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REVIEW

Public Health Risk Assessment System in Ukraine: Challenges and Development Prospects

Sistema de evaluación de riesgos para la salud pública en Ucrania: retos y perspectivas de desarrollo

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ABSTRACT

Introduction: this research scrutinizes Ukraine's population health risk assessment system, which examines methodological approaches and also identities challenges like data accessibility and environmental risks.
Method: PubMed was searched using a systematic approach for studies on health risk assessment, public health surveillance and related issues in Ukraine 2019-2024. Out of the 265 publications, only 20 of them satisfied the criteria used while nine were selected for further analysis.
Results: Ukraine's population health risk assessment system indicates that different studies used a variety of methods, such as cross-sectional surveys, case studies, and legal analyses. The most evident barriers were limitations of data access, diversity in policies, and deficiencies in health data protection mechanisms. Suggestions are made to improve data gathering mechanisms, regulatory frameworks and public health interventions. Proposed policy changes seek to tighten environmental controls, expand healthcare availability and deal with disease specific guidelines and societal disapproval.
Conclusion: Ukraine's health risk assessment system for population describes various research methodologies, main difficulties data availability environmental risks and suggests improving regulations and focusing health programs on for better public health consequences.

Keywords: Health Data Analysis; Prevention Strategies; Preventive Programs; Monitoring System.

RESUMEN

Introducción: esta investigación analiza el sistema ucraniano de evaluación de riesgos para la salud de la población, examina los enfoques metodológicos y también identifica retos como la accesibilidad de los datos y los riesgos medioambientales.
Método: se realizó una búsqueda sistemática en PubMed de estudios sobre evaluación de riesgos para la salud, vigilancia de la salud pública y temas relacionados en Ucrania 2019-2024. De las 265 publicaciones, solo 20 cumplían los criterios utilizados, mientras que nueve se seleccionaron para su posterior análisis.
Resultados: el sistema de evaluación de riesgos para la salud de la población de Ucrania indica que los

diferentes estudios utilizaron una variedad de métodos, como encuestas transversales, estudios de casos y análisis legales. Los obstáculos más evidentes fueron las limitaciones de acceso a los datos, la diversidad de políticas y las deficiencias de los mecanismos de protección de datos sanitarios. Se hacen sugerencias para mejorar los mecanismos de recopilación de datos, los marcos normativos y las intervenciones de salud pública. Los cambios políticos propuestos pretenden reforzar los controles medioambientales, ampliar la disponibilidad de asistencia sanitaria y hacer frente a las directrices específicas de cada enfermedad y a la desaprobación social.

Conclusiones: el sistema ucraniano de evaluación de riesgos para la salud de la población describe diversas metodologías de investigación, las principales dificultades disponibilidad de datos riesgos ambientales y sugiere mejorar la normativa y centrar los programas de salud en para obtener mejores consecuencias para la salud pública.

Palabras clave: Análisis de Datos Sanitarios; Estrategias de Prevención; Programas Preventivos; Sistema de Vigilancia.

INTRODUCTION

Health risk assessment is a systematic process for identifying, evaluating, and ranking risks to human health. It performs vital public health functions by advising policy-making, targeting resources and designing interventions to reduce or eliminate health hazards. HRA systems around the world differ in their structure and coverage but they all aim at safeguarding or enhancing public health.[1] A comprehensive HRA usually contains several significant parts; these are hazard identification, exposure assessment, dose-response assessment and risk characterization. Hazard identification reveals the identities of any biological, chemical, physical or psychosocial hazards that have the potential of endangering human health; exposure assessment determines how often and for how long a person is exposed to a particular substance; dose-response assesses the likelihood of one developing a certain disease as the result of that individual's level of exposure; risk characterization synthesizes hazard identification, exposure assessment, and dose-response analysis in order to quantify any public impact likely to occur.[2]

There are health risk assessment systems that function at local, national and international levels which involve key global players, for instance World Health Organization who offers guidelines and helps countries to develop HRA capacities; the European Union with its leading organizations on environmental and food related risks this includes European Environment Agency and European Food Safety Authority; America, where HRAs are done by Environmental Protection Agency, Centers for Disease Control and Prevention as well as Food and Drug Administration; whereas International Agency for Research on Cancer coordinates research on cancer causes and carcinogenesis mechanisms. These agencies work jointly to assess and control global health risks.[3]

There are many obstacles facing the global HRA systems such as those that are considered important. Risk assessments can be inaccurate if there is lack of enough or unreliable information. It is difficult to assess risks from multiple and interacting hazards and requires a high level of sophistication in methodologies. HRAs may not be adequately comprehensive due to financial constraints and limited manpower.[4] There are inconsistencies in regulations and policies across regions hence making it difficult to have effective risk management strategies implemented. Finally, making risk findings available and meaningful to the public pose's difficulties in terms of understanding and applicability.[5] However, Ukraine still experiences substantial constraints, which include; limited finances, antiquated buildings and equipment as well as inadequate personnel that all make it improbable for services to be both efficient and accessible.[6]

