ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE

ISSN: 2692-515-x, Impact Factor: 9.23
American Academic publishers, volume 6, issue 03,2026

Journal: https://www.academicpublishers.org/journals/index.php/ijai

THE ABILITY OF THE POPULATION TO PROVIDE FIRST AID IN EPIDEMIOLOGICAL EMERGENCIES: AN INTEGRATED ASSESSMENT OF KNOWLEDGE, PREPAREDNESS AND PRACTICAL SKILLS

Eshkuvatov Komil Ruziboyevich
Department of Hygiene of Children, Adolescents and Nutrition,
Tashkent State Medical University, Tashkent, Uzbekistan
Polvonova Muslima Sharofuddin kizi
Student of the 1st Faculty of General Medicine,
Tashkent State Medical University, Tashkent, Uzbekistan

Abstract. This scientific article evaluates the ability of the population to provide first aid during epidemiological emergencies based on knowledge, preparedness, and practical skills. The study used surveys, interviews, practical simulations, and statistical analysis methods. The results show that while a portion of the population possesses theoretical knowledge about first aid, practical skills remain insufficient. The findings highlight the importance of improving public preparedness systems, expanding training programs, and integrating first aid education into the educational system.

Keywords: epidemiological emergency, first aid, CPR, preparedness level, public health, epidemiology.

Introduction.

Epidemics and pandemics have always posed a serious threat to humanity. Global epidemics in recent years, in particular the COVID-19 pandemic, have seriously tested the stability of healthcare systems and the level of preparedness of the population for emergencies. According to statistics, the COVID-19 pandemic has claimed the lives of millions of people around the world. According to the Global Health Security Index, the level of preparedness of countries around the world for epidemics is on average 40–45%. This indicates that in many countries the skills of providing emergency medical care are not sufficiently developed [1]. Therefore, assessing and developing the ability of the population to provide first aid in epidemiological emergencies is of great scientific and practical importance [2,5].

Research methods and materials. The following methods were used during the study: the level of knowledge of the population was studied through questionnaires and tests, interviews with specialists and medical workers were conducted, practical training was organized to assess CPR and other first aid skills [3], statistical analysis was carried out using SPSS, Python and Excel programs [4], materials from the World Health Organization, CDC and the Ministry of Health of Uzbekistan were studied [1,5].

Level of knowledge. According to the results of the analysis, globally, approximately 30–35% of the population has theoretical knowledge of first aid. Among medical workers, this figure is more than 90% [4]. In Uzbekistan, this figure is approximately 40% [5].

Level of preparation. In developed countries (Norway, Germany), 70–90% of the population has undergone first aid training [2]. In Uzbekistan, this figure is around 25–30% [5].

Practical skills. Although 54% of the US population has received CPR training [6], 59% of them report being afraid to perform it in an emergency [3,2]. In Uzbekistan, the number of people with CPR skills is approximately 20–25% [5].

Psychological preparedness and epidemiological emergencies. Why is it important? Epidemics and pandemics are a source of not only physical but also psychological stress. For example, during COVID-19, quarantine, disease risk, and social restrictions have increased

ORIGINAL ARTICLE
INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE
ISSN: 2692-515-x, Impact Factor: 9.23
American Academic publishers, volume 6, issue 03,2026
Journal: https://www.academicpublishers.org/journals/index.php/ijai

stress, panic, and mental fatigue. These conditions lead to psychological blocks that prevent practical assistance.

Global experience and statistics: The World Health Organization Psychological First Aid (PFA) model is used worldwide to maintain the psychological stability of patients and caregivers in epidemiological emergencies. PFA trains individuals to manage stress, reduce anxiety, and improve their effectiveness in providing practical assistance.

Studies have shown that 45–55% of participants in epidemic situations experience symptoms of psychological stress, [5] which reduces the likelihood of using practical CPR and first aid. When psychological preparation is introduced as additional training, the willingness to participate in an emergency situation increases by 30–40% [5].

Digital technologies and epidemiological first aid. Epidemics are accompanied by a rapidly changing flow of information - protocols, risk warnings, and health recommendations are constantly updated. Digital technologies and mobile applications provide the population with rapid and accurate knowledge.

Global experience and statistics: Training delivered through online platforms and mobile apps in response to epidemics has been shown to achieve a 20–50% higher level of knowledge and skills [12]. For example, during the COVID-19 era, several mobile apps offered short and interactive exercises on CPR, sanitation, and quarantine rules. Searching for first aid information online has become commonplace: 25–30% of people search for first aid advice online during an epidemic [12], demonstrating the potential of digital educational tools.

Age groups and epidemiological preparedness. Epidemics affect all segments of society, even outside the home. Different age groups (adolescents, adults, the elderly) have different levels of stress, knowledge and mobilization capabilities.

