MediPIET Summary report of work activities

Besfort Kryeziu

Kosovo, Cohort 4 (2021)

Background

1. About MediPIET

The Mediterranean and Black Sea Programme for Intervention Epidemiology Training (MediPIET) aims to enhance health security in the Mediterranean and the Black Sea region by supporting capacity building for prevention and control of natural or man-made threats to health posed by communicable diseases. It is a competency-based **in-service two two-year fellowship** during which selected fellows conduct projects and field investigations at a MediPIET Training Site in their home country and attend MediPIET modules.

Since mid-2021, MediPIET is implemented by ECDC as a part of the EU Initiative on Health Security. You can find more information about the programme at: https://www.ecdc.europa.eu/en/training-and-tools/training-programmes/fellowships/medipiet

2. Pre-fellowship short biography

Besfort Kryeziu is a medical doctor who has been working at the Epidemiology Department of the National Institute of Public Health of Kosovo, as public health resident. His domain of work in the institute were communicable diseases, with a a specific focus on respiratory infections. He was was a member of the COVID-19 Management Task Team, working on the COVID-19 Operative Emergency Center. During his residency, he worked in outbreak investigation teams and was engaged in different public health projects.

Fellowship

In September 2021, Besfort Kryeziu started his MediPIET fellowship at the Epidemiology Department of the National Institute of Public Health of Kosovo,Prishtina, Kosovo. This report summarises summarises the work performed during the fellowship.

National supervisor(s): Pranvera Kaçaniku – Gunga, Arijana Kalaveshi

Scientific coordinator: Liese Van Gompel (for the first six six months), Kostas Danis (for the remaining one and a half one and a half yearss)

Fellowship projects

1. Surveillance

Evaluation of Severe Acute Respiratory Infection (SARI) Sentinel Surveillance System in Kosovo, 2021-2022

Background: Sentinel surveillance for severe acute respiratory infections (SARI) has been operational in Kosovo since 2014. We evaluated the performance of the system for the 2021/2022 season, following challenges during the COVID-19 pandemic and the lack of digitalisation.

Methods: We used ECDC guidelines. We measured completeness as the proportion of compulsory fields completed and timeliness as the proportion of notified cases with nasopharyngeal samples within 24 hours. We measured representativeness as the percentage of areas and population covered by surveillance. Simplicity and utility were evaluated using a semi-structured questionnaire administered to key stakeholders. We classified performance as weak$\leq$60%, moderate=60-79%, and good=80-100%.

Results: Overall, 91% of data were complete and 85% of the reports and nasal samples were delivered within 24 hours (good performance); 68% (73/107) of respondetnts reported that employees had enough time to accomplish their surveillance tasks and 71% (76/107) rated the system as simple (moderate performance). Only two areas of Kosovo were covered with 49% of the population and private hospitals were not were not included, indicating low representativeness. Respondents reported that the paper-based system was time-consuming and susceptible to reporting delays and mentioned lack of training and funding, and inadequate laboratory equipment as weaknesses of the surveillance.

Conclusions: The SARI sentinel surveillance performed well with good data quality, completeness, and timeliness, but low representativeness and limited resources. We recommend expanding the system to Kosovo's private hospitals, supporting staff and increasing resources to build a digitalized integrated health information system.

Keywords: severe acute respiratory infection, sentinel surveillance, evaluation, Kosovo, 2021-2022

Role and outputs: Principal investigator

The fellow wrote the protocol, developed the questionnaire, performed data entry, interviewed stakeholders, analysed the data, wrote the final report, shared the results with stakeholders, and submitted an abstract to ESCAIDE 2023.

Supervisor(s): Pranvera Kaçaniku – Gunga

Status: Completed

2. Outbreaks

Food poisoning outbreak in a primary school and a senior high school in Shale, Lipjan, November 2021

Background: On 5 November 2021 5 November 2021, the Head of Sanitary Inspection reported 16 cases of suspected food poisoning who required medical assistance in the village of Shale, Lipjan. We investigated the outbreak to identify the source of infection.

Methods: We conducted a retrospective cohort study among pupils of the primary and senior high schools in Shale. A case was defined as a pupil from the two schools who developed any gastrointestinal symptom during 1-8 November 2021. We actively searched for cases in family medicine centres, hospitals, schools, and telephone interviews of cases. We took human stool and environmental samples to identify the pathogen. We calculated attack rates and risk ratios (RRs) with 95% confidence intervals (95%CIs) to identify factors associated with the disease.