In Ukraine, the present situation of health risk assessment indicates a beginning stage which is still in its infancy and yet marked by a group of disintegrated endeavors with no clear direction. Inadequate data collection systems, lack of comprehensive policies to guide risk management strategies, and insufficient funding have historically limited health risk assessments in Ukraine. While other risks arising from broader environmental factors as well as lifestyle choices have often been ignored, the first line of concern has usually revolved around immediate dangers that people come across such as infectious diseases.[7]

Impact of external funding has strengthened Ukraine's capability to assess human health risks due to support from global bodies in enhancing data collection, analysis and public health infrastructure. Nonetheless, there are deficiencies in environmental health; non-communicable diseases; and occupational hazards.[8] The ongoing conflict in Ukraine poses great health risks, such as infectious disease outbreaks, broken healthcare availability and winter dangers.[9] Some initiatives notwithstanding, a technology-driven health risk assessment system which is all inclusive will make it possible to take public health decisions such as use of AI in the pharmaceutical industry of Ukraine.[10] In Ukraine and with its international partners, developing this framework should be on top of the list.[11,12]

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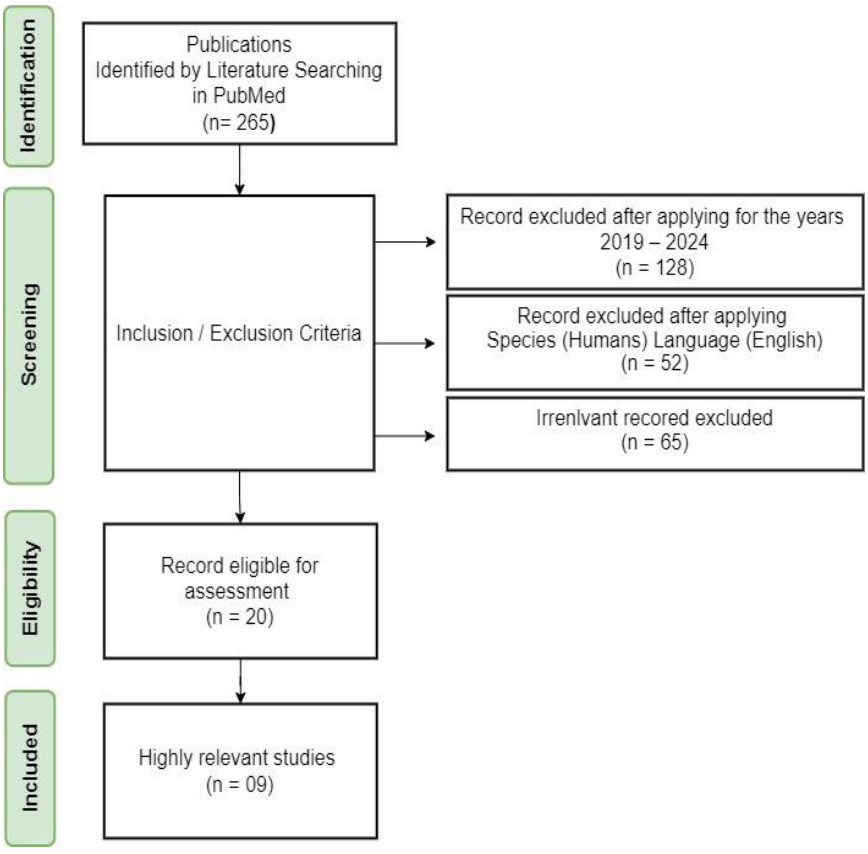
The main priority of the study is promoting improvement in Ukrainian medical education to better professional competence of doctors, and calling for reforms in practical skills, educational standards and training accountability. Suggested legal amendments have similar goals like unifying strategies for quality educational improvement and addressing health challenges.[13] Another article emphasizes the health of female students in Ukraine to propose educational reforms based on key health indicators that enhance values and address societal challenges.[14,15] The study of hatha yoga followers highlights significant improvements in their psychophysical states, indicating that they can be used for population health risk assessments.[16] The "horticultural therapy" courses for people with musculoskeletal disorders exhibit enhanced independence and sociability, bringing new ways of neurorehabilitation.[17] During the Proto-Slavic and Kyivan Rus periods, Ukrainian medical education was a combination of rational thinking and irrational practices.[18] Modernizing health care for the injured of war means taking care of causes related to attacks on healthcare providers, non-communicable diseases and antibiotic resistance, which can be discussed using telemedicine or mobile facilities.[19] Now Ukraine has made some progress in reforming its health system, there remains a task of developing an integrated framework for health risk assessment in a comprehensive manner. In order to strengthen this element of public health, it is necessary to build capacity continuously, invest in it and copy the best practices of successful models of HRA from around the world. If these issues are addressed, Ukraine will be able to detect and reduce risks affecting its population leading improved health status and enhanced population safety. The aim of the study is to emphasize the necessity of analyzing problems and prospects concerning the development of population's health risk assessment system in Ukraine.

