



Strategies for Creating a Coordinating System of Arterial Hypertension Prophylaxis in a Population with Different Risk Factors and Trophology Status

Mamasoliev Nematjon Solievich¹, Nishonova Nodirakhon Akramovna², Kalandarov Dilmurod Madaminovich³

¹ DSc, Professor, Andijan State Medical Institute

² Independent researcher, Andijan State Medical Institute

³ PhD, Associate professor, Andijan State Medical Institute

ABSTRACT: The authors proposed strategies for creating a coordinated system for the prevention of arterial hypertension in a population with different risk factors and trophic status in this review of the literature. In general, the studies described and carried out in different conditions are important, creating new ideas about the modern description of arterial hypertension in the population. The authors concluded that there is a “horizon” of promising directions for the future science to further study the epidemiology and prevention of AH.

KEYWORDS: arterial hypertension (AH), coronary heart disease (CHD), arterial pressure (AB), coordinating system, trophology status.

As an example of a large number of foreign studies, it can be seen that urban programs on the prevention of non-communicable diseases, in particular, arterial hypertension, aimed at strengthening the health of the local population, have a positive effect [14, 25, 35].

Zinoveva V.A., Popovich M.V., Kontsevaya A.V. etc. (2021) analyzed a large volume of publications of this content, some of which described policies and programs implemented in urban areas, and all of which aimed to reduce risk factors associated with noncommunicable disease outbreaks. The programs considered in the review were as follows: 6 programs on healthy eating and reducing the prevalence of obesity, 2 programs on reducing arterial hypertension, 7 programs on combating alcoholism and smoking, and 5 programs on increasing physical activity.

These program examples presented by the researchers can serve as an additional source/resource for the development and implementation of prevention programs at the level of regions and regions, cities and districts [6].

It should be noted separately that in the results of investigations carried out in recent years, it was confirmed that modifiable risk factors have a role in the spread of coronary heart disease (CHD) and arterial hypertension (AH) and the expected death from it. Therefore, it is a very important task to constantly search for methods and types of control of AH risk factors.

Gornyy B.E. and Kulikova M.S. (2021) research has confirmed that modifiable risk factors are one of the promising trends in modifiable risk factors and maintaining/promoting a healthy lifestyle (using text messages for prevention), and the use of mHealth technology is becoming a tradition [5].

This situation is explained by the increasing number of mobile phones and the popularity of text messaging as a means of communication. According to the 2016 annual report of the International Telecommunication Union, the number of mobile subscribers in the world has reached 5 billion people, and this number is expected to grow and exceed the world population in the coming years. 95% of the world's population lives in areas covered by mobile cellular network, 84% of the population has access to broadband networks [5, 40]. The mobility, rapid access, and direct communication of these technologies enable the delivery of needed medical information to the consumer/population.

The effectiveness of mHealth technology has been proven in many studies: Kim W. and Glanz K. (2013) in elderly people [27], Martin S. et al. (2015) and Miller A. et al. (2016) in a 24-week follow-up [29, 30], Free C. et al. (2013) and Head K.J. et al (2013) in studies on smoking and changing trophic status [21, 26], Vnal E. et al. (2018) in a review analysis involving 9 reviewers



and 3,637 participants, Park L.G. et al. (2016) meta-review [33] confirmed that the use of text messages is a useful, convenient, safe and effective preventive and therapeutic tool for the secondary prevention of CHD, especially in arterial hypertension.

There is one downside to providing preventive information: paying the provider for the service. And so the advent of smartphones has further enhanced the technological possibilities of online counseling and customer support. In this regard, in telemedicine, the intervention of messengers is becoming more and more powerful. In particular, according to the information that researchers provide more and more, Whats App Messenger [10, 24] and chat-bat technologies, which provide the functions of sending photos, video and voice information, and making voice and video calls, have begun to be widely used [13, 14].

From the above review, it is clear that the need and need for preventive technologies has increased dramatically, which is already understood in medicine and especially in cardiology. This logically profound conclusion must be recognized, especially when viewed in relation to AH. But until now, mainly in preventive hypertensiology and preventive cardiology, the acceptance and use of the preventive direction with the understanding of “today” and “tomorrow” and the level of obtaining the result expected by “armed medicine” with today’s high technologies is not completely satisfactory. Or it seems from our analysis that this final conclusion has been confirmed and confirmed in almost all studies [41].

