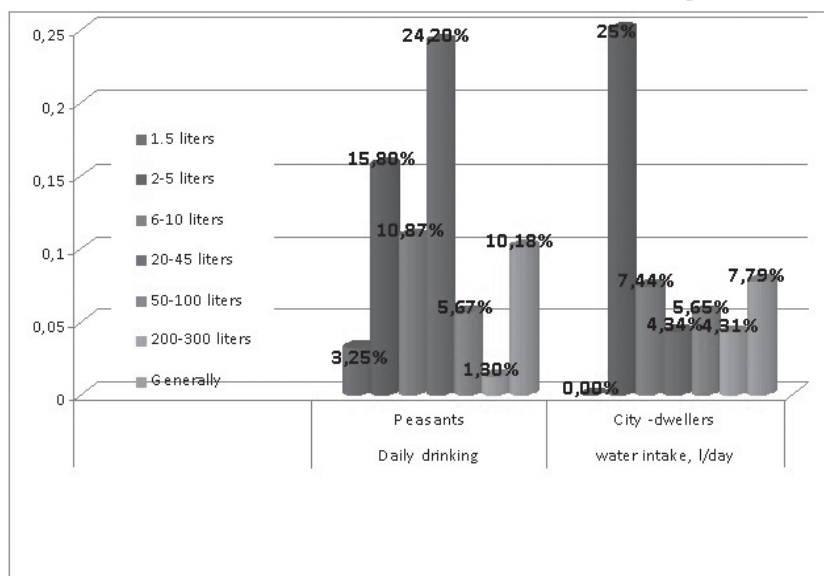


Fig. 2. Daily consumption of drinking water among respondents of experimental and control groups, l/day.

Conclusions:

1. During 2012 – 2014 years our study showed significant trend towards growth useage of drinking water purifiers, mostly, for drinking purposes, among peasants and city-dwellers.

2. Peasants – residents of Dnepropetrovsk region have been performed deterioration quality of piped drinking water as well as odor (12.03 ± 0.64 %), color (7.45 ± 0.16 %), rust (6.92 ± 0.44 %), sediment (6.37 ± 1.52 %), turbidity and suspended solids (6.15 ± 0.81 %), taste and aftertaste (5.92 ± 1.33 %), foam and impurities (5.47 ± 1.28 % ($p < 0.05$)). Minority of peasants (10.33 ± 0.20 % consider «problem with drinking water quality does not exist».

3. Our study indicates growth daily consumption of drinking water is related to peasants' population: from 2 – 5 liters/daily (15.80 ± 1.27 % to 20 – 40 liters/daily (24.20 ± 1.59 % ($p < 0.001$)). On the other hand, the study results provided tendency to decrease piped water among city-dwellers (7.44 ± 0.17 % on average 6 – 10 liters/daily ($p < 0.001$)) and significant trend to increase consumption of bottled water (26.33 ± 1.52 % or domestic filters (33.13 ± 0.27 % ($p < 0.05$)).

4. Moreover, long – term period of residence over 10 years appeared in both groups and ranged from (78.03 ± 0.52 % at the peasants to (74.87 ± 2.28 % at the city-dwellers. Average age of peasants was (33.33 ± 0.52) years, city-dwellers (35.07 ± 0.54) years.

5. In conclusion, this study indicates that peasants' population has been confirmed by centralized system of water supply (15.20 ± 1.30 % and centralized sewage system (32.13 ± 0.84 % ($p < 0.05$)). Minority of peasants (2.42 ± 0.12 % were not related to centralized systems of municipal service ($p < 0.001$)). Majority of peasants lived in the high-style 6 – 16 storeys apartments (20.77 ± 1.27 % ($p < 0.001$)). Finally, 6.15 ± 1.41 % of peasants related to unsatisfactory sanitary conditions, mostly 5 – 6 persons per 1 apartment ($p < 0.05$, $t = 3.858$); 30.83 ± 2.92 % of respondents were provided with 2 sinks.

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СИНДРОМ ЭМОЦИОНАЛЬНОГО ВЫГОРАНИЯ У МЕДРАБОТНИКОВ

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Профессиональное выгорание — проявляется у специалистов, вынужденных во время выполнения своих обязанностей тесно общаться с людьми и приносит обществу серьезные убытки – как экономические, так и психо-эмоциональные.

1.2.3. Выгорание можно рассматривать и как следствие неправильно организованного труда, нерационального управления, неподготовленности персонала. Признаки профессионального выгорания:

- 1) чувство безразличия, эмоционального истощения, изнеможения;
- 2) дегуманизация (развитие негативного отношения к своим коллегам и клиентам);
- 3) негативное профессиональное самовосприятие — ощущение собственной некомпетентности, недостатка профессионального мастерства.

Маслач и Джексон характеризовали **синдром эмоционального выгорания** - как эмоциональное истощение. Изучение синдрома проводится по методике: Maslach Burnout Inventory (MBI).

3.4.5.6. Основными симптомами СЭВ являются:

- 1) усталость, утомление, истощение после активной профессиональной деятельности;
- 2) психосоматические проблемы (колебания артериального давления, головные боли, заболевания пищеварительной и сердечно-сосудистой систем, неврологические расстройства, бессонница);
- 3) появление негативного отношения к пациентам (вместо имевшихся ранее позитивных взаимоотношений);
- 4) отрицательная настроенность к выполняемой деятельности;
- 5) агрессивные тенденции (гнев и раздражительность по отношению к коллегам и пациентам);
- 6) негативное отношение к себе;
- 7) тревожные состояния, пессимистическая настроенность, депрессия, ощущение бессмысленности происходящих событий, чувство вины.

7.8.9. СЭВ в настоящее время имеет статус диагноза в рубрике МКБ-10 Z73 - Проблемы, связанные с трудностями управления своей жизнью. Психическое выгорание понимается как профессиональный кризис, связанный с работой в целом, а не только с межличностными взаимоотношениями в процессе ее. - эмоциональное истощение - чувство эмоциональной опустошенности и усталости, вызванное собственной работой;- деперсонализация - циничное, безразличное отношение к труду и объектам своего труда;- редукция профессиональных достижений - возникновение чувства некомпетентности в своей профессиональной сфере, осознание неуспеха в ней. 10. 11.12.

Актуальность проблемы здоровья медицинских работников обусловлена тем, что качество и эффективность их деятельности зависят не только от квалификации и материально-технического оснащения, но и от состояния здоровья [3, 4].