METHOD

Based on the comprehensive search in PubMed using selected keywords, Figure 1 PRISMA flow diagram outlines the systematic review process. The keyword utilized Health Risk Assessment AND Public Health Surveillance OR Preventive Health Services AND Health Status Indicators OR Health Policy AND Data Collection OR Risk Management AND Environmental Monitoring OR Health Information Systems AND Ukraine. Initially identifying 265 publications, the screening phase applied criteria focusing on relevance to humans, publication in English, and relevance to the specified years (2019-2024). The screening process eliminated 245 of the records, which resulted in 20 eligible studies. From these, 9 studies were selected as highly relevant for inclusion based on their alignment with the research objectives regarding health risk assessment, public health surveillance, preventive health services, health status indicators, health policy, data collection, risk management, environmental monitoring, and health information systems in the context of Ukraine (figure 1).



Source: Own elaboration on the basis of: https://www.prisma-statement.org/citing-prisma-2020

Figure 1. PRISMA flow diagram

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The inclusion and exclusion criteria for included studies that focused on topics related to health risk assessment, public health surveillance, preventive health services, health status indicators, health policy, data collection, risk management, environmental monitoring, and health information systems, specifically within the context of Ukraine. In order for a study to be included in the narrative review, it had to meet certain criteria. For instance, all studies had to have been published in English between 2019 and 2024 and involved human participants. The scientific articles that did not meet these specific topic and language requirements as well as those examining non-human subjects or posted in other languages apart from English were excluded from the analysis. Furthermore, studies that were of no interest to the present research focus were disregarded also.

Data Extraction

With this narrative review, we extracted data by collecting relevant information from selected studies to cover various key factors in the research. These were the year of publication, study design and sample size which gave a base for each study. Other than that, they were able to document what kind of health risks were assessed to ascertain the extent and areas covered by their research. The objective was also to identify specific challenges experienced by researchers during the course of their studies so as to highlight difficult areas and limitations. Also, recommended recommendations put forward by these investigations were jotted down capturing possible solutions or best practices. Similarly, further prospects or future developments were taken out for an outline of potential areas where more investigation can be undertaken along with innovation. Finally, notes on probable changes in policy or interventions that could influence health care provision as suggested by the studies were made available for onward transmission towards a more actionable agenda on health policy and practice amongst others. Consequently, this comprehensive data extraction aimed synthesizing a strong overview of main issues in Health Risk Assessment Research Landscape: Public Health Surveillance; Preventive Health Services and Related areas in Ukraine.

RESULTS

Table 1 gives a breakdown of some basic features of the studies in this narrative review on population health risk assessment system in Ukraine, which comprise different study designs and sample sizes from recent literature. These studies encompass a cross-sectional study comprising 200 participants, case reports consisting of five cases, legal analysis, an observational study with no specific sample size, an epidemiologic survey with unidentified subjects, a cross-sectional survey consisting of 2285 respondents; bibliosemantic systems analysis, descriptive research that had no specified sample size but consisted of one-hundred-and-twenty-four respondents.

Table 1. Study characteristics

Author's / Year	Study Design	Sample Size
Witteveen et al. 2024 [20]	Cross-sectional study	200
Aboushady et al. 2024 [21]	Case studies	5
N et al. 2024 [22]	Legal analysis	-
Medvedeva et al. 2021 [23]	Observational study	-
Rogovskyy et al. 2020 [24]	Epidemiological Study	-
Dumchev et al. 2020 [25]	Cross-sectional study	2285
Naumenko et al. 2020 [26]	Bibliosemantic, systems analysis	-
Leung et al. 2019 [27]	Descriptive study	-
Go et al. 2019 [28]	Descriptive study	124

This narrative review synthesizes findings from various studies on population health risk assessment system in Ukraine challenges and prospects for development, as table 2 shows. The problems include but are not limited to the following: health data is difficult to access, policy implementation is variable, lack of medical data protection law, heavy metal contamination risks and disease surveillance data gaps. To do this it is necessary to have better regulations and standards in place. It also requires a more robust system of collection and analysis of health information; harmonized approaches to the risk assessments; as well as sufficient public health interventions. By doing so it will be easier to mitigate these risks through targeted interventions and improved healthcare delivery systems such as those aimed at eliminating discrimination against marginalized individuals like drug users or those who have been involved in other high-risk activities related diseases at all levels of prevention. If these complexities can be addressed properly then this would help Ukraine's population health risk assessment capacity building while achieving sounder health outcomes across its different public domains.