Evidence is the increasing prevalence of non-communicable diseases, including CHD and arterial hypertension, and their risk factors or mortality from these diseases:

- the share of infectious diseases in the structure of deaths occurring in the world is about 70%, $\frac{3}{4}$ of which corresponds to countries with low and medium income [42]. According to the Global Burden of Disease Study, 6.02 million deaths among women in 2019 were related to dietary risk factors and excess body weight, more than 6 million deaths among men were due to tobacco smoking, 4.47 million were due to dietary factors, 2 around million – related to alcohol consumption [23];

- in 2016, 53.4% of deaths in Russia were associated with modifiable risk factors, 48.5% with metabolic factors, 8.2% with environmental and occupational factors, systolic arterial hypertension was the leading risk factor in men and women and in all age groups, and they 32.7% caused death;

- for men, smoking was the second risk factor and the cause of death in 24.1%;

- alcohol accounted for 18.2% of deaths;

- in women, hypercholesterolemia is the second most common risk factor, causing 23.2% of deaths;

- excess body weight ranks third and is associated with 19.0% mortality in Russia [22].

In general, the analysis of the total “past” and “today” epidemiological studies clearly shows one result – the problem of controlling risk factors (the leader of which is AH) is a complex interdisciplinary task [15, 16].

Among cardiovascular diseases, AH is considered the “first important” disease and risk factor. Currently, it is treated as an important problem of humanity with high clinical, social and economic importance [8].

Foreign researchers Dzau V.S. (2019) and others, provide data to support this view. The data is based on the evaluation of the results of 1479 epidemiological studies (we found that no other sources have analyzed such a large number of epidemiological studies during the literature review). According to it, as of 2015, the prevalence of AH in the world reached 1.3 billion [19].

It is correct to assess the problem of AH from two sides – according to the RF-2 study [4]. First of all, today, AH as a disease of civilization is expressed by prolonging human life and increasing the percentage of individuals observed in the population. Second, CHD should be considered and evaluated as a leading modifiable risk factor [3]. Such a conclusion was made already in the 20th century in the famous and well-known Framingham’s study [1].

Thus, AH is simultaneously considered both an independent disease and the origin of CHD and a trigger for serious exacerbations [3].

AH continues to be a pressing issue of science, its damage to the population is high, and despite the many epidemiologic studies devoted to it, the disease and its associated risk factors continue to be an epidemic. During the analysis of the literature, we witnessed that this problem persists in all countries, in the total population, in all ethnic and age groups, including among the population engaged in farming activities.

Therefore, the current problems of AH epidemiology, prevention and control, which remain unresolved, are not “double”, but more than “triple”, or it is necessary to “look” at it from three sides, not from two sides.

The most pressing issues and solutions of AH to be considered:



– a large-scale meta-review was given by Ettehad D. et al. (2016) and a very important result was concluded: A reduction in SBP of 10 mmHg was associated with a 20% reduction in the risk of developing CHD, 17% of ischemic heart disease, 27% of stroke, 28% of heart failure, and 13% of all-cause mortality;

– another systematic review, conducted by Brunstrom M. and Carlberg B. (2017) (300,000 patients in 74 studies), confirmed in the study that the reduction of AB plan has a positive effect on mortality and incidence rates of heart disease syndrome, systolic arterial pressure (SAB) indicates when the initial level is at 140 mm of mercury column. [17];

– Chow C.K. and co-authors' (2019) research is a continuation of the aforementioned, confirming and recommending another scientific-practical finding: to reduce the burden of diseases associated with AH, the control of AB pressure is very important, and it is necessary to achieve the promotion of timely initiation of treatment as much as possible [18].

But it is confirmed by researches that reaching the target level of Arterial Pressure and keeping it under control remains difficult even in developed countries. Rotar O.P. and co-authors (2020) described the research data of May Month Measure (MMM – 19) carried out in Russia and paid attention to the results related to this issue.

