

Abstracts from the poster session  
at the “PUBLIC HEALTH NOW!  
Security – Governance – Education”  
Conference – Online First Version

Abstracts published as submitted by the authors

## The effectiveness of physical therapy in restoring functional independence in patients after stroke during the long-term rehabilitation period

Olga Andriichuk\*, Vira Antropova

Lesya Ukrainka Volyn National University, Lutsk, Ukraine

\* Correspondence to: andrijchuk.olga@vnu.edu.ua

**Introduction:** Stroke is one of the leading causes of disability worldwide and is accompanied by persistent impairments in motor function, leading to reduced functional independence. A significant proportion of stroke survivors require long-term rehabilitation to restore mobility, balance, and their ability to perform everyday activities. Physical therapy is a central component of the rehabilitation process, promoting the restoration of motor functions and improving quality of life. The aim of the study was to evaluate the effectiveness of a physical therapy programme in patients during the long-term poststroke rehabilitation period.

**Methods:** The study included 30 patients with sequelae of ischemic and hemorrhagic stroke. Pre- and post-physical therapy assessments were conducted using validated clinical tools: Timed Up and Go (TUG), Berg Balance Scale (BBS), Barthel Index (BI), Rivermead Mobility Index (RMI), National Institutes of Health Stroke Scale (NIHSS), Modified Rankin Scale (mRS) and Visual Analog Scale (VAS). The physical therapy programme included individualized therapeutic exercises, balance and gait training, functionally oriented tasks, and education for patients and their families. Statistical analysis was performed using the paired Student *t* test, with a significance level of *P* below 0.05.

**Results:** A significant improvement was observed across all parameters ( $P < 0.001$ ). The TUG time decreased, while the BBS, BI, and RMI scores increased, indicating enhanced mobility, postural control, level of functional independence, and the ability to move independently. In addition, reductions were observed in the VAS, NIHSS, and mRS scores.

**Discussion and conclusions:** The study confirms the high efficacy of the physical therapy

programme in poststroke patients during the long-term rehabilitation period, based on comprehensive, individualized approaches. The practical significance of the study lies in the possibility of implementing the developed physical therapy programme in clinical practice to improve rehabilitation outcomes and quality of life of poststroke patients.

## Measures of care quality and organizational performance in long-term care: a scoping review of ownership differences and evidence gaps

Chungwan Lo<sup>1</sup>, Diego Ortega-Moreno<sup>2</sup>, Elizabeth Kiilu<sup>3</sup>, Carla Perrotta<sup>4</sup>, Alejandro Gonzalez-Aquines<sup>3\*</sup>

<sup>1</sup> Department of Prevention and Evaluation, Leibniz-Institute for Prevention Research and Epidemiology – BIPS, Bremen, Germany

<sup>2</sup> Faculty of Medicine, Autonomous University of Nuevo Leon, Nuevo Leon, Mexico

<sup>3</sup> School of Nursing, Public Health, and Healthcare Leadership, Faculty of Health and Social Care, University of Bradford, Bradford, England

<sup>4</sup> School of Public Health, Physiotherapy and Sports Science, University College Dublin, Dublin, Ireland

\* Correspondence to: lo@leibniz-bips.de

**Introduction:** The expanding role of private long-term care (LTC) services has raised concerns about care quality and organizational performance across different ownership models. Evidence shows heterogeneous outcome definitions, limiting comparability and interpretation. This scoping review aims to synthesize measures and results of care quality and organizational performance across LTC ownerships and identify current evidence gaps.

**Methods:** Following PRISMA-ScR guidance, a PCC (Population, Concept, Context) framework was employed across 6 databases (MEDLINE, CINAHL, Web of Science, Embase, the Cochrane Library, and Google Scholar). Measures and results of care quality and organizational performance were consolidated according to the WHO-Europe framework and McKinsey 7S model, respectively. Evidence gaps were qualitatively mapped through study's rationales, limitations, and implications.

**Results:** Of 5174 identified records, 124 studies were included. Most studies were cross-sectional (65%), conducted in the United States (57%), and focused on nursing homes (81%). Care quality and organizational performance measures were mainly reported on safety (32%), staffing (15%), people-centeredness (14%), and strategy (7%). Public LTC performed better in staffing (68.4%), safety (52.5%), and people-centeredness (47%), while private services tended to outperform in efficiency (50%). Strategy results are mixed. Evidence gaps included data constraints, unmeasured confounding, and reliance on observational designs.

**Discussion and conclusions:** Existing evidence captures a narrow set of dimensions: safety, people-centeredness, staffing, and strategy, insufficiently reflecting system complexity and possibly misleading policy decisions. This review highlights the urgent need for diversified data sources and comprehensive frameworks to better inform LTC public health decisions.

## Antenatal class participation and postpartum depression in women during the COVID-19 pandemic: a prospective study

Aleksandra Ciochoń<sup>1\*</sup>, Dariusz P. Danel<sup>2</sup>, Magdalena Klimek<sup>3</sup>, Sarah Duk<sup>3,4</sup>, Anna Apanasewicz<sup>2</sup>, Rebecca Brittain<sup>3,5</sup>, Andrzej Galbarczyk<sup>3,6</sup>, Magdalena Mijas<sup>3,7</sup>, Anna Ziolkiewicz<sup>8</sup>, Urszula M. Marcinkowska<sup>3</sup>

<sup>1</sup> Department of Epidemiology and Population Studies, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>2</sup> Department of Anthropology, Ludwik Hirsfeld Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Wrocław, Poland

<sup>3</sup> Department of Environmental Health, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>4</sup> Doctoral School of Medical and Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>5</sup> Department of Anthropology, Yale University, New Haven, United States

<sup>6</sup> Lise Meitner Research Group BirthRites – Cultures of Reproduction, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

<sup>7</sup> Department of Anthropology, Baylor University, Waco, United States

<sup>8</sup> Laboratory of Anthropology, Institute of Zoology and Biomedical Research, Jagiellonian University, Kraków, Poland

\* Correspondence to: [aleksandra.ciochon@uj.edu.pl](mailto:aleksandra.ciochon@uj.edu.pl)

**Introduction:** Antenatal classes reduce postpartum depression (PPD) probability by providing knowledge about childbirth, newborn care, enhancing parenting skills, and social support. This study examined whether in-person or online antenatal class participation, compared with nonparticipation, was associated with a lower likelihood of PPD during the COVID-19 pandemic.

**Methods:** The study included 776 pregnant women (age range, 19–42 y; mean [SD], 30.98 [3.83] y) during the COVID-19 pandemic. Approximately 35 days after childbirth, PPD was assessed using the Edinburgh Postpartum Depression Scale, with scores greater than or equal to 13 indicating probable PPD. Participants were categorized based on antenatal class participation: in-person, online, or none. Multiple logistic regression was applied to examine the association between different forms of antenatal class participation (in-person or online vs nonparticipation) and the probability of postpartum depression, adjusting for age, education, pregnancy complications, parity, and breastfeeding.

**Results:** We observed that in-person antenatal class attendance was associated with a lower odds of PPD (odds ratio, 0.61; 95% CI, 0.38–0.99;  $P = 0.047$ ), as compared with nonparticipation, whereas online participation showed no significant relationship with PPD ( $P = 0.28$ ).

**Discussion and conclusions:** In-person antenatal education may protect against postpartum depression, potentially by offering social interaction and psychological support that online formats may not fully provide. These results emphasize that both attendance and the mode of delivery of antenatal programs are important for maternal mental health. Strengthening access to high-quality in-person prenatal education should be a key component of perinatal health strategies. Future research should identify which specific program elements are most effective in preventing postpartum depression.

## Public health policies, attitudes, and frequency of sugar-sweetened beverage consumption among adolescents from the Podkarpackie Region: preliminary results

Ewa Błaszczuk-Bębenek\*, Paweł Jagielski, Beata Piórecka, Paweł Kawalec

Department of Nutrition and Drug Research, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: ewa.blaszczuk@uj.edu.pl

**Introduction:** The introduction of a sugar tax and regulations restricting the sale of energy drinks (EDs) were intended to reduce consumption of sugar-sweetened beverages (SSBs), particularly among minors. The aim of this study was to assess attitudes toward legislative changes introduced in 2021 and 2024, as well as the frequency of SSB consumption among adolescents, considering sex and nutritional status.

**Methods:** A cross-sectional study was conducted in February 2026 among students aged 15–17 years from the Podkarpackie Region. Data were collected using a structured dietary questionnaire based on the validated KomPAN instrument, supplemented with questions on attitudes toward recent legislative changes. Nutritional status was assessed using anthropometric measurements, including body weight (kg), height (m), waist circumference (WC; cm). Body mass index (BMI; kg/m<sup>2</sup>) and abdominal obesity (WC ≥90th percentile) were classified according to centile charts from the OLAF study. Statistical analyses were performed using the  $\chi^2$  test and the Mann–Whitney test, with *P* values below 0.05 considered significant.

**Results:** The study included 198 participants (55.1% girls), approximately 80% were from rural areas. Normal body weight was observed in 78.3% of the participants, and abdominal obesity in 7.1%, with no sex differences (*P* > 0.05). The most frequently consumed beverage was mineral water (76.3% consumed it daily); however, 10.6% of the participants consumed SSBs at least once daily, and 5.5% reported daily consumption of EDs.

Boys consumed SSBs significantly more frequently than girls (*P* = 0.015), while no associations were found with BMI or WC. Reduced SSB consumption after the sugar tax was declared by 27.8% of the participants, whereas 70.2% reported reduced ED consumption following the sales ban, with no sex differences.

**Discussion and conclusions:** The sugar tax was associated with self-reported reductions in SSB consumption among approximately one-quarter of the participants, whereas decreases in ED intake were reported more frequently following the implementation of the ED sales ban. These findings suggest that public health interventions may differ in their associations with adolescents' dietary behaviours. Achieving sustained improvements in dietary patterns and nutritional status is likely to require a comprehensive approach integrating fiscal policies, educational initiatives, and regulatory measures.