Table 2. Types of health risks assessed and specific challenges

Author's / Year	Types of health risks assessed	Specific challenges
Witteveen et al. 2024 [20]	Environmental, occupational, and lifestyle-related risks	Data access, exposure variability, confounding control
Aboushady et al. 2024 [21]	COVID-19 contact tracing efforts and associated risks	Policy variability, digitalization, language barriers, capacity
N et al. 2024 [22]	Risks related to the confidentiality of medical information	Ukrainian medical data protection gaps during martial law expansion
Medvedeva et al. 2021 [23]	Environmental risks due to heavy metal contamination	Excessive heavy metals endanger consumer health safety
Rogovskyy et al. 2020 [24]	Lyme borreliosis incidence related	Data sparse on patient demographics and symptoms
Dumchev et al. 2020 [25]	Risk related to HIV transmission modes, including injecting drug use, homosexual exposure, and heterosexual exposure	Stigma and biased reporting
Naumenko et al. 2020 [26]	Patient safety in medical education, occupational safety and health of health workers	Global Patient Safety Integration
Leung et al. 2019 [27]	Risk related to radiation exposure	Chernobyl radiation's long-term health effects
Go et al. 2019 [28]	Risks related to injection drug use and potential AIDS-related deaths	Clinic access, finances, side effects, information gaps

The results of this narrative review, depicted in table 3 and based on a population health risk assessment system implemented in Ukraine, have been identified. Various recommendations and future directions for development were identified. Some key suggestions are: enhancing information collection approaches; improving awareness programmes; fortifying regulatory frameworks. Moreover, it stresses the need to mainstream contact tracing while adopting digital practices through which communities can convey themselves to wider publics. Legal improvements and data protection measures are also recommended as ways of helping to effectively manage urban environment and show the public about risks to their health. The document highlights the need for unified diagnostic guidelines in diseases such as LB, improved HIV case registration systems and prevention strategies that target high-risk populations. Also, recommendations include more monitoring of cancer trends enrolling patient safety education into medical curricula as well as addressing barriers within healthcare systems that hinder good relationship between patients and providers consequently hampering patients' satisfaction & outcomes.

Table 3. Prospects for development

Author's / Year	Recommendations	Future directions and opportunities for development
Witteveen et al. 2024 [20]	Enhance data collection, increase awareness programs, improve regulatory frameworks	Develop advanced exposure assessment tools, conduct longitudinal studies, integrate health risk data with genetics
Aboushady et al. 2024 [21]	Institutionalize digital contact tracing, enhance public communication, adapt to local contexts	Develop advanced exposure assessment tools, conduct longitudinal studies, integrate health risk data with genetics
N et al. 2024 [22]	Improve legislation, expand data protection roles, emphasize international legal cooperation	Enhance legal frameworks, improve regulatory mechanisms for data protection, increase international cooperation
Medvedeva et al. 2021 [23]	Improve urban environmental management, inform public on local produce risks	Conduct broader environmental impact research, develop sustainable urban agriculture practices
Rogovskyy et al. 2020 [24]	Adopt unified LB diagnostic guidelines, expand LB surveillance with improved diagnostics	Improve LB diagnostic capabilities, expand surveillance efforts
Dumchev et al. 2020 [25]	Enhance HIV case registration, implement tailored prevention for key populations	Expand combination prevention strategies, outreach and education programs
Naumenko et al. 2020 [26]	Enhance patient safety in medical education curricula	Implement updated educational materials and methods for patient safety disparities
Leung et al. 2019 [27]	Monitor cancer trends, guide national health policies	Implement screening programs, enhance diagnostics, monitor regional disparities in cancer rates
Go et al. 2019 [28]	Integrate strategies for health system barriers, improve patient-provider interactions	Implement lessons for effective engagement of HIV-infected PWID in care and treatment

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Table 4 indicates the recommended policy shifts and interventions as per the studies included narrative review on population health risk assessment system in Ukraine: challenges and prospects for development. For example, it can be suggested that there should be a law to minimize pollutants and improve safety standards at workplaces to reduce occupational and environmental health risks. By expanding responsible subjects and tightening waste disposal regulations, this would constitute some of the legislative improvements which aim to reducing contamination risks. In order to achieve this standardization of diagnostic guidelines, the destigmatization of HIV risk factors, and improvement of patient safety through medical education reforms have been made in healthcare system enhancements. These efforts also include propositions for targeted health resource allocation in regions with high incidence of cancer and measures to enhance access to healthcare services without stigmatizing drug users aimed at bridging public health gaps and therefore improving the overall population health status of Ukraine.