AH was found in 51.5% of people over 25 years old in the study. Among them, the share of those receiving antihypertensive therapy (AHT) is 73.6%, while those who have reached the target level of arterial pressure – 12% among men and 17.2% among women [10].

A multicenter observational study called “Epidemiology of cardiovascular diseases and their risk factors in Russian regions – ESSE RF” was conducted in Russia. Shalnova S.A. et al. (2018) published the results of this study, showing that the prevalence of AH in the elderly population of the Russian Federation is 43.1%, and only 10% of the population has been monitored for disease progression. According to the researchers, one of the backup options is to standardize AB and increase the population's contact with the health system (dispensary, preventive medical examinations and epidemiological monitoring) [11].

In recent years, 7 large multicenter studies have been conducted in near foreign countries (mainly Russia) and 12 in distant countries related to the epidemiology of AH. New ideas, interpretations and promising scientific-practical directions are presented in them.

Among them, RF-2 stands out due to its methodological superiority and, in our opinion, can serve as a “guiding star” in the implementation of epidemiological studies. Its main results were presented by Balanova Yu.A. et al. (2014). [4]:

– among clients aware of AH, the share of controlled AB is 30%, such indicator was 10% in the group of clients who were not aware;

– in the group of those who were not aware of the presence of AH, the most frequent AH was 1st degree ($70.9 \pm 0.07\%$), mainly the type of AH with asymptomatic course [4].

Petersen J., Kontsevaya A. et al (2020) presented results that were comparable to the data cited in their published large article. In an epidemiological study, only 22.2% of men and 43.0% of women from 2284 participants aged 40–60 years who were followed up with the diagnosis of AH achieved the result. The rest had uncontrolled AH or AH resistant to pharmacotherapy. In this population as well, it was associated with a higher rate of patient visits to a physician, better control of AH, and an increase in the rate of achievement of the standard value of AB [36].

According to the reliable indicators of researchers, in the population who completely lost contact with medical services in the last year, only 47.3% of cases had normal AB indicators (42.1% among men, 54.9% among women), untreated AH was detected in 31.4% of cases. (38.7% among men, 20.8% among women).

Kaveshnikov V.S., Serebryakova V.N. and Trubachevalar I.A. (2019) conducted an epidemiologic study of a representative population of Russia aged 25–64 (770 people were involved). According to the results, the population aware of high AB had a higher rate of AHT intake (both men and women) and the frequency of achieving AB target compared to the unaware population [7].

Similar information Badin Yu.V. and cited by co-authors. The authors describe the results of the EPOXA–AH epidemiologic study conducted in the European part of Russia in 2002–2017. It is shown that during 2002 – 2017, the number of people aware of the presence of AH in the population of the European part of Russia increased and made 47.6 and 76.9%, respectively. The same trend was observed in relation to the percentage of effective patients – 14.3 and 34.9%. But 49.6% of patients with AH managed to lower blood pressure only to the 1st level of the disease [1].



Petersen J. et al. (2020) presented the results of another epidemiological study conducted in Russia in 2015–2018 under the name “Know your heart”. It examined 2,774 people and found that lack of contact with the public health system (including non-attendance at clinics) was associated with low awareness of AH [36].

Epidemiological studies conducted and continued in Uzbekistan, including the Andijan preventive school, are historically connected with Russian research. Methodological approaches are very close, and therefore, the Russian results are of great importance in the comparative evaluation of the results. Therefore, there is a need to monitor and analyze them.

From this point of view, the results of another epidemiological study conducted in 2007 at the first level of health care based on the data of the AH register of Russia are of interest. The results of this study were presented by Posnenkova O.M, Kiselev A.R, Gridnev V.I and Shvartslar V.A (2012):

- as part of the study, clients with previously confirmed diagnosis of AH in 14 regions of the Russian Federation (RF) were selected and dynamic monitoring was established over them for a year;
- only 28% of identified patients were kept at the standard level of AB;
- the frequency of consulting a doctor was higher in clients with normal AB;
- despite the fact that 16% of clients regularly visit a doctor, AB still did not reach the norm;
- this requires improvement of technologies and structure of medical care for patients with AG observed in ambulatory conditions [9].