## Mapping methods and tools for measuring patient experience in oncology settings: a scoping review

Julia C. Kowalska<sup>1,2\*</sup>, Dawid Storman<sup>3</sup>, Kamila Michalska<sup>1,2</sup>, Mateusz Świercz<sup>3</sup>, Małgorzata Maraj<sup>3</sup>, Joanna Zajac<sup>3</sup>, Alicja Domagała<sup>2</sup>

<sup>1</sup> Doctoral School of Medical and Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>2</sup> Institute of Public Health, Jagiellonian University Medical College, Kraków, Poland

<sup>3</sup> Department of Hygiene and Dietetics, Chair of Epidemiology and Preventive Medicine, Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: julia.kowalska@doctoral.uj.edu.pl

**Introduction:** Patient experience (PX) is a key dimension of health care quality in oncology, reflecting patients' interactions across the entire care continuum—from diagnosis to survivorship. Despite its importance, there is no consensus on how PX should be conceptualized or measured. This study aimed to systematically map methods and tools used to assess PX in oncology and to characterize their key features.

**Methods:** A scoping review was conducted following the Arksey and O'Malley framework. Six electronic databases were systematically searched for original studies published up to May 2025. Eligible studies included those reporting methods or tools for measuring PX among oncology patients. Data extraction covered study characteristics, measurement approaches, and tool properties. Findings were synthesized using descriptive and narrative analysis.

**Results:** A total of 109 studies were included, identifying 43 unique PX measurement tools. Survey-based questionnaires predominated, with national cancer patient experience surveys accounting for 44% of the applications. However, substantial fragmentation was observed, as most tools were used in only 1 or 2 studies. Notably, 63% of tools lacked a clear theoretical foundation, and reporting of psychometric properties was often limited or inconsistent. Commonly assessed domains included communication and information provision, care coordination, and respect and dignity.

**Discussion and conclusions:** PX measurement in oncology is characterized by methodological diversity but lacks standardization, theoretical clarity, and robust validation. These limitations hinder the translation of findings into meaningful clinical improvements. Future efforts should prioritize the development of theory-driven, psychometrically sound, and culturally adaptable tools to enhance the utility of PX data in oncology care and research.

## From vaccination decision support to epidemic forecasting: preliminary results from 2 EUVABECO workstreams

Magdalena Sikorska<sup>1\*</sup>, François Kaag<sup>2</sup>, Dominik Selzer<sup>3</sup>, Rafał Halik<sup>1</sup>, Nicola L. Bragazzi<sup>3</sup>, Jean-Louis Koeck<sup>2</sup>, Olena Stropalova<sup>1</sup>, Thorsten Lehr<sup>3</sup>, Szczepan Jakubowski<sup>1</sup>, Christiane Dings<sup>3</sup>, Mariusz Duplaga<sup>1</sup>

<sup>1</sup> Department of Health Promotion and e-Health, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>2</sup> SYADEM, Bordeaux, France

<sup>3</sup> Clinical Pharmacy, Saarland University, Saarbrücken, Germany

\* Correspondence to: [magdalena1.sikorska@uj.edu.pl](mailto:magdalena1.sikorska@uj.edu.pl)

**Introduction:** The EUVABECO (European Vaccination Beyond COVID-19) project aims to support Member States in translating COVID-19 vaccination lessons into implementation plans for routine vaccination programs and outbreaks. We report preliminary results from 2 workstreams managed by the Jagiellonian University Medical College: Mentor adaptation for adults in Poland and modeling based on Polish COVID-19 data. The project is funded by EC HADEA (No. 101132545) and the Polish Ministry of Science and Higher Education (No. 5786/EU4Health/2024/2).

**Methods:** Work followed the V-cycle, linking requirements, implementation, validation, and feedback. Mentor, a SYADEM clinical decision support application, was adapted to national immunization requirements and tested through persona scenarios and free exploration. User experience (UEX), system usability (SUS), and e-health literacy (eHL) were assessed with validated instruments. Modeling adapted a validated German SARS-CoV-2 transmission model to Polish data, extending the Susceptible–Infectious–Recovered framework by hospitalizations and fatalities and incorporating vaccination coverage, testing indicators, and variant dynamics. Model fitting was performed in NONMEM using Nonlinear Mixed Effects Modeling techniques.

**Results:** Mentor provided personalized recommendations based on health profile, vaccination history, and risk factors. In 35 adults, mean (SD) SUS was 71.4 (19.1), and 65.7% scored 68 points or more. Mean (SD) UEX was 1.3 (1.4), with eHL

associated with better UEX ( $\rho = 0.4$ ). The modelling framework transferred successfully to the Polish context, reproducing key epidemic patterns. Higher testing intensity and vaccination rates in Germany led to different patterns in cases, hospitalization and mortality between the 2 countries. The framework was subsequently used to build a Poland-specific COVID-19 scenario simulation tool.

**Discussion and conclusions:** These results show how structured implementation planning can support different vaccination strategy components: individualized decision support for citizens and model-based evidence for public health planning. The model shows strong potential for planning vaccination and public health interventions using readily available epidemiological data but requires validation by potential users.

### Commercial e-prescription websites as a parallel pathway to care: determinants of use among internet users in Poland

Paulina Smoła\*, Magdalena Sikorska, Mariusz Duplaga

Department of Health Promotion and e-Health, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: paulina.smola@doctoral.uj.edu.pl

**Introduction:** Commercial e-prescription websites provide paid access to prescriptions outside the patient's usual relationship with a family physician or treating specialist. Their use may reflect convenience, access barriers, or parallel digital care pathways. This study identified determinants of using paid online e-prescribing services in Poland.

**Methods:** Data came from a nationwide computer-assisted telephone interviewing survey. The analysis was limited to respondents who declared internet use ( $n = 1125$ ). The outcome was the reported use of paid websites issuing e-prescriptions. Candidate predictors included sociodemographic factors, digital media use, use of health care services, chronic disease status, and prior teleconsultation. Multivariable logistic

regression was applied, with results reported as odds ratios (ORs) with 95% CIs. The study was funded by the National Science Centre, Poland (Grant No. 2021/43/B/NZ7/02140).

**Results:** Overall, 362 respondents (32.2%) reported using paid online e-prescribing services. The most frequently reported medicine groups were nonsteroidal anti-inflammatory drugs (89/362; 24.6%), strong opioid analgesics (67/362; 18.5%), and antidepressants or anxiolytics (63/362; 17.4%). The regression model explained 34.5% of the variance in service use (Nagelkerke  $R^2 = 0.345$ ). Prior telephone or video teleconsultation was a strong independent correlate (OR, 7.4; 95% CI, 4.96–11.06). Use of emergency or hospital-based care was also associated with higher odds, both in the intermediate category (OR, 1.75; 95% CI, 1.23–2.5) and the highest category (OR, 5.95; 95% CI, 3.89–9.08). The number of routine outpatient visits also contributed to the model ( $P < 0.001$ ), but the pattern was not linear; the highest category showed lower odds than the reference group (OR, 0.44; 95% CI, 0.21–0.95).

**Discussion and conclusions:** Use of paid online e-prescribing services was associated primarily with prior remote care and emergency or hospital-based care. The role of routine outpatient care, reflected by primary-care or specialist visits, was less straightforward. These services may create a convenience-oriented route that bypasses regular clinical supervision.

### The implementation funnel in coordinated care within primary health care: gaps between provider participation and service delivery in Poland

Weronika Pawlik\*, Katarzyna Badora-Musiał, Iwona Kowalska-Bobko

Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: weronika1.pawlik@student.uj.edu.pl

**Introduction:** Strengthening primary health care (PHC) and improving care coordination are key strategies to address health care fragmenta-

tion, the rising burden of chronic diseases, and increasing system costs. In Poland, a nationwide coordinated care reform was introduced in 2022, aimed to expand the role of PHC in chronic disease management and reduce fragmentation. The aim of this study was to analyze the implementation of coordinated care in PHC in Poland.

**Methods:** This study is based on an analysis of publicly available data from the National Health Fund and institutional reports. The analysis uses indicators suggested by the authors, including provider participation, pathways coverage, and regional variations, to assess the breadth and the depth of the reform implementation.

**Results:** By December 2025, 63% of PHC providers had coordinated care contracts, but only 38% of participating facilities implemented all 5 specialists' pathways. Implementation varied geographically, with higher uptake in eastern and southern voivodeships and lower in western and northern regions.

Pathway coverage was uneven: cardiology and diabetology pathways achieved the highest coverage (87% and 83% of facilities, respectively), followed by pulmonology (72%) and endocrinology (69%), while nephrology had the lowest implementation (47%).

Despite increasing provider participation, an "implementation funnel" was observed. In 2024, 41% of PHC providers participated in the model, but only 4.7% of patients used coordinated care services, accounting for 2.5% of all PHC interventions. Patient coverage more than doubled between 2023 and 2024 (from 2.13% to 4.7%), suggesting a positive learning curve and improved utilization within participating facilities.

**Discussion and conclusions:** The implementation of coordinated care in PHC in Poland shows progress at the provider level, but reveals gaps in comprehensiveness, regional equity, and patient coverage. The "implementation funnel" indicates the gap between policy adoption and service utilization. Future policy efforts should focus on reducing regional disparities, supporting lower-capacity providers, and strengthening evaluation frameworks.

## Epidemiology of occupational diseases in Poland

Amelia Filipiak<sup>1\*</sup>, Beata Świątkowska<sup>1,2</sup>

<sup>1</sup> Department of Environmental Epidemiology, Nofer Institute of Occupational Medicine in Lodz, Łódź, Poland

<sup>2</sup> Department of Public Health, Medical University of Lodz, Łódź, Poland

\* Correspondence to: amelia.filipiak@imp.lodz.pl

**Introduction:** Occupational diseases remain a relevant public health concern in Poland. Epidemiological assessment of these conditions enables identification of high-risk populations and evaluation of the effectiveness of preventive interventions.

**Materials and methods:** The analysis was based on data on confirmed occupational diseases reported in 2015–2024 to the Central Register of Occupational Diseases of the Institute of Occupational Medicine in Łódź. Analyses were performed by disease category, sex, and voivodeship using descriptive statistics and time-trend analysis.