World experience and statistics: Analysis shows that in epidemic situations, young people aged 18–25 years receive first aid knowledge through online resources in 60–70% of cases, but practical skills are low. Older age groups (45+) show lower rates of using mobile technology tools, although they understand epidemiological protocols well. In groups with a higher level of education (bachelor's degree and above), knowledge of epidemics and first aid is 15–20% higher [14].

Simulation training for epidemiological situations. Simulation training recreates real epidemiological situations: identifying disease symptoms, quarantine protocols, compliance with sanitary rules along with CPR.

World experience and statistics: Many health systems have integrated simulation training into their first aid training programs: it increases students' decision-making ability under stress by 25–35% [13]. Participants in simulations show 3 times higher practical efficiency – the error rate is reduced [8], time management is improved [13].

Integration of the education system and epidemiological emergencies. Systematic education at the school and university levels is essential to build a society prepared for epidemics. This will strengthen the epidemiological health of the entire society, including young people.

World experience and statistics: Several countries – such as Canada, Germany and Finland – have integrated epidemiology and first aid into their curricula. As a result, students have a 40–55% higher level of knowledge. Special lessons on epidemics have increased students' adherence to health protocols by 30–45%. [9]

Global organizations related to epidemics.

1. The following play a key role in global epidemiological monitoring, prevention and management.

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE
ISSN: 2692-515-x, Impact Factor: 9.23
American Academic publishers, volume 6, issue 03,2026
Journal: https://www.academicpublishers.org/journals/index.php/ijai

2. World Health Organization (WHO) – global monitoring of infectious diseases, standards, recommendations, coordination of emergencies.

3. Centers for Disease Control and Prevention (CDC) – studies epidemics, provides preventive recommendations and manages outbreaks.

4. European Centre for Disease Prevention and Control (ECDC) – monitors the spread of diseases in the European Union and proposes response measures.

5. GAVI, the Vaccine Alliance – supports vaccination and immunization programs, especially in less developed countries.

6. Coalition for Epidemic Preparedness Innovations (CEPI) – provides scientific and financial support for vaccines against epidemics.

Analysis of survey results. The survey conducted during the study aimed to determine the ability of the population to provide first aid in epidemiological emergencies.

1. Willingness to learn first aid (102 votes). Results: 70% of respondents are ready to learn first aid skills in depth for personal safety and to help others, 26% want to limit themselves to simple instructions, 4% consider it useless to waste time on this. Analysis: The indicator shows that a large part of the population is ready to provide active assistance in emergency situations. At the same time, a small part of respondents is wary of learning in-depth medical knowledge.

2. Emergency response strategy (99 votes). Results: 39% stay at home and strictly follow hygiene rules, 35% organize help with friends and neighbors if necessary, 23% send an urgent medical alert and warn the community, 3% choose to do nothing. Analysis: Although the majority of respondents chose a passive protection strategy, there was a need for increased teamwork and communication with medical services.

3. Providing assistance to a sick person (98 votes). Results: 52%, if necessary, provide first aid and stabilize until a doctor arrives, 38% isolate him at a safe distance and notify medical services, 5% prioritize their own safety and call other specialists, and 5% take no action. Analysis: Most respondents understand the rules of epidemiological safety, but lack confidence in practical action in an emergency.

4. Community assistance in an emergency (96 votes). Results: 49% are ready to provide first aid, 27% advise on hygiene and protective equipment, 20% collect information and participate in surveillance to control the spread of the epidemic, 4% protect themselves. Analysis: There are enough respondents who are ready to provide practical assistance, but involvement in preventive and control work should be promoted more.

5. Methods of increasing public awareness (96 votes). Results: 47% seminars and trainings in local community centers and clinics, 34% mass propaganda on television and radio, 15% interactive training through online courses and mobile applications, 4% information through newspapers and posters. Analysis: Respondents consider interactive and practical training to be effective. Active and visual methods attract more attention than mass propaganda.

6. Preschool education and preparedness in children (95 votes). Results: 37% practical activities, such as demonstrating hand washing and wearing a mask, 35% teaching hygiene rules through games, 27% explaining through books and cartoons, 1% just giving advice to parents. Analysis: It is more effective to develop hygiene and epidemic preparedness in children through more interactive and practical methods.

7. Epidemiological knowledge in school education (95 votes). Results: 38% integration of topics within biology and health sciences, 38% special lessons and laboratory practices, 22% interactive tests, simulations and role-playing games, 2% only lectures and text materials.

ISSN: 2692-515-x, Impact Factor: 9.23
American Academic publishers, volume 6, issue 03,2026
Journal: https://www.academicpublishers.org/journals/index.php/ijai

Analysis: Respondents prefer an integrated and practical approach. Simple lectures and text materials are not enough.