Sengul S. et al (2016) performed a Patent 2 epidemiological study with 5434 people in Turkey. Evidence suggests that contact with the health care system increases the rate of awareness that a patient has AH by more than 8-fold. This makes it possible to take necessary measures in the very early stages of the disease, before the appearance of strong symptoms [38].

Mizzali M. et al (2020) presented the results of such a population-level study in Iran. According to it, 71.3% of the respondents were residents who were aware of the presence of AH, had visited a doctor in the last three months [31].

Peltzer K., Sengpid S. (2018) Conducted the first epidemiological study on AH in Indonesia. The results of this study are of great interest, as standardized and unified examination methods were used in accordance with the criteria of the World Health Organization, and a high methodological level was ensured. First, its size and the breadth of the age range attract attention. 29,965 people over 18 years of age were studied (it is worth considering as a unique epidemiological study). The frequency of awareness about AH increased in a statistically reliable and positive manner depending on the population’s visits to local outpatient – polyclinic medical institutions in the last 4 weeks [34].

Rodriguez Pezez M.C. et al (2012) performed a Cardiovascular, diabetes and cancer (CDC) study in the population of the Canary Islands. The bottom line is that the sooner a patient consults a doctor, the greater his awareness of AH and/or the corresponding improvement in treatment results. For example, they confirmed that visiting a doctor 2–3 times a year increases the client’s awareness of AH by 5 times, and more visits by 12.67 times [37].

Abd El-Aty M.A. et al. (2015) conducted an epidemiological study in Oman in 4717 clients and investigated the issues of early detection and increased control of AH. Similar results were obtained: only 12.9% of those who had never visited a doctor in the last year had an awareness of AH. At the same time, in those who visited the doctor 3 times during the year, this indicator was confirmed with a frequency of 44.5% [12].

In this regard, another study attracts attention. It was conducted by König M. et al. in 2009–2014 in Berlin in 1654 residents aged 60–85 years (Berlin Aging Study II cohort – BASE – II). Results: 28x increase in AH awareness by AHT customers. A visit to the doctor in the last 3 months increased this figure 3 times [28].

Conclusion. In general, the studies described and carried out in different conditions are important, creating new ideas about the modern description of arterial hypertension in the population. In them, the “horizon” of promising directions for the future science to further study the epidemiology and prevention of AH is visible. They will be described in the next chapter.

REFERENCES

1. Badin Yu.V., Fomin I.V., Belenkov Yu.N. et al. EPOCHA – AH 1998 – 2017: Dynamics of prevalence, awareness of arterial hypertension, treatment coverage and effective control of blood pressure in the European part of the Russian Federation // *Cardiology*. 59 (15), 2019. – p. 35–41.