**Results:** In 2015–2024, a total of 22 985 occupational disease cases were recorded in Poland, including 11 356 among women and 11 629 in men. Over the study period, significant temporal changes in both the number and structure of occupational diseases were observed. The total case and incidence rate per 100 000 employed persons demonstrated a nonlinear trend, with a marked decline in 2016–2020 followed by an increase after 2020. Infectious and parasitic diseases constituted the largest proportion of the cases, increasing from 9.7% in 1995–2000 to 19.3% in 2020–2025. Pneumoconioses and voice disorders remained relatively stable, each accounting for approximately 19% of the cases. Concurrently, a decreasing trend was noted for selected conditions, including noise-induced hearing loss, vibration syndrome, and occupational poisonings. Sex-specific analysis indicated higher incidence among females in recent years, with a substantial contribution of infectious and parasitic diseases in this subgroup. In 2024, the highest incidence rates were observed in the Kujawsko-Pomorskie and Dolnośląskie voivodeships, and the lowest in the Łódzkie voivodeship.

**Discussion and conclusions:** Observed shifts in the structure of occupational diseases likely reflect ongoing changes in workplace exposures and the emergence of new risk factors, including biological hazards. The increasing burden of infectious diseases is associated with the post-2020 epidemic context. The decline in diseases linked to selected exposures may indicate improvements in occupational safety; however targeted preventive strategies remain warranted.

## Correlations between the prescribing patterns of psychotropic medications and socioeconomic factors during the COVID-19 pandemic: a cross-sectional Swedish registry study

Dainty Ei<sup>1,2\*</sup>, Gunnar Brådvik<sup>3</sup>, Peter Lindgren<sup>3,4</sup>, Paul Barach<sup>5,6</sup>, Tomasz Bochenek<sup>1</sup>

<sup>1</sup> Department of Nutrition and Drug Research, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>2</sup> Impact Assessment Unit, Office for Service Transformation, Singapore Health Services, Singapore

<sup>3</sup> The Swedish Institute for Health Economics, Lund, Sweden

<sup>4</sup> Department of Learning, Informatics, Management and Ethics, Karolinska Institutet, Stockholm, Sweden

<sup>5</sup> Thomas Jefferson University, Philadelphia, Pennsylvania, United States of America

<sup>6</sup> University of North Carolina, North Carolina, United States

\* Correspondence to: daintyeei@gmail.com

**Introduction:** The COVID-19 pandemic had a profoundly negative impact on societal sectors, public health systems, and state economies. The crisis led to high levels of stress, anxiety, depression, insomnia, and substance abuse, while the impact on changes in psychotropic medication prescribing was complex. Despite less restrictive measures in the first stage of the pandemic, Sweden experienced significant mental health consequences and changes in psychotropic medication prescribing. This study aimed to characterize different psychotropic medication prescribing patterns—including antidepressants, anxiolytics, hypnotics, sedatives, and drugs for addictive disorders (nicotine, alcohol, and opioid dependence)—at regional levels. Additionally, it investigated the

correlations of disease spread and socioeconomic factors with these regional prescribing patterns.

**Methods:** We employed an observational and retrospective design, incorporating time-series analysis, spatial visualization, and regression analysis of data from the Swedish National Prescribed Drug Register.

**Results:** The prescribing of anxiolytics and drugs used in addictive disorders decreased during the pandemic, with the most striking reductions seen in medications used for nicotine dependence. Considerable regional variations were observed across Sweden during the pandemic years, with antidepressant prescribing increasing slightly, and hypnotics and sedatives showing a relatively stable trend. Notably, none of the 4 key variables of disease spread and socioeconomic factors showed a statistically significant correlation with the changes in the prescribing of drugs used for nicotine dependence.

**Discussion and conclusions:** Our study demonstrated differentiated changes in psychotropic medication prescribing patterns during the COVID-19 pandemic in Sweden. We found a “pandemic effect” on nicotine dependence drug prescribing, which the investigated socioeconomic variables could not explain. These findings suggest that targeted mental health interventions and specific regional health policies should be developed to reduce disparities and address regional variations during future health emergencies to ensure health system resilience.

## The effectiveness of rehabilitation after mine-explosive injury

Oksana Viliura\*, Bohdan Andriichuk

Lesya Ukrainka Volyn National University, Lutsk, Ukraine

\* Correspondence to: vilyuraoksana493@gmail.com

**Introduction:** The ongoing international armed conflict in Ukraine has led to an increase in the number of injuries requiring amputation, particularly of the lower limbs. Every year, tens of thousands of amputations are recorded in Ukraine, with the majority affecting military personnel,

particularly as a result of mine-explosive injuries. This situation highlights the need to develop a rehabilitation programme to improve these individuals' functional outcomes and facilitate their integration into society. The study aimed to identify and justify evidence-based physical therapy methods in a comprehensive rehabilitation programme following transtibial amputation resulting from mine-explosive injuries in military personnel.

**Methods:** The study involved 30 male patients with transtibial amputations. Baseline and final rehabilitation assessments were conducted using the Visual Analog Scale (VAS), Timed Up and Go Test (TUG), Berg Balance Scale (BBS), Amputee Mobility Predictor without Prosthesis (AMPnoPRO), Basic Amputee Mobility Score (BAMS), the Activities-specific Balance Confidence Scale (ABC), the 2-Minute Walk Test (2MWT), and the L-test of Functional Mobility (L-test). The individualized preprosthetic rehabilitation programme included stump shaping, mirror therapy to reduce phantom pain, range-of-motion exercises, and balance training with a BOSU ball, balance cushion and a fitball. Data were processed in Jamovie and analyzed using the Shapiro–Wilk test, paired Student *t* test, Wilcoxon criterion, and McNemar test.

**Results:** A normal distribution of the measures was observed for BBS, VAS, AMPnoPRO, ABC, 2MWT and L-test, whereas a non-normal distribution was found for TUG and BAMS.

**Discussion and conclusions:** Analysis of the changes in baseline rehabilitation assessment scores following therapeutic intervention shows that the comprehensive rehabilitation program is effective and has a positive impact on patients with transtibial amputation. The dynamics between baseline and final assessment results indicate a statistically significant difference, as demonstrated by the BBS, TUG, VAS, AMPnoPRO, BAMS, 2MWT and L-test.

## Management of the implementation of guaranteed palliative care at the health care facility level

**Yuliia Sokol\*, Tetiana Yurochko**

National University of Kyiv-Mohyla Academy, Kyiv, Ukraine

\* Correspondence to: yul.z@ukr.net

**Introduction:** Since 2022, inpatient palliative care in Ukraine has been delivered under the Medical Guarantees Program (MGP). Two palliative care (PC) packages have been introduced: inpatient and mobile. This study focuses on challenges in the implementation of inpatient care. Analysis of trends and contracting conditions in 2022–2025, compared with quantitative indicators of PC provision, allows assessment of whether the new financing model ensures service stability and equitable territorial coverage across Ukraine. To analyze the dynamics of inpatient palliative care in Ukraine in 2022–2025 in relation to changes in contracting conditions of healthcare providers with the National Health Service of Ukraine (NHSU).

**Methods:** A retrospective analysis of NHSU open data was conducted, along with a comparative legal analysis of specifications and contracting conditions for the “Inpatient Palliative Care” service package for 2022–2025.

**Results:** Since 2022, the supply of palliative care services has increased across Ukraine. By 2024, the number of providers grew by 11.3%. However, in 2025 a sharp decline was observed: 24.8% fewer providers as compared with 2024 and 15.2% fewer than in 2022.

**Discussion and conclusions:** In 2023, demand for inpatient palliative care increased in most regions; in some, the number of treated patients doubled (eg, Vinnytsia region: 2400 to 5300; Kharkiv region: 2500 to 4800). In 2025, however, the number of treated patients decreased by 33.9% in Vinnytsia and by 27% in Kharkiv regions. This may be explained by a shift from a mixed financing model with a predominant global budget rate in 2023 to a differentiated payment system based on diagnosis-related groups in 2025. At the same time, some regions demonstrate sta-

ble performance. These findings suggest that the negative trend is associated with contracting conditions rather than quality of care, warranting further in-depth research.

## The ASPHER CCP as a template for enhancing undergraduate Public Health education in the United Kingdom: the Bradford experience

Alejandro Gonzalez-Aquines<sup>1\*</sup>, Lalita Sah<sup>1</sup>, Daniel Bingham<sup>1</sup>, Andrew Hart<sup>1</sup>, Cor Jonker<sup>1</sup>, Imose Itua<sup>1</sup>, Elizabeth Kiilu<sup>1</sup>, Ela Mistry-Jackson<sup>1</sup>, Victoria Archbold<sup>1</sup>, Elizabeth Cooper<sup>1</sup>, Karl F. Conyard<sup>2</sup>, Mary Codd<sup>2</sup>

<sup>1</sup> School of Nursing, Public Health and Healthcare Leadership, University of Bradford, Bradford, United Kingdom

<sup>2</sup> UCD School of Public Health, Physiotherapy & Sports Science, University College Dublin, Dublin, Ireland

\* Correspondence to: a.gonzalezaquines3@bradford.ac.uk

**Introduction:** The 1st Edition of the ASPHER CCP (ccp.aspher.org) provides a comprehensive framework for public health education programmes across Europe and beyond. Among the many applications of the ASPHER CCP, this project profiles its utility in enhancing undergraduate public health education at the University of Bradford in the United Kingdom.

**Methods:** The implementation of the ASPHER CCP began by introducing the committee responsible for developing a new undergraduate public health programme. After consulting with the ASPHER CCP coordination team, the committee self-evaluated the existing programme to identify gaps in public health education. The committee met twice to discuss how to implement the 4 areas of the ASPHER CCP and to identify the University's strengths as a unique selling point for the new curriculum. Following the discussions, the committee mapped the new curriculum to the ASPHER CCP to ensure the core areas were covered.

**Results:** The new curriculum includes core public health modules and 3 strategic themes: innovative, data-driven, and person-centered public health. The new curriculum prioritizes interdepartmental collaboration and the development

of public health competencies relevant to the local and national context. Initial feedback from students includes “the information is understandable and clear and made relevant for whatever career we pursue in public health”, “nice flow and structure” and “the module helps us think of innovative health approaches.”

**Discussion and conclusions:** Implementing the ASPHER CCP enabled interdepartmental collaboration and facilitated the development of strategic themes aligned with local and national public health workforce priorities. Early feedback from students evidences the programme's impact on undergraduate public health education.