Table 4. Policy Recommendations for Improving Population Health Risk Assessment in Ukraine

Author's / Year	Potential policy changes or interventions suggested
Witteveen et al. 2024 [20]	Implement stricter regulations on pollutants, improve workplace safety standards, promote healthier lifestyle choices
Aboushady et al. 2024 [21]	Stricter regulations on pollutants, improved workplace safety standards, promotion of healthier lifestyle choices
N et al. 2024 [22]	Expand the list of responsible subjects, improve legislation, ensure better regulation during martial law
Medvedeva et al. 2021 [23]	Implement stricter regulations on waste disposal and land use planning to mitigate contamination risks
Rogovskyy et al. 2020 [24]	Implement LB diagnostic guidelines to standardize testing protocols across clinics and laboratories in Ukraine
Dumchev et al. 2020 [25]	Policy reforms to destigmatize HIV risk factors, enhance data accuracy, and support comprehensive prevention programs
Naumenko et al. 2020 [26]	Increase focus on patient safety across all disciplines within medical education
Leung et al. 2019 [27]	Focus resources in regions with elevated cancer incidence like Kyiv; consider regional variations in health resource allocation
Go et al. 2019 [28]	Develop policies to improve clinic accessibility, reduce financial barriers, and combat stigma associated with drug use among healthcare providers

DISCUSSION

The current systematic review is a synthesis of findings from different studies on Ukraine's population health risk assessment system and employs various methods such as cross-sectional analysis, case studies, legal reviews and epidemiological studies. All these researches point out to some common problems associated with health risks on Ukraine's population. Among major problems are; issues like restricted access to healthcare data; unsteady policy implementation; gaps in medical privacy laws, heavy metal contamination threats. In addition, weaknesses in disease surveillance and bias that affect reporting system particularly for vulnerable people such as injecting drug users have been mentioned as important barriers to effective health care access. Addressing these challenges requires comprehensive regulatory reforms, improved data infrastructure, standardized risk assessment methodologies and intensified public health interventions. Furthermore, the studies also stress that Ukraine bears an immense infectious burden including SARS-CoV-2 and multi drug resistant tuberculosis as well as vulnerabilities to outbreak of vaccine preventable diseases like polio.[29] Their significance lies in the fact that they indicate how present health data systems and legal frameworks are not sufficient enough to protect confidential medical information and maintain privacy, potentially affecting healthcare seeking patterns.[30] In addition, surveillance technologies are significant in dealing with health emergencies in Central and Eastern Europe during the crisis such as conflict and COVID-19. The research point out that there is a need for improved surveillance systems and flexible healthcare approaches to assist countries manage forthcoming health issues [31]. Finally, human geography and SWOT analyses serve to emphasize the pressing need for reforming Ukrainian healthcare system in line with international standards especially in view of the contemporary challenges such as COVID-19.[32] To conclude, addressing the many dangers to health in Ukraine requires strong regulation change, better data systems and flexible public health strategies. These actions are essential for improving healthcare delivery and enhancing outcomes in the face of prevailing and future health problems.

Ukraine's population health risk assessment system should be improved by enhancing data collection, public communication and regulatory frameworks. This is important in the perspective of digitalizing practices, refining disease guidelines, improving HIV registration processes and integrating patient safety education. There are three major dimensions of improvement including; urban environmental management, individualized prevention strategies, and overcoming systemic barriers to healthcare for better health outcomes. For instance,

a study on surface ozone levels in Ukraine has shown how physical-chemical analysis as well as statistic data processing can be used to evaluate public health effects resulting from air pollution in the country.[33,34] In the same way, epidemiological techniques and mathematical statistics are applied in the analysis of measles incidence to assess epidemic state and vaccination rates.[35] Public health decisions are informed by robust data gathering and analysis. Some recommendations include enhancing regulatory frameworks and increasing awareness. Moreover, a study on drinking water quality calls for the update of standards with fresh scientific information.[36,37] In addition, the evaluation of hazards originating from calamities at chemical-producing industries underscores the importance of enhanced awareness creation campaigns that can deal with multiple risks emanating from complex contingency situations.[38,39] In conclusion, the investigated investigations urge Ukraine to strengthen information collection, control, awareness campaigns for the public, electronic platforms and tracing as well in order to prevent environmental threats and enhance its health care system-making it tougher.

Current narrative review on population health risk assessment in Ukraine calls for stricter environmental rules, safer working places, and legal improvements in the area of waste disposal. Health care reforms should include: standardizing diagnostics; destigmatizing AIDS and reallocating resources towards high cancer regions with an aim to minimize disparities and improve public health outcomes. It is a study that highlights Kazakhstan's environmental challenges that it says require green policies which would counter technogenic pressures, such as regulations. The article insists upon the necessity of toughening state control, enhancing licensing and monitoring systems, greening legislation, and widening international cooperation through this way to provide protection from environmental security threats as well as ensure sustainable development.[40]

A different report has recently examined the likely public health consequences of a shift to circular economy in waste. It advocates for utilization of Health Impact Assessment (HIA) as an instrument for guiding both policy and infrastructure choices, showing the potential health gains resulting from improved waste management approaches such as reduced landfill risks and promoting sustainable development.[41] Equally important, conflict in Ukraine caused great harm to the environment through urban destruction, fires and release of hazardous materials all worsening climate change. Immediate actions are required to avert this; prevention, better methods for assessing the environment, and developing a national air quality monitoring system that would put a stop on future environmental damage.[42] Furthermore, an investigation looks into the development of environmental auditing in Ukraine within the context of EU integration. It combines command-and-control with market-based techniques which have its roots in the soviet era and global standards. They have common auditors; however, their types differ by regulation. These practices are likely to be differently influenced by European law after further integration with the EU.[43] These studies taken together emphasize the significance of strong environmental and health rules, better control systems and the adoption of current sustainable practices. This will greatly improve health outcomes for the public while ensuring environmental security within Ukraine as well as other places with such like circumstances.