2. Balanova B.A., Kontsevaya A.V., Shalnova S.A., Deev A.D. and others. The prevalence of behavioral risk factors for cardiovascular diseases in the Russian population according to the results of the ESSE–RF study // *Preventive medicine*. 17 (5), 2014. – p. 42–52.
3. Balanova Yu.A., Shalnova S.A., Deev A.D. and others. Dynamics of arterial hypertension and its impact on mortality in the Russian population // *Systemic hypertension*. 11 (4), 2014. – p. 18–20.
4. Balanova Yu.A., Shalnova S.A., Imaeva A.E. and others. The prevalence of arterial hypertension, treatment coverage and its effectiveness in the Russian Federation (data from the observational study ESSE – RF // *Rational Pharmacotherapy in Cardiology*. 15 (4), 2019. – p. 451–464.
5. Gorny B.E., Kulikova M.S. The use of text messages in the prevention of chronic non–communicable diseases // *Preventive Medicine*. 2021. – p. 111–117.
6. Zinovieva V.A., Popovich M.V., Kontsevaya A.V. and others. Can municipal health promotion programs improve the health status of the population? Review of foreign practices // *Preventive medicine*. No. 25, 2021. – p. 103–110.
7. Kaveshnikov V.S., Serebryakova V.N., Trubacheva I.A. Analysis of factors associated with the probability of taking antihypertensive drugs in the population of patients with arterial hypertension // *Russian Journal of Cardiology*. 24 (6), 2019. – p. 74–76.
8. Kashutina M.I., Kontsevaya A.V. Awareness of the level of blood pressure and its control in the population: the role of contacts between the population and the healthcare system // *Preventive medicine*. Volume 24, Number 5, 2021. – p. 126–131.
9. Posnenkova O.M., Kiselev A.R., Gridnev V.I. Shvarts V.A. et al. Blood pressure control in patients with hypertension in primary health care. Data analysis of the register of arterial hypertension // *Cardiovascular therapy and prevention*. 11 (3), 2012. – p. 5–10.
10. Rotar O.P., Tolkunova K.M. Solntsev V.N., Erina A.M. Adherence to treatment and control of arterial hypertension in the framework of the Russian screening campaign MMM–19 // *Russian Journal of Cardiology*. 25 (3), 2020. – p. 37–45.
11. Shalnova S.A., Konradi A.O., Balanova N.A., Deev A.D. et al. What factors influence the control of arterial hypertension in Russia // *Cardiovascular therapy and prevention*. 17 (4), 2018. – p. 54–59.
12. Abd El – Aty M.A, Meky E.A, Morsi M.M et al. Omani population: predictors for unawareness and uncontrolled hypertension // *J. Egypt Public Health Assoc*. 90 (3), 2015. – p. 126–131.
13. Barak A., Klein B., Proud food J.C. Defining internet – supported therapeutic interventions // *Ann. Behav Med*. 38 (1), 2009. – p. 4–15.
14. Batista MDSA, Mondinil, Jaime PC. Actions of the school Health Programm and school meals in the prevention of childhood overweighti: experience in the municipality of Itapevi, Sao Paulo State, Brazil, 2014 // *Epidemiologia e Sorvicos de Saunde*. 26 (3), 2017. – p. 570–574.
15. Beaglehole R., Bonita R., Horton R., Adama C. et al. Lancet NCD Action Group; MCD Alliance. Priority action for the non – communicable disease crisis // *Lancet*. 377 (9775), 2011. – p. 1439–1446.
16. Bonita R., Magnusson R., Bovet P., Zao D. et al. Lancet NCD Action Group. Country actions to meet VN commitments on noncommunicable diseases; a stepwise aproach // *Lancet*. 381 (9866), 2013. – p. 576–883.
17. Brunstrom M., Carlberg B. Association or blood Pressure Levels: A Systemstic Review and Meta–analysis // *JAMA Intern Med*. 178 (1), 2018. – p. 29–34.
18. Chow C.K., Gupta R. Blood pressure control: a challenge to global health systems // *Lancet*. 394 (10189), 2019. – p. 614–615.
19. Dzau Y.S., Balatbat C.A., Future of Hypertension. 74 (3), 2019. – p. 452–455.
20. Ettehad D., Emdin C.A., Kiran A. et al. Blood pressure lowering for prevention of cardiovascular disease and death: a systematic review and meta–analysis // *The hancet*. 387 (10022), 2016. – p. 958–965.
21. Free C., Philips G., Galli L., Watson L. et al. The effectiveness of mobilehealth technology – based health Behaviour change or disease management intervention for health care consumers: a systematic review // *Plos Med*. 10 (1), 2013.
22. GBD 2016 Russian Collaborative. The burden of disease in Russia from 198 to 2016: a systematic analysis for the Global Burden of Disease Study 2016 // *Lancet*. 392 (10153), 2018. – p. 1139–1145.