## Peak and pillow: is ovulation linked to sleep duration?

Aleksandra Wachowicz<sup>1\*</sup>, Andrzej Galbarczyk<sup>1,2</sup>, Urszula M. Marcinkowska<sup>1</sup>, Sude Ozdemir<sup>3</sup>, Magdalena Klimek<sup>1</sup>, Anna Tubek-Krokosz<sup>1,4</sup>, Kinga Stojewska<sup>1,4</sup>, Karolina Krzych-Miłkowska<sup>1</sup>, Magdalena Mijas<sup>1,5</sup>, Monika Ścibor<sup>1</sup>, Grazyna Jasienska<sup>1</sup>

<sup>1</sup> Department of Environmental Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>2</sup> Lise Meitner Research Group BirthRites – Cultures of Reproduction, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

<sup>3</sup> Doctoral School of the University of the National Education Commission, Kraków, Poland

<sup>4</sup> Jagiellonian University Medical College, Doctoral School of Medical and Health Sciences, Kraków, Poland

<sup>5</sup> Department of Anthropology, Baylor University, Waco, United States

\* Correspondence to: a.wachowicz@student.uj.edu.pl

**Introduction:** Sleep duration and quality is associated with hormonal fluctuations, yet limited research has examined how sleep architecture differs between ovulatory and nonovulatory menstrual cycles. Given the role of estradiol in circadian regulation and sleep, ovulatory status may be associated with measurable differences in sleep patterns. This study aimed to compare total sleep time and sleep phases duration, namely the rapid eye movement (REM), light, and deep sleep, between women with confirmed ovulation and those without detected ovulation.

**Methods:** The participants used ovulation tests based on luteinizing hormone (LH) levels and wore Fitbit trackers for sleep duration for 1 full menstrual cycle. We compared sleep characteristics between the groups of participants with a positive LH test result (LH+;  $n = 77$ ) and those with a negative result (LH-;  $n = 53$ ). Demographic characteristics and sleep parameters were compared using the Student  $t$  tests to identify differences between the 2 groups.

**Results:** The participants with a positive LH test result demonstrated significantly longer total sleep duration ( $P < 0.001$ ) and extended REM sleep duration ( $P = 0.002$ ) than those without detected ovulation. Conversely, no significant group differences were found for light sleep ( $P = 0.76$ ) or deep sleep duration ( $P = 0.1$ ).

**Discussion and conclusions:** The findings indicate that during ovulatory cycle women exhibit significantly longer total sleep and REM phase durations compared to nonovulatory cycles. These differences may be attributed to varying estradiol levels, which are typically lower in cycles without detected ovulation. Given that estradiol plays a crucial role in supporting circadian rhythm and maintaining REM sleep integrity, lower levels may result in shorter, lower-quality sleep. This relationship potentially creates a “vicious cycle,” where sleep deprivation further suppresses estradiol production, ultimately hindering physiological recovery and hormonal balance.

## From childlessness to larger families: sociodemographic determinants of fertility intentions among childless women

Anna Jurczak<sup>1,2\*</sup>, Ilona Nenko<sup>1</sup>,  
Urszula M. Marcinkowska<sup>1</sup>

<sup>1</sup> Department of Environmental Health, Faculty of Public Health, Jagiellonian University Collegium Medicum, Kraków, Poland

<sup>2</sup> Doctoral School of Medical and Health Sciences, Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: a.jurczak@doctoral.uj.edu.pl

to have children or choosing not to have children at all. The aim of this study was to identify the sociocultural factors shaping the decision of planned number of children among childless women in Poland.

**Methods:** A cross-sectional online study was conducted among 816 heterosexual women aged 19–40 years who reported having no children, no diagnosed infertility, and not being pregnant at the time of data collection. A multinomial logistic regression model was applied, with the number of intended children as the dependent variable. Predictors included age, place of residence, education, financial and employment situation, contraceptive use, and relationship status.

**Results:** Relationship status emerged as the strongest predictor of planned number of children. Being married, as compared with being in a nonmarital relationship, substantially increased the likelihood of planning a larger family, with the highest effect observed for intending 3 or more children (odds ratio [OR], 5.29;  $P < 0.001$ ; for 2 children: OR, 2.32;  $P = 0.002$ ). University degree was the second strongest predictor—it was positively associated with intentions to have 3 or more children (OR, 2.52;  $P = 0.005$ ). Unsurprisingly, increasing age reduced the likelihood of planning 3 or more children (OR, 0.83;  $P < 0.001$ ).

**Discussion and conclusions:** The findings highlight the role of education and relationship institutionalization in family planning processes in Poland. The results suggest that family policy should place greater emphasis on psychosocial aspects of relational stability and women’s higher education, as they predict higher likelihood of intending to have larger families.

**Introduction:** Demographic indicators point to a systematic trend toward delaying the decision

## Shaping the future medical workforce: a comparative study of recruitment and retention policies in Poland and the United Kingdom

Kamila Michalska<sup>1,2\*</sup>, Alejandro Gonzalez-Aguines<sup>3</sup>, Lynn McVey<sup>4</sup>, Gaynor Clark<sup>5</sup>, Alicja Domagała<sup>2</sup>

<sup>1</sup> Doctoral School of Medical and Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>2</sup> Institute of Public Health, Jagiellonian University Medical College, Kraków, Poland

<sup>3</sup> Faculty of Health Studies, University of Bradford, Bradford, United Kingdom

<sup>4</sup> NIHR Yorkshire and Humber Applied Research Collaboration, Yorkshire Quality and Safety Research Group, Bradford Institute for Health Research, Bradford, United Kingdom

<sup>5</sup> NHS West Yorkshire Integrated Care Board, United Kingdom

\* Correspondence to: kamila.michalska@doctoral.uj.edu.pl

**Introduction:** Health workforce shortages remain a major challenge across European health care systems. Increasing pressure to recruit and retain early-career doctors is compounded by changing expectations regarding work-life balance, professional development, and working conditions. This study compares policy approaches targeting young doctors in Poland and the United Kingdom and identifies solutions that may be transferable across different health systems.

**Methods:** A comparative policy analysis was conducted in April 2025 using a framework based on the World Health Organization health workforce strategy. The study draws on national policy documents, legal regulations, international reports, and scientific literature. The analysis was complemented by expert consultations involving specialists from both Poland and the United Kingdom. It examines education and training, career development, working conditions, financial incentives, and international mobility.

**Results:** Both countries have expanded medical education and postgraduate training capacity, but differ in implementation and policy coherence. Poland has pursued rapid growth in the number of medical schools and student intake, combined with significant salary increases and locally driven financial incentives. However, these measures remain fragmented and are not embedded in a comprehensive long-term workforce strategy, limiting their impact on retention and workforce stability. In contrast, the United Kingdom has ad-

opted a more coordinated and gradual approach through national planning. Policies place stronger emphasis on improving workplace conditions, flexible career pathways, structured mentoring, and wellbeing support. Incentive systems in the United Kingdom are more centralized and predictable, while in Poland they remain diverse and locally determined, contributing to variation in access and effectiveness.

**Discussion and conclusions:** Policies aimed at early-career doctors should extend beyond increasing training capacity and remuneration. Sustainable retention requires integrated, long-term strategies that align education with system capacity, strengthen professional support structures, improve working conditions, and adapt training to evolving healthcare needs. These findings offer relevant insights for strengthening workforce policies across European health systems.

## Physical therapy for primary school-aged children with chronic respiratory diseases

Bohdana Karpiuk\*, Yaroslav Andriichuk

Lesya Ukrainka Volyn National University, Lutsk, Ukraine

\* Correspondence to: Karpiuk.Bohdana2024@vnu.edu.ua

**Introduction:** Chronic bronchitis in children of primary school age is accompanied by persistent inflammation of the bronchi, impaired mucociliary clearance, and reduced lung ventilation, leading to decreased exercise tolerance and functional limitations. Despite pharmacological treatment, functional impairments often persist. The aim of the study was to evaluate the effectiveness of a structured physical therapy programme in improving respiratory and functional parameters in children aged 6–10 years with chronic bronchitis.

**Methods:** The study included 20 children aged 6–10 years diagnosed with chronic bronchitis. The physical therapy programme lasted 6 weeks. Before and after the programme, spirometry (vital capacity [VC], forced expiratory volume in 1 second [FEV<sub>1</sub>]), analysis of clinical symptoms (cough frequency, presence of sputum), and functional

tests (endurance, coordination) were performed. The programme included diaphragmatic breathing, prolonged exhalation exercises, therapeutic gymnastics, coordination and balance training, moderate-intensity aerobic exercise, and bronchial drainage techniques.

**Results:** Upon completion of the physical therapy programme, significant improvements were observed ( $P < 0.05$ ). Mean (SD) VC increased from 72.4% (5.1%) to 84.6% (4.3%), and FEV<sub>1</sub> from 70.2% (4.8%) to 82.1% (4.6%). The frequency of coughing decreased by 38%, and improved sputum clearance was observed in 82% of the children. Exercise tolerance increased by 26%, and coordination scores by 31%. Normalization of the breathing pattern and improved chest mobility were also noted.

**Discussion and conclusions:** A structured physical therapy programme provides clinically significant improvements in respiratory function and physical performance in children with chronic bronchitis. The combination of breathing exercises with motor and aerobic exercise is an effective rehabilitation approach that contributes to improved quality of life and the prevention of disease progression.

## Trust in the shadow of uncertainty: the role of institutional trust in building local herd immunity

Paweł Nowicki<sup>1</sup>, Magdalena Górajka<sup>2</sup>,  
Anna Garus-Pakowska<sup>3\*</sup>

<sup>1</sup> Department of Nutrition and Epidemiology, Medical University of Lodz, Łódź, Poland

<sup>2</sup> Centre of Mathematics and Physics, Lodz University of Technology, Łódź, Poland

<sup>3</sup> Department of Nutrition and Epidemiology, Medical University of Lodz, Łódź, Poland

\* Correspondence to: [anna.garus-pakowska@umed.lodz.pl](mailto:anna.garus-pakowska@umed.lodz.pl)

**Introduction:** Modern public health faces a critical challenge in which advances in medical technology collide with a growing crisis of public trust. Parental trust in healthcare systems and scientific institutions is an important determinant of national epidemiological stability. Declining trust may result in refusal of preventive measures,

reduced vaccination uptake, and erosion of regional herd immunity. This study aimed to evaluate the impact of parental attitudes, particularly mistrust and vaccine-related concerns, on the uptake of mandatory measles and pertussis vaccinations in Radomsko, Poland, and to identify trust as a key determinant of vaccination decisions.