Limitations

Diverse study designs and sample sizes, data gaps and inconsistencies are some of the limitations of Ukraine's population health risk assessment system as reviewed in the narrative. Findings cannot be synthesized, and conclusions cannot be generalized due to participant details that are unspecified and a limited scope in legal analysis and policy. They take into account environmental/occupational health risks associated with vulnerable populations' healthcare barriers; stigma-based biases but might not adequately cover all relevant hazards and impacts. The recommendations made for improving the system lack clarity about the feasibilities of realizing them and resources needed by it. By using standard methods for conducting research, addressing these drawbacks through standardization methodologies can lead to improved public health outcomes. This could strengthen Ukraine's capabilities for assessing health risks and eventually promote better public health output when combined with more extensive data collection techniques.

Recommendation

Key strategies are important for enhancing Ukraine's population health risk assessment system. The reliability of healthcare data and uniformity can be achieved through standardizing data collection methods. Healthy conduct is promoted by public enlightenment campaigns meant for the citizens and medical personnel. Health hazards due to environmental and occupational exposures can be reduced through updating regulatory frameworks with stricter measures on environmental and occupational safety; IT use in disease surveillance enhances fast response by the health authorities; legal reforms should prioritize security of health information; improving medical training through integration of patient safety education and preventive care contributes towards bridging the gap between U.S.'s high death rate from preventable causes, as compared to other advanced nations. These measures are aimed at creating a more proactive Ukrainian health risk assessment system with regard to policy implementation.

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CONCLUSIONS

Current study is focused on the evaluation of public health hazards in Ukraine with the aid of different techniques such as one-time questionnaires, case studies, legal reviews and infection rate analysis. It also highlights challenges that include data accessibility problems, violations of laws concerning medical confidentiality, toxic substances like heavy metals and the differences in illness surveillance capabilities. These issues must be addressed to improve the accuracy and coverage of health risk assessments. The researchers advocate for better legislation on sustainable development, improved data infrastructure, standardized risk assessment practices and targeted actions for those at-risk groups. Digitization of healthcare systems is recommended along with preventive care measures for vulnerable groups. In practice, further steps should involve making contact tracing institutionalized, improving public communication strategies or including patients' safety training into medical education so as to better respond to local health requirements. Consequently, these problems need immediate attention while recommendations made will go a long way in enhancing Ukraine healthcare risk assessment leading to healthier population free from exposure to healthcare risks increased.

REFERENCES

1. Bizjak T, Kontić D, Kontić B. Practical opportunities to improve the impact of health risk assessment on environmental and public health decisions. Int J Environ Res Public Health. 2022;19. Available from: https://doi.org/10.3390/ijerph19074200/s1

2. Dovjak M, Kukec A. Identification of health risk factors and their parameters. In: Creating Healthy and Sustainable Buildings. Springer International Publishing; 2019. p. 83–120. Available from: https://doi.org/10.1007/978-3-030-19412-3_3

3. Bhat TH, Jiawen G, Farzaneh H. Air pollution health risk assessment (AP-HRA), principles and applications. Int J Environ Res Public Health. 2021;18:1–29. Available from: https://doi.org/10.3390/ijerph18041935

4. Lukianykhin V, Skorokhod I, Vidomenko O, Zhuzhukina N, Redko K. Analyzing the challenges of diversifying the future economy of Ukraine. Futurity Econ Law. 2024;4:125–43. Available from: https://doi.org/10.57125/fel.2024.03.25.08

5. Espegren Y, Hugosson M. HR analytics-as-practice: a systematic literature review. J Organ Eff People Perform. 2023. Available from: https://doi.org/10.1108/joepp-11-2022-0345

6. Romaniuk P, Semigina T. Ukrainian health care system and its chances for successful transition from Soviet legacies. Glob Health. 2018;14:1–11. Available from: https://doi.org/10.1186/s12992-018-0439-5/figures/1

7. Popov O, Iatsyshyn A, Kovach V, Artemchuk V, Kameneva I, Taraduda D, et al. Risk assessment for the population of Kyiv, Ukraine as a result of atmospheric air pollution. J Health Pollut. 2020;10:200303.

8. World Bank. Ukraine overview: Development news, research, data. Available from: https://www.worldbank.org/en/country/ukraine/overview. Accessed 16 Jul 2024.