8. Training the population as an epidemiologist (103 votes). Results: 49% mass awareness and explanation of protective measures, 35% interactive classes in schools and kindergartens, 10% practical training in local communities, 4% mobile applications and digital resources, 2% limited to official recommendations only. Analysis: Respondents consider a combination of educational and preventive work, including an interactive approach through schools and kindergartens, to be effective. Training the population as an epidemiologist.

9. Are you interested in increasing your knowledge of epidemics and measures to prevent them (104 votes)? Results: 62% – Yes, I want to learn practical skills and apply them in real life, 25% – Yes, I am only interested in theoretical knowledge and general information, 13% – No, this topic is not interesting to me. Analysis: The results show that the majority of respondents (62%) are ready to study epidemics and measures to prevent them in a practical way and apply them in real life. This indicates that the population is ready to provide active assistance in emergency situations. At the same time, 25% of respondents are only interested in theoretical knowledge, which indicates the need for expanding knowledge and advocacy work. The remaining 13% of respondents expressed their lack of interest in the topic, that is, not all respondents are ready to actively participate.

10. Are you interested in learning about emergency preparedness and protection measures (epidemic, natural disaster) in your area? Results: 53% - Yes, I want to learn about practical preparation, planning and resource mobilization, 30% - Partially, only general recommendations and theoretical advice are of interest, 17% - No, I do not consider it to be relevant to my personal needs. Analysis: The majority of the population is ready to learn about practical preparation and resource mobilization. Some prefer to limit themselves to theoretical advice, while others do not pay attention to this topic due to personal needs.

General conclusion.

The conducted analyses show that the level of knowledge and practical training of the population in providing first aid in epidemiological emergencies is not sufficiently formed uniformly. Although a certain part of the population has theoretical knowledge, it was observed that there is an opportunity to develop practical skills, psychological stability and quick decision-making competencies. At the same time, the readiness of a large part of the respondents to study first aid in more depth and actively participate in emergency situations indicates that a sense of responsibility for health care is being formed in society. The results also indicate that simulation training, interactive teaching methods and wider use of digital technologies can serve to consistently increase the preparedness of the population. Integrating psychological training components into the educational process can increase the likelihood of effective action in emergency situations. In addition, the systematic introduction of epidemiological knowledge at school and higher education levels can help strengthen the overall level of epidemiological security of society in the long term. In general, a comprehensive approach that combines theoretical knowledge, practical skills, and psychological preparation can be considered an important strategic direction for building a resilient and prepared society in response to epidemiological threats.

References:

ISSN: 2692-515-x, Impact Factor: 9.23
American Academic publishers, volume 6, issue 03,2026
Journal: https://www.academicpublishers.org/journals/index.php/ijai

1. World Health Organization (WHO). Global Health Security Index 2021. Geneva: WHO, 2021.
2. Centers for Disease Control and Prevention (CDC). COVID-19 Response Guidelines. Atlanta: CDC, 2020.
3. American Heart Association (AHA). CPR and Emergency Cardiovascular Care Guidelines. Dallas: AHA, 2020.
4. Smith, J., & Brown, L. Simulation Training in Emergency Medicine. Journal of Health Education, 2020; 45(3): 123–134.
5. O‘zbekiston Respublikasi Sog‘liqni saqlash vazirligi. Favqulodda vaziyatlarda birinchi yordam protokollari. Tashkent, 2022.
6. World Health Organization. Psychological First Aid: Guide for Field Workers. Geneva: WHO, 2011.
7. Lee, H. Youth Engagement in Pandemic Preparedness via Digital Tools. Public Health Review, 2021; 12(2): 56–67.
8.Johnson, R. Effectiveness of Interactive First Aid Training Programs. International Journal of Disaster Risk Reduction, 2020; 47: 101–110.
9.Finlyandiya Sog‘liqni saqlash agentligi. Integrating Health Education in Schools, Helsinki, 2019.
10. Norvegiya Sog‘liqni saqlash departamenti. First Aid Training Statistics Report, Oslo, 2019.
11. Germaniya Sog‘liqni saqlash vazirligi. Population Emergency Preparedness Survey, Berlin, 2020.
12. WHO. Digital Health Interventions for Epidemic Preparedness, Geneva, 2021.
13. Kim, S., & Park, Y. Psychological Preparedness and Emergency Response. Journal of Mental Health in Epidemics, 2021; 8(1): 22–35.
14. European Centre for Disease Prevention and Control (ECDC). Epidemic Preparedness Reports. Stockholm: ECDC, 2021.
15. GAVI, the Vaccine Alliance. Global Vaccination and Epidemic Preparedness Reports, 2021.
16. Coalition for Epidemic Preparedness Innovations (CEPI). Vaccine Development Updates, 2020.