**Methods:** A cross-sectional study was conducted between January and March 2025 among 459 parents of school-aged children in Radomsko. The validated Vaccination Attitudes Examination (VAX) scale was used to assess mistrust of vaccine benefits and concerns about vaccine safety. Survey findings were compared with official vaccination data from the State Sanitary Inspection for birth cohorts from 2014 to 2019.

**Results:** Most parents (63%) reported severe concerns about unforeseen long-term vaccine side effects. Trust proved to be a stronger motivator for compliance than formal education. In the high-mistrust group, only 75.3% of the children were fully vaccinated, as compared with 99.7% in the low-mistrust group ( $P < 0.001$ ). This decline in trust contributed to a local increase of 2.7 percentage points in measles vaccine refusals among the 2014–2019 cohorts.

**Discussion and conclusions:** Trust is a dynamic variable that directly shapes the boundaries of regional health security. Findings from Radomsko suggest that even high parental education does not guarantee vaccine acceptance when institutional trust is lacking. Health policy (governance) should shift from an authoritarian model toward relationship-building through transparent dialogue and education aimed at addressing parental concerns and rebuilding trust.

## Epistemic injustice in clinical practice: the case of menstrual pain

Adriana Mickiewicz\*

Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: [adriana.mickiewicz@uj.edu.pl](mailto:adriana.mickiewicz@uj.edu.pl)

**Introduction:** The presentation has 2 main aims: descriptive and normative. The first is to outline the problem of epistemic injustice in clinical practice in the context of patients experiencing menstrual pain. The second is to identify possible strategies for counteracting this phenomenon and to propose a more ethical approach to patient care.

Epistemic injustice is a concept from social philosophy introduced by Miranda Fricker. It refers to a form of systemic discrimination in which individuals have reduced access to participation in collective knowledge. There are 2 main forms of epistemic injustice: testimonial injustice (the refusal to regard someone as credible due to prejudice) and hermeneutical injustice (the lack of adequate concepts and interpretive frameworks needed to make sense of one's experiences).

**Methods:** I will discuss a qualitative literature review on epistemic injustice and physician bias toward patients reporting menstrual pain. The review will draw on studies published within the last 10 years and indexed in Embase and PubMed. The study will be conducted in accordance with PRISMA guidelines. The review will include qualitative and quantitative studies exploring experiences of dismissal, disbelief, diagnostic delay, gender bias, and medical gaslighting among individuals experiencing dysmenorrhea, endometriosis, or other menstruation-related pain conditions. I will focus on assessing which forms of epistemic injustice are present, as well as their consequences for patients' well-being.

**Results:** The study will assess the extent to which both types of epistemic injustice are present among patients experiencing menstrual pain. It will also consider the consequences for their well-being.

**Discussion and conclusions:** Epistemic injustice violates fundamental ethical values such as equality, autonomy, and the principle of nonmaleficence (as biases contribute, among other things, to delayed diagnosis of conditions such as endometriosis). From this, I will derive the ethical necessity of recognising patients' experiences and narratives as a crucial source of clinical knowledge.

## The impact of orthodontic treatment on oral health-related quality of life: a pilot questionnaire study

Anita Bayati<sup>1\*</sup>, Wioletta Bereziewicz<sup>1,2</sup>, Jakub Bereziewicz<sup>2,3</sup>, Dominika Pasich<sup>1</sup>, Wojciech Stós<sup>4,5</sup>, Jolanta Pytko-Polończyk<sup>1</sup>

<sup>1</sup> Department of Integrated Dentistry, Institute of Dentistry, Faculty of Medicine, Jagiellonian University Collegium Medicum, Kraków, Poland

<sup>2</sup> Ars Estetica Institute sp. z o.o., Kraków, Poland

<sup>3</sup> Department of Periodontology and Oral Diseases, University Center of Dentistry, Medical University of Warsaw, Warszawa, Poland

<sup>4</sup> Orthodontic Clinic, University Dental Clinic, Jagiellonian University Medical College, Kraków, Poland

<sup>5</sup> Department of Orthodontics, Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: anita.bayati@student.uj.edu.pl

**Introduction:** Facial esthetics heavily influence psychosocial well-being. While malocclusion affects 40%–80% of the Polish population, the National Health Fund primarily covers removable appliances for children under 12 years old. This creates a severe supply-demand gap; approximately 200 doctors compete for just 10 orthodontic residency spots annually, limiting public access to care. This study evaluates the psychosocial impact of dental esthetics among patients in Kraków and its influence on oral health-related quality of life.

**Methods:** This cross-sectional study included 101 participants at the University Dental Clinic in Kraków. Data were collected via a 23-item questionnaire based on the Malocclusion Impact Questionnaire (MIQ). Statistical analyses included the independent samples *t* tests, Pearson correlations, and multiple regression to identify predictors of dental distress.

**Results:** Functional impairment was low: 80.2% of the participants reported no biting impact and 90.1% reported no speech difficulties. Conversely, the psychosocial impact was substantial. Social comparison predicted overall dental distress more strongly than internal self-perception ( $\beta = 0.778$ ;  $P < 0.001$  vs  $\beta = 0.641$ ;  $P < 0.001$ ). The participants perceiving their teeth as “ordinary” reported significantly higher social comparison distress than those with positive self-perception ( $P = 0.041$ ). Furthermore, dental shy-

ness strongly correlated with physically covering one's smile ( $r = 0.76$ ;  $P < 0.001$ ).

**Discussion and conclusions:** Dental esthetics act as a “social barrier,” particularly for young adults aged 20–25 years, where 52% expressed high appearance anxiety. Patient motivation is largely driven by a desire to mitigate social disadvantage during peer comparison rather than functional need. Given these significant psychosocial implications, increasing accredited orthodontic residencies in Poland is vital to expanding public care. Clinical success must prioritize emotional and social well-being alongside structural alignment.

## Breakfast consumption and hydration status among school-aged children and adolescents in the Małopolska Region (Poland)

Beata Piórecka<sup>1\*</sup>, Paweł Jagielski<sup>1</sup>,  
Agnieszka Kozioł-Kozakowska<sup>2</sup>,  
Ewa Błaszczak-Bębenek<sup>1</sup>, Paweł Kawalec<sup>1</sup>

<sup>1</sup> Department of Nutrition and Drug Research, Institute of Public Health, Faculty of Health Science, Jagiellonian University Medical College, Kraków, Poland

<sup>2</sup> Department of Pediatrics, Gastroenterology and Nutrition, Institute of Pediatrics, Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: beata.piorecka@uj.edu.pl

**Introduction:** Breakfast should include solid foods rather than liquids alone. This study aimed to assess the qualitative and quantitative characteristics of breakfast consumption in relation to hydration status among school-aged children.

**Methods:** The survey was conducted in 2018 in primary and secondary schools in the Małopolska region. The study included 264 healthy children aged 7–15 years. Hydration status was evaluated using urine osmolality measured during the school day, with underhydration defined as osmolality greater than 800 mOsm/kg H<sub>2</sub>O. Breakfast composition and fluid intake were recorded by researchers at school and supplemented with parental dietary records. Dietary data were analyzed using Dieta 5.0 software. Cluster analysis (k-means) identified 3 groups differing

in hydration status and breakfast nutritional value. Statistical analyses were performed using Statistica 13 PL and PS IMAGO PRO 10 (IBM SPSS Statistics 29), with  $P$  values below 0.05 considered significant.

**Results:** Among all participants, 4.9% neither ate nor drank anything before school, and another 4.9% consumed fluids only. Clusters 1 ( $n = 75$ ) and 2 ( $n = 49$ ) showed no underhydration, although they differed significantly in breakfast quantity and composition. Cluster 2 was characterized by all children consuming breakfast, with a mean (SD) water intake of 400 (184.49) ml and a more favorable potassium-to-sodium ratio. Breakfasts in this cluster mainly included cereal products and milk. In Cluster 1, children consumed smaller amounts of food and fluids, primarily cereal products, with a mean (SD) water intake of 224.61 (121.52) ml and insufficient potassium intake relative to sodium. In Cluster 3 ( $n = 140$ ), underhydration co-occurred with a mean (SD) breakfast water intake of 256.36 (144.47) ml, along with an unfavorable potassium-to-sodium ratio.

**Discussion and conclusions:** The findings suggest that consuming at least 400 ml of fluids in the morning, including milk, may improve hydration status in school-aged children. Reducing sodium and increasing potassium intake are also recommended.

## Do immune-related adverse events during pembrolizumab therapy predict pathologic complete response in early triple-negative breast cancer? A systematic review and meta-analysis

Monika Reczek<sup>1\*</sup>, Magdalena Monica<sup>2</sup>,  
Katarzyna Pogoda<sup>3</sup>

<sup>1</sup> HTA Consulting, Kraków, Poland

<sup>2</sup> Thermo Fisher Scientific, Warszawa, Poland

<sup>3</sup> Maria Skłodowska-Curie National Research Institute of Oncology, Warszawa, Poland

\* Correspondence to: monreczek@gmail.com

**Introduction:** KEYNOTE-522 demonstrated improved pathologic complete response (pCR)

rates and long-term outcomes with pembrolizumab in early-stage triple-negative breast cancer (TNBC). Nevertheless, treatment response remains heterogeneous, highlighting the need for reliable predictive biomarkers. As immune-related adverse events (irAEs) may reflect treatment-induced immune activation, they have emerged as potential indicators of therapeutic response; however, their predictive value in TNBC remains unclear. We therefore performed a meta-analysis evaluating the association between irAEs and pCR in early-stage TNBC.

**Methods:** A PRISMA-guided systematic review (CRD420261376455) was conducted using PubMed, Embase, major oncology conference websites, and reference lists searched through April 24, 2026. Eligible studies included patients with early-stage TNBC treated with pembrolizumab-based therapy and evaluated the association between irAEs and pCR. Odds ratios (ORs) were pooled using random-effects meta-analysis. Statistical analyses were performed using Stata v19BE.

**Results:** Of 1002 identified records, 137 full-text articles were assessed for eligibility, and 22 studies were included in the systematic review. Conference abstracts only (without full-text publications) accounted for 36% of the included studies. Most studies were retrospective (91%), with sample sizes ranging from 28 to 608 patients (total  $n = 3667$ ).