9. Hruzevskyi O, Sci D. A systematic analysis of the impact of the military conflict on the distance education system in Ukraine. E-Learning Innov J. 2023;1:71–87. Available from: https://doi.org/10.57125/elij.2023.03.25.04

10. Savchuk A, Borysiuk I, Mahanova T, Ihnatova T. Artificial intelligence in the pharmaceutical industry of Ukraine: Prospects for future development. Futurity Med. 2023;2:18–25. Available from: https://doi.org/10.57125/fem.2023.06.30.02

11. World Health Organization. Ukraine emergency. Available from: https://www.who.int/emergencies/situations/ukraine-emergency. Accessed 16 Jul 2024.

12. Nashyvochnikov O. Transformation of views on the use of the airborne assault troops of the Armed Forces of Ukraine during the Russian-Ukrainian armed conflict (2014–2018). Futurity of Social Sciences. 2023;1:67–84. Available from: https://doi.org/10.57125/FS.2023.03.20.5

13. Radziievska I, Trepet G, Radzikhovska N, Sukhostavets N, Yuryk O, Saienko V. Modern achievements and prospects for the development of higher medical education: Ukrainian realities. Amazon Invest. 2022;11:114-

23. Available from: https://doi.org/10.34069/AI/2022.55.07.12

14. Golod N, Tolchieva H, Bilyk V, Romanenko V, Boiagina O, Biriukova T. The state of health of female students of a special medical group: Factors of deterioration and educational ways to improve. Rev Rom Educ Multidimens. 2022;14:325–46. Available from: https://doi.org/10.18662/RREM/14.3/612

15. Borysenko O, Marukhovskä-Kartunova O, Volkova V, Baran A, Maraieva U. The influence of social networks on the formation of modern culture and its relationship with philosophy. Futurity Philosophy. 2024;3:80–94. Available from: https://doi.org/10.57125/FP.2024.09.30.05

16. Tolcheva AV. Assessment of psycho-physiological state of students with the experience of hatha yoga. Pedagog Psihol Med Biol Probl Fiz Vikhov Sport. 2011;11:128–31.

17. Sarancha I, Kovinko M, Maksymchuk B, Tarasenko H, Kharchenko S, Demchenko I, et al. Horticultural therapy course as an educational-therapeutic tool of rehabilitation for individuals with MSDs. Rev Rom Educ Multidimens. 2022;14:180–200.

18. Kulichenko A, Boichenko M. Origins of medical education on the territory of modern Ukraine.

19. Ilina-Stohniienko V, Malets M. Regarding the modernisation of medical care system for victims of armed conflicts (Ukrainian experience). Futurity Medicine. 2022;1:30–42. Available from: https://doi.org/10.57125/FEM.2022.09.30.04

20. Witteveen S, Hans JB, Izdebski R, Hasman H, Samuelsen Ø, Dortet L, et al. Dissemination of extensively drug-resistant NDM-producing Providencia stuartii in Europe linked to patients transferred from Ukraine, March 2022 to March 2023. Euro Surveill. 2024;29. Available from: https://doi.org/10.2807/1560-7917.ES.2024.29.23.2300616

21. Aboushady AT, Blackmore C, Nagel A, Janashvili L, Gexha D, Otorbaeva D, et al. Contact tracing in Austria, Georgia, Kyrgyzstan, Ukraine, and Kosovo during the COVID-19 pandemic: Response review and good practices. Eur J Public Health. 2024;34:387–93. Available from: https://doi.org/10.1093/eurpub/ckad217

22. Onishchenko NM, Teremetskyi VI, Kolesnikov AP, Kovalchuk OY, Shabalin AV, Romas MI. Protection of confidential medical information in Ukraine: Problems of legal regulation. Georgian Med News. 2024;4(349):161–8. Available from: https://www.geomednews.com/Articles/2024/4_2024/161-168.pdf

23. Medvedeva Y, Kucher A, Lipsa J, Hełdak M. Human health risk assessment on the consumption of apples growing in urbanized areas: Case of Kharkiv, Ukraine. Int J Environ Res Public Health. 2021;18:1–14. Available from: https://doi.org/10.3390/ijerph18041504

24. Rogovskyy AS, Biatov AP, Davis MA, Liu S, Nebogatkin IV. Upsurge of Lyme borreliosis in Ukraine: A 20-year survey. J Travel Med. 2020;27:1–3. Available from: https://doi.org/10.1093/jtm/taaa100

25. Dumchev K, Kornilova M, Kulchynska R, Azarskova M, Vitek C. Improved ascertainment of modes of HIV transmission in Ukraine indicates importance of drug injecting and homosexual risk. BMC Public Health. 2020;20. Available from: https://doi.org/10.1186/s12889-020-09373-2

26. Naumenko OM, Skaletsky YM, Didkovskyy VL, Rigan MM, Maluk OO. Safety of patients and medical staff in curricula and training programs for medical professionals in Ukraine. Wiad Lek. 2020;73:2265–8.