23. GBD 2019 Risk Factors Collaborators. Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analyses for the Global Burden of Disease Study 2019 // *Lancet*. 396 (10258), 2020. – p. 1223–1247.
24. Giordano V., Koch H., Godoy – Santos A. et al. WhatsApp Messengers on Adjunctive Tool for Telemedicine: Ann Overview // *Internet J Med Res*. 6 (2), 2017.
25. Harris E., Willis S., Developing healthy local communities at local government level: lessons from the past decade // *Aust N Z J Public Health*. 21(4), 1997. – p. 403–410.
26. Head J.K., Noar S.M., Iannarino N.T., et al. Efficacy of text messaging – based interventions for health promotion: a meta-analysis // *Soc Sci Med*. 2013. – p. 42–46.
27. Kim B.H., Glanz K. Text messaging to motivate Walking in older African American: a randomized controlled trial // *Am J Med*. 44 (1), 2013. – p. 72–74.
28. Könid M., Gollasch M., Roseda A., Demuth I. et al. Antihypertensive Treatment Patterns and Blood Pressure Control in Older Adults: Results from the Berlin Aging study II // *Drugs Aging*. 35 (11), 2018. –p. 993–1003.
29. Martin S.S., Feldman D.T., Blumenthal RS, Jones S.R., et al. m Active: A Randomized Clinical Trial of an Automated Health Intervention for Physical Activity Promotion // *J. Am Heart Assoc*. 4 (11), 2015.
30. Miller A.M., Khoo S., Morris D.T., Text Messaging for Exercise Promotion in older Adults From an Upper – Middle – Income Country: Randomized Controlled Trial // *Med Internet Res*. 18 (1), January, 2016.
31. Mizzali M., Bagheri B., Dehgani A. Awareness, treatment, and control of hypertension and related factor in adult Iranian population // *BMC Public Health*. 20 (1), 2020. – p. 667.
32. Osteheaga Y, Zang G, Hughes J.P et al. Factors Associated with Hypertension Control in US Adults Using 2017 ACC // AHA Guidelines: National Health and Nutrition Examination Survey 1999–2016 // *American Journal of Hypertension*, 2018. – p. 887–893.
33. Park L. G., Bcatty A, Stafford Z. et al. Mobile Phone Intervention for the secondary Prevention of Cardiovascular Disease // *Prog Cardiovasc Dis*. 58 (6), 2016. – 640–648.
34. Peltrez K., Sengpid S. The Prevalence and social determinations of Hypertension among Adults in Indonesia: A Cross – sectional Population – Based National Survey // *Int J Hypertens*, 2018.
35. Peters D., Harting J. Van Oers H. et al. Manifestations of integrated public health policy in Dutch municipalities // *Health Promot Int*. 31 (2), 2016. – p. 291–300.
36. Petersen J., Malyutina S., Ryabikov A., Kontsevaya A. et al. Uncontrolled and apparent treatment resistant hypertension: a cross – sectional study of Russian and Norwegian 40 – 69 year old // *BMS Cardiovasc Disord*. 20 (1), 2020. – p. 136.
37. Rodriguez Pezez MC, Cabrera de Leon A, Morales Torres R.M. et al. Factors associated with knowledge and control of arterial hypertension in the Canary Islands // *Rev Escardiol (Egg Ed)*, 65 (3), 2012. – p. 335–339.
38. Sengul S., Akpolot T., Ezdem Y. et al. Turkish Society of hypertension and Renal Diseases. Changes in hypertension prevalence, awareness, treatment and control rates in Turkey from 2003 to 2012 // *J. Hypertens*. 34 (6), 2016. – p. 1209–1213.
39. Unal E., Giakoumidakis K, Khan E. et al. Mobile phone text messaging for improving secondary prevention in cardiovascular diseases: A systematic review // *Heart Lung*. 47 (4), 2018. – p. 354–556.
40. Wallis I., Blessing P., Dalwai M. et al. Integrating Health at point of care in low – and middle – income settings. The system perspective // *Glob Health Action*. 2017.
41. Wilson P.W., D’agostine R.B., Sullivan, Parise H et al. Overweight and obesity as determinants of cardiovascular risk: the Framingham experience // *Arch Intern Med*. 162 (16), 2002. – p. 1868–1871.
42. World Health Organization. Noncommunicable disease // *Factsheets*. Geneva: WHO, January 25, 2018.

Cite this Article: Mamasoliev Nematjon Solievich, Nishonova Nodirakhon Akramovna, Kalandarov Dilmurod Madaminovich (2022). Strategies for Creating a Coordinating System of Arterial Hypertension Prophylaxis in a Population with Different Risk Factors and Trophology Status. International Journal of Current Science Research and Review, 5(12), 4424-4429