Across 14 studies included in the meta-analysis, pCR was achieved in 60.7% of the patients with irAEs vs 53.2% of those without irAEs, corresponding to a 48% higher odds of achieving pCR (pooled OR, 1.48; 95% CI, 1.23–1.77;  $P < 0.0001$ ). A significant association was also observed for grade  $\geq 3$  irAEs in 8 studies (pooled OR, 1.33; 95% CI, 1.07–1.66;  $P = 0.012$ ), with pCR rates of 62% vs 55.1%, respectively. Evidence regarding organ-specific irAEs was limited, with significant associations reported only for thyroiditis and alanine aminotransferase elevation.

**Discussion and conclusions:** irAEs during pembrolizumab-based therapy were associated with improved pCR rates in early-stage TNBC, suggesting their potential role as accessible predictive biomarkers. However, available evidence is largely retrospective, frequently based on small

patient cohorts, and includes a substantial proportion of non-peer-reviewed studies. Prospective studies are needed to validate these findings and define the clinical utility of irAEs in TNBC.

## Women's first birth experience and subsequent birth preferences

Weronika Stochnialek<sup>1,2\*</sup>, Emma M. Swift<sup>3,4</sup>, Edythe Mangindin<sup>3,4</sup>, Ilona Nenko<sup>1</sup>

<sup>1</sup> Department of Environmental Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>2</sup> Doctoral School of Medical and Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>3</sup> Faculty of Nursing and Midwifery, University of Iceland, Reykjavik, Iceland

<sup>4</sup> Reykjavik Birth Center, Reykjavik, Iceland

\* Correspondence to: weronika.stochnialek@doctoral.uj.edu.pl

**Introduction:** Negative childbirth experiences may influence women's future reproductive intentions, including both the decision to have another child and preferences regarding the mode of birth. Yet, Poland has one of the highest cesarean birth rates in Europe (48%), and identifying factors associated with women's birth mode preferences may support efforts to reduce this rate. Thus, the aim of this study was to assess the association between childbirth experience and preferences regarding the mode of birth in a hypothetical future pregnancy.

**Methods:** We analyzed data from 1037 Polish women who gave birth to their first child between 2018 and 2023. The mean (SD) age of the participants was 30.8 (3.63) years. The participants assessed their childbirth experience using the Childbirth Experience Questionnaire, version 2 (CEQ2). All models were adjusted for maternal age, education level, place of residence, mode of birth, and the period of the COVID-19 pandemic.

**Results:** The mean (SD) childbirth experience score was 2.56 (0.72). More negative childbirth experience were associated with a preference for cesarean birth in a future pregnancy (adjusted odds ratio [aOR], 2.23; 95% CI, 1.29–3.87). Furthermore, women whose first pregnancy ended in a planned cesarean birth were more likely to prefer a cesarean birth in a subsequent pregnancy

(aOR, 22.48; 95% CI, 13.48–37.5), as were women who experienced an emergency cesarean birth or instrumental birth (aOR, 5.72; 95% CI, 3.73–8.76).

**Discussion and conclusions:** Childbirth experience is a significant predictor of preferred mode of birth in a future pregnancy. Promoting positive childbirth experiences may contribute to reducing the high cesarean birth rate.

## Is air pollution during the heating season more hazardous to respiratory and laryngological urgent admissions in Poland?

**Bogdan Bochenek<sup>1\*</sup>, Joanna Wieczorek<sup>1</sup>, Mateusz Jankowski<sup>2</sup>, Paweł Goryński<sup>2</sup>**

<sup>1</sup> The Institute of Meteorology and Water Management-National Research Institute, Division of Numerical Weather Prediction, Warszawa, Poland

<sup>2</sup> Centre of Postgraduate Medical Education, School of Public Health, Warszawa, Poland

\* Correspondence to: bogdan.bochenek@imgw.pl

**Introduction:** Poland's reliance on solid-fuel domestic combustion creates pronounced seasonal pollution peaks. This study examines whether heating-season air pollution amplifies the risk of urgent hospital admissions for chronic obstructive pulmonary disease (COPD) and asthma and characterizes the co-occurrence of ear–nose–throat (ENT) comorbidities in acute asthma admissions.

**Methods:** We analyzed 630 059 emergency COPD and 190 495 emergency asthma admissions from the Polish National Health Fund, 2012–2019. ENT comorbidity (International Classification of Diseases (*International Classification of Diseases, Tenth Revision* codes: J00, J06, J30–J38, H65–H67) was identified in urgent asthma admissions and assessed at voivodeship level. Daily PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>2</sub> concentrations were obtained from the national Chief Inspectorate for Environmental Protection monitoring network. Distributed lag nonlinear models (quasi-Poisson, lag 0–10 days) were stratified by heating (November–March) and nonheating (April–October) seasons.

**Results:** Significant pollution effects were confined to the heating season. For COPD urgent

hospitalizations, PM<sub>10</sub> RR was 1.039 (1.011–1.067) in the heating vs 0.979 (0.954–1.006) in the nonheating season; the respective SO<sub>2</sub> RR values were 1.055 (1.035–1.076) vs 1.017 (0.993–1.042). For asthma adults, PM<sub>2.5</sub> heating RR reached 1.1 (1.051–1.152) and SO<sub>2</sub>, 1.082 (1.048–1.117). ENT comorbidity was present in 28%–33% of urgent asthma admissions, predominantly allergic rhinitis (J30; 62% of the ENT cases). Regional prevalence ranged from 25.4% (Pomorskie) to 1.8% (Warmińsko-Mazurskie).

**Discussion and conclusions:** Air pollution effects on urgent respiratory admissions in Poland are a heating-season phenomenon driven by coal and biomass combustion. The high co-occurrence of ENT diagnoses—particularly allergic rhinitis—supports the “united airways” concept and suggests that upper airway inflammation is part of the acute pollution response. Marked regional variation in ENT comorbidity warrants further investigation into both environmental exposure and diagnostic practice differences.

## Determinants of knowledge, attitudes, and behaviors among Yemeni women about cervical cancer

**Boshra Ali<sup>1,2\*</sup>, Andrzej Galbarczyk<sup>2,3</sup>, Grazyna Jasienska<sup>2</sup>, Maryam Ba-Break<sup>4</sup>, Hülya Gül<sup>1</sup>**

<sup>1</sup> Public Health Department, Istanbul University, Türkiye

<sup>2</sup> Department of Environmental Health, Jagiellonian University, Kraków, Poland

<sup>3</sup> Max Planck Institute for Evolutionary Anthropology, Germany

<sup>4</sup> Nuffield Centre for International Health, University of Leeds, Leeds, United Kingdom

\* Correspondence to: boshra.sasaah@gmail.com

**Introduction:** Cervical cancer (CxCa) remains the fourth most frequently diagnosed cancer and the fourth leading cause of cancer-related mortality among women worldwide. A disproportionate burden of incidence and mortality occurs in low- and middle-income countries, where access to effective screening programs and human papillomavirus (HPV) vaccination remains limited. In Yemen, the lack of national cervical cancer screening initiatives and HPV vaccination policies

contributes significantly to delayed diagnosis and poor clinical outcomes.

This study aimed to identify the factors associated with awareness and preventive health behaviors.

**Methods:** A cross-sectional study was conducted among 399 women in Sana'a, Yemen. Data were collected through face-to-face interviews using a structured questionnaire. Logistic regression analysis was performed to evaluate the associations between knowledge, attitudes, and preventive behaviors related to CxCa.

**Results:** The mean age of participants was 35.3 years. Most women (79.2%) worked outside the home and 88.5% reported no family history of cervical cancer. Higher education was significantly associated with awareness of CxCa. Women working outside the household were more than 4 times as likely to be aware of CxCa and were more likely to know that it is preventable and treatable. Women with a family history of CxCa were twice as likely to be aware of the disease and more likely to have heard of and undergone Pap smear testing. Age and diagnosis status were not significantly associated with awareness.

**Discussion and conclusions:** The findings of this study reveal significant deficiencies in awareness and preventive practices regarding CxCa among Yemeni women. Targeted public health interventions are therefore essential, particularly for women with lower educational attainment and those not participating in the workforce. In addition, the establishment of organized CxCa screening programs and the expansion of access to early detection services are urgently needed to strengthen prevention strategies and improve clinical outcomes.

## Pollen service within the comprehensive meteorological coverage of Poland

Joanna Wieczorek<sup>1\*</sup>, Dorota Myszkowska<sup>2</sup>, Łukasz Grewling<sup>3</sup>, Marta Gruszczyńska<sup>1</sup>, Mariusz Śliz<sup>4</sup>, Members of the Polish Aerobiological Network<sup>5</sup>

<sup>1</sup> National Weather Prediction Center, The Institute of Meteorology and Water Management – National Research Institute, Warszawa, Poland

<sup>2</sup> Jagiellonian University Medical College, Kraków, Poland

<sup>3</sup> Faculty of Biology, Adam Mickiewicz University, Poznań, Poland

<sup>4</sup> Development Office, IT Centre, The Institute of Meteorology and Water Management – National Research Institute, Warszawa, Poland

<sup>5</sup> Jagiellonian University Medical College, University of Silesia in Katowice, University of Szczecin, Adam Mickiewicz University in Poznan, University of Life Sciences in Lublin, University of Rzeszów, Medical University of Lodz, University of Wrocław

\* Correspondence to: [jwieczorek@imgw.pl](mailto:jwieczorek@imgw.pl)

Allergy symptoms affect up to 40% of the Polish population, mainly city dwellers. Allergic rhinitis (AR) and bronchial asthma affect approximately 22%–25% and 9%–12% of the population, respectively. Studies highlighted asthma as a social problem requiring systemic solutions.

Weather conditions affect the concentration of inhalant allergens, which provoke allergic symptoms. It is important to include information on allergen exposure in meteorological advisory products, especially when issuing recommendations for outdoor activity planning. This is what inspired the creation of the Pollen Service, which has been operating nationwide on the IMGW-PIB platform since May 2026 at <https://biometeo.imgw.pl/?page=PYLKI>. Data on the concentrations of allergenic pollen and fungal spores are provided by the Polish Aerobiological Network, based on measurements at 8 university centers, in accordance with the International Aerobiology Association requirements.

The service provides weekly updates on the concentrations of allergenic pollen grains and fungal spores, along with a clinical risk rating that indicates to allergy sufferers how severe their reactions are likely to be in a given week. Detailed forecasts for cities will provide insight into current and forecast conditions and enable an assessment of pollen season progression. This monitoring will be of assistance to both professionals and patients.