27. Leung KM, Shabat G, Lu P, Fields AC, Lukashenko A, Davids JS, et al. Trends in solid tumor incidence in Ukraine 30 years after Chernobyl. J Glob Oncol. 2019;5. Available from: https://doi.org/10.1200/jgo.19.00099

28. Go VF, Hershow RB, Kiriazova T, Sarasvita R, Bui Q, Latkin CA, et al. Client and provider perspectives on antiretroviral treatment uptake and adherence among people who inject drugs in Indonesia, Ukraine and Vietnam: HPTN 074. AIDS Behav. 2019;23(4):1084–93. Available from: https://doi.org/10.1007/s10461-018-2307-y

29. Cojocaru E, Cojocaru C, Cojocaru E, Oancea CI. Health risks during Ukrainian humanitarian crisis. Risk

Manag Healthc Policy. 2022;15:1775. Available from: https://doi.org/10.2147/rmhp.s375021

30. Kedar O, Golberg A, Obolski U, Confino-Cohen R. Allergic to bureaucracy? Regulatory allergenicity assessments of novel food: Motivations, challenges, compromises, and possibilities. Compr Rev Food Sci Food Saf. 2024;23. Available from: https://doi.org/10.1111/1541-4337.13300

31. Geanta M, Cucos B, Boata A, Nuta AC, Nuta FM, Semenov VV. The Ukrainian war and the pandemic: The impact on public health and the need for new health digital tools and the next level of intelligence. Med Perspekt. 2023;28:207–17. Available from: https://doi.org/10.26641/2307-0404.2023.4.294241

32. Niemets L, Bartosh O, Sehida K, Niemets K, Kliuchko L, Kravchenko K, et al. Human-geographical peculiarities of the healthcare system of Ukraine in the conditions of modern challenges. Visn V.N. Karazin Kharkiv Natl Univ Geol Geogr Ecol. 2021;(54):206–23. Available from: https://doi.org/10.26565/2410-7360-2021-54-16

33. Turos OI, Petrosian AA, Maremukha TP, Morhulova VV, Grabovets D, Brezitska NV, et al. Long-term trends (compared to the pre-war period) and public health impact of surface ozone in Ukraine. Wiad Lek. 2024;77:703–9. Available from: https://doi.org/10.36740/WLEK202404114

34. Machaca MH. Relationship between physical activity and quality of work life in accountancy professionals: A literature review. Edu - Tech Enterprise 2024;2:13–13. https://doi.org/10.71459/edutech202413.

35. Zadorozhna VI, Vynnyk NP, Serheieva TA, Marichev IL, Brighata SI, Demchishina IV. Analysis of the measles incidence in Ukraine and the population immunity. Mod Pediatr Ukr. 2024;138:15–22. Available from: https://doi.org/10.15574/SP.2024.138.15

36. Isaev DS, Mozzhukhina NA, Stepanyan AA. Justification of temporary deviations in drinking water quality given new scientific data for health risk assessment. Public Health Life Environ. 2024;32:23–32. Available from: https://doi.org/10.35627/2219-5238/2024-32-5-23-32

37. León-Zevallos L, Casco RJE, Macha-Huamán R. Digital marketing positioning in a retail sector company. Edu - Tech Enterprise 2024;2:11–11. https://doi.org/10.71459/edutech202411.

38. Gan RK, Alsua C, Aregay A, Assaf D, Bruni E, González PA. Exploring cascading disaster risk during complex emergencies: Chemical industry disaster risk assessment in the aftermath of the Kakhovka Dam bombing in Ukraine. Disaster Med Public Health Prep. 2024;18. Available from: https://doi.org/10.1017/DMP.2024.41

39. Fidel WWS, Cuicapusa EEM, Espilco POV. Managerial Accounting and its Impact on Decision Making in a small company in the food sector in West Lima. Edu - Tech Enterprise 2024;2:8–8. https://doi.org/10.71459/edutech20248.

40. Koshkinbaeva AS, Zhumagulova SR, Zhanaliyeva AZ, Bizhanova AR, Khamzina SS. Environmental safety of modern Kazakhstan: General legal analysis. J Environ Manag Tour. 2019;10(1):22. Available from: https://doi.org/10.14505//jemt.v10.1(33).03

41. World Health Organization. Assessing the health impacts of waste management in the context of the circular economy. Regional Office for Europe. 2023.

42. Kabylda A, Gendelis S, Kravets T, Galyanchuk I, Vakal A. Trajectory of air quality in Ukraine. Int J Environ Stud. 2024;81:239–49. Available from: https://doi.org/10.1080/00207233.2024.2314854

43. Ruban A, Rydén L. Introducing environmental auditing as a tool of environmental governance in Ukraine. J Clean Prod. 2019;212:505–14. Available from: https://doi.org/10.1016/j.jclepro.2018.11.059

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CONFLICT OF INTEREST

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