## Did the COVID-19 pandemic affect mental health care in public system in Poland?

Joanna Kobza<sup>1\*</sup>, Mariusz Geremek<sup>1</sup>,  
Ewa Niewiadomska<sup>2</sup>

<sup>1</sup> Public Health Department, School of Public Health in Bytom,  
Medical University in Katowice, Poland

<sup>2</sup> Department of Biostatistics, School of Public Health in Bytom,  
Medical University in Katowice, Poland

\* Correspondence to: jkobza@sum.edu.pl

**Introduction:** The European Commission's Comprehensive Approach to Mental Health indicated mental health as important as physical health. The World Health Organization highlighted that however outpatient mental health services are becoming more accessible, some factors still affect access to them.

**Methods:** The aim of the study was spatial and temporal analysis of the number of patients and services provided in outpatient mental health care in Poland over the period 2012–2024 in the public sector. The analysis took 3 periods into account: prepandemic, pandemic, and postpandemic. Maps of the services have been drawn up showing if there are any regional differences. Data obtained from the National Health Fund included: psychological services, outpatient psychiatric and daytime psychiatric rehabilitation services for children, adolescents and adults, treatment of neurotic disorders, psychogeriatric and geriatric psychiatric services. The study was descriptive in nature, employing the analysis of growth rates and correlation analysis. MS Excel 2019 was used for calculations and graphical presentation. Regional variations were illustrated using cartograms.

**Results:** Between 2012 and 2019, there was a steady increase in the number of services. In 2020 and 2021, a sharp decline in the number of services was observed; both psychological and psychiatric among adults, although in 2023 the number of services was higher than in 2019, unlike in the case of children and adolescents, where during the pandemic the number of patients and services increased significantly and a downward trend has been recorded since 2022. In terms of psychogeriatric treatment, the highest number of services was recorded in 2021 and 2022. In more

urbanized regions it was noted different trends to those in less urbanized.

**Discussion and conclusions:** Access to mental health services is improving. The pandemic has affected treatment across all age groups. Maps are a key tool for stakeholders in providing information on where and what services are provided within the public system.

## The price of a shot: direct financial incentives and COVID-19 vaccination willingness

Pavlo Todorych\*, Christoph Sowada

Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: pavlo.todorych@student.uj.edu.pl

**Introduction:** By February 2026, COVID-19 caused over 7 million deaths and 779 million infections. Vaccination was key to reducing transmission and death, but success depended on uptake. After free vaccinations started, hesitancy became a major barrier, a top global health threat before the pandemic. Governments used financial incentives, such as cash, gift cards, and transfers. This study evaluated how effective these incentives were in increasing adult vaccination willingness and the factors influencing their impact.

**Methods:** A PRISMA-compliant scoping review across Web of Science, MEDLINE, Embase, and Scopus (January 2021–March 2024) included studies on adults, financial incentives (cash, gift cards, or transfers), and COVID-19 vaccination willingness. After analyzing 376 records, 40 studies met all criteria.

**Results:** Overall, 27 of 40 studies reported a positive effect of direct financial incentives on willingness to be vaccinated against COVID-19. Effectiveness is determined by 3 interacting factors: incentive magnitude, payment type, and target population characteristics. Incentives below 25–50 USD show negligible or counterproductive effects; 83.6% of the respondents rated a 25 USD gift card as discouraging or irrelevant. At 100–200 USD, effects become measurable but moderate. At 1000 USD in cash, willingness in-

creased by 17.1 percentage points, with 79.7% of the participants expressing willingness to vaccinate. Direct cash and guaranteed cash cards produce the strongest results. Younger adults (18–29 y) are the most price-responsive across all incentive amounts. Older adults respond primarily to access-based interventions, specifically proximity to a trusted general practitioner. Undecided individuals, regardless of age, respond most strongly to financial rewards; a cash reward alone increased uptake by 5 percentage points, rising to 13 when combined with physician access and restored freedoms.

**Discussion and conclusions:** Direct financial incentives are an effective public health strategy for increasing COVID-19 vaccination rates, particularly among undecided individuals and economically vulnerable populations. Their effectiveness is not uniform and depends critically on the incentive's magnitude, payment form, and the recipient's demographics. Low-value incentives risk signaling distrust.

## Health education under pressure: a multiperspective analysis of implementation and participation in Polish schools

Andrzej Jarynowski\*, Angelika Kierczak, Franciszek Kędzierski, Dorota Kiedik

Wroclaw Medical University, Wroclaw, Poland

\* Correspondence to: [andrzej.jarynowski@umw.edu.pl](mailto:andrzej.jarynowski@umw.edu.pl)

**Introduction:** In the 2025–26 school year, Health Education was introduced as a new subject in Polish primary schools, grades 4–8. Public health students of the Wroclaw Medical University conducted one of the first comprehensive empirical studies examining how the subject is implemented, understood, and contested in school practice.

**Methods:** The mixed-method study included surveys of 79 teachers and 42 parents, individual interviews with 6 teachers and 2 parents, one focus group, 4 lesson-based ethnographic observations, media monitoring (quantitative and qualitative assessment of material), sim-

ulation exercises on controversial topics, and structured debriefing. Data integration was supported by an orchestration methodology based on a large language model–assisted Delphi process. Medical, educational, ethical, and social actors independently analyzed raw materials and preliminary interpretations, after which an aggregator synthesized consensus and formulated practical recommendations to increase participation in Health Education.

**Results:** The study identified insufficient systemic support for teachers, especially in addressing psychological topics. Parental decisions were strongly influenced by group dynamics, particularly around sexuality-related content, although resistance appeared partly negotiable. Media discourse often marginalized substantive health issues, instead emphasizing political and identity-based conflict. The findings indicate a likely re-emergence of coordinated antihealth disinformation campaigns around the September 2026 parental opt-out deadline, requiring anticipatory communication and institutional preparedness.

**Discussion and conclusions:** To strengthen implementation, the study recommends: 1) relocating the most parentally controversial or pedagogically demanding topics, such as sexuality education and psychological issues, to more flexible formats; 2) ensuring sustained expert support, especially from psychologists and trusted public health institutions; 3) reinforcing the implementation framework through a mandatory core curriculum, stable organizational conditions, and optimized scheduling.

## Navigating modernity: communal values, genomic medicine, and health care financing among the Old Order Amish (2014–2024)

Anna Kotlińska<sup>1\*</sup>, Adam Krzyk<sup>2</sup>, Weronika Kowal<sup>3</sup>, Joseph Donnermeyer<sup>4</sup>

<sup>1</sup> Department of Environmental Health, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College, Kraków, Poland

<sup>2</sup> Language Centre of the Jagiellonian University Medical College, Kraków, Poland

<sup>3</sup> Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, Ohio, United States

<sup>4</sup> School of Environment and Natural Resources, The Ohio State University, Columbus, Ohio, United States

\* Correspondence to: [anna.kotlinska@uj.edu.pl](mailto:anna.kotlinska@uj.edu.pl)

**Introduction:** The Old Order Amish population doubles approximately every 20–22 years. Understanding their unique health culture is a demographic imperative for health care providers in rural North America. This study examines how core values—Gelassenheit (submission to God’s will) and communal self-reliance—shape their complex interaction with modern health care.

**Methods:** We conducted a targeted review of recent peer-reviewed publications and clinical reports, building on foundational literature. Selection criteria focused on original research addressing medical decision-making, health care financing, and possible tensions between professional medicine and traditional beliefs.

**Results:** Amish health definitions are pragmatic, where the inability to perform physical work primarily triggers the seeking of medical care. Health care financing contrasts with mainstream system. Commercial insurance is widely rejected for community-organized mutual aid. Programs such as Amish Hospital Aid operate with zero administrative overhead and a strict 80/20 cost-sharing model, promoting cost containment and interdependence. Medically, the Amish exhibit a fascinating paradox. While acceptance of preventive public health measures is declining—with full vaccination acceptance dropping to 41% in some settlements—the community proactively embraces genomic medicine. Community-supported clinics provide diagnostic services and comprehensive outpatient care for over 2000 patients

with rare founder-effect disorders at remarkably low costs. Furthermore, recent data show in-house laboratories have completed over 6700 advanced genetic screenings to ensure rapid diagnosis for vulnerable children.

**Discussion and conclusions:** The Amish approach to medicine selectively integrates technologies that cure disease without threatening socio-religious boundaries. Effective health-care engagement requires culturally competent, community-oriented approaches that respect alternative financing mechanisms and local church leadership.

## Knowledge and attitudes of primary health care patients toward transplantation: a single-center cross-sectional study

Edyta Kwilosz<sup>1</sup>, Julia Woźnica<sup>1</sup>, Weronika Pawlik<sup>2</sup>, Katarzyna Badora-Musiał<sup>2\*</sup>

<sup>1</sup> State University of Applied Sciences in Krosno, Krosno, Poland

<sup>2</sup> Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: [kasia.badora@uj.edu.pl](mailto:kasia.badora@uj.edu.pl)

**Introduction:** The shortage of organs for transplantation remains an important public health and clinical challenge. Public knowledge and attitudes toward organ donation are particularly relevant in Poland, where the presumed consent model is in force. Primary health care may provide an important setting for patient education on organ donation and transplantation. This study aimed to assess the knowledge and attitudes of primary health care patients toward transplantation and to analyze associations between selected sociodemographic factors, knowledge, and attitudes.

**Methods:** A single-center cross-sectional study was conducted among 182 patients of the Specmed primary health care clinic in Krosno, Poland. A diagnostic survey method was used with an original questionnaire including sociodemographic data, a knowledge test, and an assessment of attitudes toward transplantation using a 5-point Likert scale. Statistical analysis included the  $\chi^2$  test, Cramer V, and Kendall  $\tau$  correlation coefficients.

The significance level was set at  $P$  value lower than or equal to 0.05.

**Results:** Low knowledge about transplantation was found in 83% of the respondents, moderate knowledge in 13.7%, and high knowledge in 3.3%. Despite these deficits, 74.2% of the participants presented favorable attitudes toward transplantation, 23.1% ambivalent attitudes, and 2.7% unfavorable attitudes. A significant association was found between higher knowledge levels and more positive attitudes. Higher education was positively associated with knowledge, whereas older age was negatively associated with knowledge. Previous exposure to the term “organ transplant” was associated with more favorable attitudes. Sex, place of residence, marital status, and type of employment did not significantly differentiate knowledge or attitudes.

**Discussion and conclusions:** Primary health care patients demonstrated low knowledge but a high level of social acceptance of organ donation and transplantation. The findings indicate the need for population-wide educational activities in primary health care settings, especially regarding legal regulations, family discussions about organ donation, and the public health importance of transplantation.

## Age-related epidemiological differences in unintentional injury mortality and hospital morbidity among older adults in Poland: implications for targeted prevention

Rafał Halik<sup>1</sup>, Katarzyna Domosławska-Żylińska<sup>2</sup>, Magdalena M. Łopatek<sup>2</sup>

<sup>1</sup> Department of Population Health Monitoring and Analysis, National Institute of Public Health – National Research Institute, Warszawa, Poland

<sup>2</sup> Department of Health Promotion and System-Level Interventions, National Institute of Public Health NIH - National Research Institute, Warszawa, Poland

\* Correspondence to: rhalik@pzh.gov.pl

**Introduction:** Population aging increases the burden of injuries, yet older adults are often treated as a homogeneous group. This study aimed

to assess epidemiological differences in accidents mortality and hospitalization across older age subgroups and to highlight the need for tailored prevention strategies. The analysis was conducted within the statutory research project ZC-6.2025 of the National Institute of Public Health (NIZP PZH–PIB).

**Methods:** National mortality data (2010–2024) and hospitalization data from selected voivodeships were analyzed. Age- and sex-specific mortality rates, cause-specific structures, temporal trends (annual percentage change [APC]), and hospitalization rates were examined for 3 age groups: 60–69, 70–79, and 80+ years.

**Results:** In 2010–2024, 99 690 deaths among individuals aged 60+ years were attributed to accidents (51% of all injury deaths). Falls were the leading cause (56%), followed by road traffic injuries (16%) and poisonings (>6%). Mortality increased with age and remained higher in men, although sex differences diminished in the oldest group. In 2024, mortality rates (per 100 000) clearly differed by age group: 60–69 years, 70.6 (men) vs 13.9 (women); 70–79 years, 77.8 vs 30.9; 80+ years, 231.5 vs 185.1.

Time trends also varied: 60–69: stable (APC, –0.4%); 70–79: decrease (APC, –1.3%); 80+: increase (APC, +1.4%). Falls increased in the oldest group (80+ y), while traffic injuries declined across all age groups. A concerning increase in poisoning-related mortality was observed in age groups 60–69 (APC, +4.8%) and 70–79 years (APC, +5.3%).

During the COVID-19 pandemic, mortality increased, particularly due to falls, with the strongest rise in women aged 80+ years. In voivodeships with high-quality data, hospitalization rates due to accidents increased with age among individuals aged 60+, were predominantly driven by falls (76.3%), and were particularly high among women aged 80+ years.

**Discussion and conclusions:** The findings indicate the need for age-specific prevention: intensified fall prevention among 80+ group, and targeted interventions addressing poisonings and behavioural risks in the 60–79 population.

## Selected lifestyle factors and blood pressure values among adolescents aged 15–17 years from Nowy Sącz

Anna Węglarska<sup>1\*</sup>, Paweł Jagielski<sup>2</sup>, Beata Piórecka<sup>2</sup>, Ewa Błaszczuk-Bębenek<sup>2</sup>

<sup>1</sup> Human Nutrition Students' Scientific Group, Institute of Public Health, Jagiellonian University Medical College, Kraków, Poland

<sup>2</sup> Department of Nutrition and Drug Research, Institute of Public Health, Jagiellonian University Medical College, Kraków, Poland

\* Correspondence to: [anna.weglarska@student.uj.edu.pl](mailto:anna.weglarska@student.uj.edu.pl)

Health behaviors adopted during adolescence may influence the risk of developing cardiovascular diseases in adulthood.

The aim of the study was to assess the associations between anthropometric parameters, selected lifestyle factors, and blood pressure (BP) values among high school students from Nowy Sącz.

A cross-sectional study was conducted among 148 students aged 15–17 years. Data on dietary habits and selected lifestyle factors were collected using a questionnaire developed based on the KomPAN®. Nutritional status was assessed using anthropometric measurements: body weight (kg), waist and hip circumferences (cm), and BP measurements (mm Hg). Indicators such as body mass index (BMI), waist-to-hip ratio, and waist-to-height ratio (WHtR) were calculated and interpreted using OLAF percentile charts. According to the Polish Society of Hypertension guidelines (2019), percentile charts were used for 15-year-olds, and adult criteria for 16–17-year-olds to assess BP.

The analysis was performed using the Spearman rank correlation coefficient, the Mann–Whitney test, and the  $\chi^2$  test; the level of significance was set at a *P* value below 0.05.

The mean (SD) age of the participants was 16 (0.8) years (92.6% boys). According to BMI classification, 60.1% of the participants had normal nutritional status, while overweight and obesity were observed in 33.1% of the study group. Elevated BP values were found in 31.1% of the participants. A positive correlation was found between mean systolic BP and BMI ( $r = 0.315$ ;  $P < 0.001$ ), and WHtR ( $r = 0.284$ ;  $P < 0.001$ ). Among the participants with elevated BP, overweight and obesity

were observed more frequently than among those with normal BP values (50% vs 22.5%;  $P = 0.0015$ ). The participants with elevated BP had a higher WHtR as compared with those with normal BP values (mean [SD], 0.44 [0.05] vs 0.41 [0.05];  $P = 0.0005$ ). No significant associations were found BP pressure and the consumption of sugar-sweetened beverages, fast food, physical activity level, or cigarette smoking.

Higher BMI and WHtR values were associated with higher BP values among the studied adolescents. The findings underline the importance of routine anthropometric and BP measurements as part of preventive care in this age group. Public health policies should therefore promote integrated school-based actions combining regular health monitoring, nutrition education, and interventions aimed at maintaining healthy body weight.

## Preparing a hospital-based health technology assessment for an AI-supported clinical decision-support system in child and adolescent mental health: the Mentalio multicenter experience

Maciej Wszółkowski<sup>1</sup>, Iwona Kowalska-Bobko<sup>2</sup>, Wojciech Komnata<sup>1,3\*</sup>

<sup>1</sup> Nivalit sp. z o.o., Kraków, Poland

<sup>2</sup> Jagiellonian University Medical College, Kraków, Poland

<sup>3</sup> Mentalio sp. z o.o., Kraków, Poland

\* Correspondence to: [wojciech.komnata@nivalit.com](mailto:wojciech.komnata@nivalit.com)

**Introduction:** Child and adolescent mental health services in Poland face rising demand against a limited specialist workforce, and digital tools supported by artificial intelligence (AI) are increasingly considered as a way to assist clinicians in routine care. Mentalio is an AI-supported medical device designed to assist mental health professionals working with patients aged 13–21 years. Developed with funding from the Polish Medical Research Agency (ABM), the device is now completing its multicenter clinical study and entering the preparatory phase for a Hospital-Based Health Technology Assessment (HB-HTA), aligned with the national HB-HTA methodology

and the Polish guidelines for the assessment of medical devices. The study is conducted across 5 sites: the University Hospitals in Kraków and Poznań, and psychiatric hospitals in Łódź, Gdańsk, and Morawica, engaging more than 90 mental health professionals.

**Methods:** The clinical study follows a multicenter design across academic and regional psychiatric hospitals. A development cohort of 1100 patients has already been assessed across the 5 sites, and a final validation phase enrolling 390 patients is now nearing completion. Recognized limitations include nonrandom site selection, heterogeneity of clinical workflows between academic and regional psychiatric settings, and the absence of an established reference standard for AI-supported decision support in adolescent psychiatry.

With the clinical study close to completion, the team has initiated planning of the HB-HTA process. Work has begun on defining the decision problem, specifying clinical and organizational end points, mapping workflow integration across the participating hospitals, and outlining the framework for the economic analysis at the hospital level.

**Discussion and conclusions:** The aim of this work is to translate completed multicenter clinical evidence into a structured HB-HTA. Anticipated challenges include selection of an appropriate comparator, representativeness of data for the adolescent population, the need for revalidation of evolving AI models, explainability supporting clinician oversight, and ethical safeguards for minors—areas where current HB-HTA frameworks require further development for AI-based medical devices.

## Quality of life with endometriosis as an underestimated public health challenge

Agnieszka Hubert-Lutecka\*, Gabriela Gagat

Public Health Laboratory, Faculty of Health Sciences and Psychology, Collegium Medicum, University of Rzeszow, Rzeszów, Poland

\* Correspondence to: [hubertagnieszka@gmail.com](mailto:hubertagnieszka@gmail.com)

**Introduction:** Endometriosis is a serious estrogen-dependent, inflammatory disease that affects 6%–10% of women in Poland aged 15–49 years. It is characterized by the presence of endometrial cells outside the uterine cavity. The primary problem is the late diagnosis of the disease, after an average of 6–8 years of pain that excludes women from normal social and professional life. The aim of the study was to assess the quality of life of women with endometriosis living in the Rzeszów County.

**Methods:** The study was conducted between December 2025 and February 2026. A diagnostic survey was used, using a proprietary, anonymous questionnaire. The study included 133 women aged 18–45 years residing in the Rzeszów County. Descriptive statistics and statistical inference were used to analyze the collected research material and verify the hypotheses.

**Results:** Over half of the respondents (55%) reported experiencing pain daily/several times a week. The vast majority, representing 75.2% of the study population, unequivocally confirmed that they experienced physical or professional difficulties due to endometriosis. Only less than 1 in 5 respondents (18.4%) declared that the condition did not negatively impact their ability to work and engage in physical activity. Nearly 1 in 3 women (32%) reported long-term or permanent absence from social and family activities due to the disease.

**Discussion and conclusions:** Endometriosis significantly impacts women's quality of life, limiting their daily functioning in the physical, mental, and social spheres through the presence of chronic pain and functional limitations. Regarding the subjective assessment of quality of life, the analysis revealed a significant positive correlation with age. Older patients rated their overall quality of life slightly better than the youngest women. Other clinical parameters analyzed, including the objective stage of endometriosis, time since diagnosis, and body mass index, did not significantly impact the perceived quality of life ( $P > 0.05$ ).