Results: Of 67 pupils, 40 (60%) met our case definition [overall attack rate (AR)=60%]. Among all cases, 19 (47%) were female. The sex-specific attack rate was 42% for females and 57% males. Individuals who consumed homemade sauce had a a 1.9 (RR 1.9, 95% CI 1.0 - 3.9, p=0.057) times higher risk of illness than individuals who did not consume this food item. Cultures from stool and specimens from the sauce yielded *Salmonella* enteritidis at levels exceeding the reference threshold.

Conclusion: Laboratory, environmental and epidemiological findings pointed towards the homemade sauce as a possible source of infection. We recommended all the necessary hygeinic measures for the prevention of future outbreaks.

Role and outputs: Principal investigator

The fellow was involved in all the stepes of the outbreak investigation, adapted the official outbreak investigation questionnaire, performed data entry, analysed the data, wrote the final report, and shared the results with interdisciplinary teams such as Water, Food and Air Quality Department and Food and Veterinary Agency.

Supervisor(s): Pranvera Kaçaniku – Gunga

Status: Completed

3. Research

Effectiveness of the COVID-19 vaccine against hospitalissations for severe acute respiratory infections in patients with laboratory-confirmed SARS-CoV-2, Kosovo, December 2021 to May 2023: a prospective test negative case–control study

Background: COVID-19 vaccination in Kosovo began on 29 March 201929 March 2021. We estimated adjusted primary series COVID-19 vaccine effectiveness (VE) against severe acute respiratory infections (SARI)-associated hospitalisation.

Methods: In this test-negative case-control study, we compared COVID-19 vaccination status between laboratory-confirmed cases for SARS-CoV-2 and test-negative controls among adult patients admitted to four sentinel hospitals who met the WHO SARI case definition. From every SARI patient, we collected demographic, COVID-19 vaccination data and a respiratory specimen, which was tested for SARS-CoV-2 using RT-PCR. The exposure of interest was COVID-19 vaccination prior to hospital admission. The primary outcome was hospitalissed SARI due to SARS-CoV-2 infection. Using logistic regression, we calculated adjusted odd ratios of vaccination in cases compared with controls; VE estimates were calculated as (1-adjusted odds ratio) x100%.

Results: From 1 January From 1 January2022–6 April 6 April2023, we included 257 SARI patients. The mThe median edian age was 65.5 years (IQR:41-76); 50% were female. None had prior confirmed COVID-19 infection. Overall, 49% (63/125) of cases and 51% (63/132) of controls had received primary vaccine series; 132 (51%) received Pfizer-BioNTech, 37 (14%) received AstraZeneca. Of 123 samples with genetic sequencing, 84% were Omicron. VE was 40% (95%CI: -20–65%) for all ages, 81% (95%CI: 40–85%) for 18–59 year-olds and -45% (95%CI: -200–45%) for 60–79 year-olds. VE waned from 68% (95%CI: -266–97%) for participants who received their second doses <120 days prior to admission to 31% (95%CI: -44%–67%) for those vaccinated 240 days prior to admission.

Conclusions: Primary series COVID-19 vaccine provided moderate protection against SARI hospitalisation in Kosovo during an Omicron-predominant period, although precision was low. Vaccine effectiveness waned over time, underscoring the need to consider booster vaccination to increase protection.

Keywords: COVID-19, vaccination, vaccine effectiveness, SARI, Kosovo

Role and outputs: Principal investigator

The fellow wrote the protocol, submitted it to the ethical committee, developed the informed consent form and the questionnaire, developed all the SOPs and the data entry mask, performed data entry and data analysis, conducted the training of study staff, did continuous monitoring and evaluation, performed weekly data checking and shared those data with co-investigators, wrote a manuscript to be submitted to a peer-reviewed journal.

Supervisor(s): Pranvera Kaçaniku – Gunga, Arijana Kalaveshi, Mark Katz

Status: Completed

4. Scientific communication

Conference presentations

- **Kryeziu B**. Effectiveness of the COVID-19 vaccine against hospitalizations for severe acute respiratory infections in patients with laboratory-confirmed SARS-CoV-2, Kosovo, December 2021 to May 2023: a prospective test negative case–control study. MediPIET Scientific Event,2023,Barcelona, Spain.

Publications and outputs

1. **Kryeziu B**, Kalaveshi-Osmani A, Katz M, et al. Effectiveness of the COVID-19 vaccine against hospitalizations for severe acute respiratory infections in patients with laboratory-confirmed SARS-CoV-2, Kosovo, December 2021 to May 2023: a prospective test negative case–control study. [to be submitted]

2. Cawley C, Gabrani J, Stevanović A, Aidaraliev R, Çakmak Barsbay M, … **Kryeziu B**. et al. (2023) The Burden of Disease due to COVID-19 (BoCO-19): A study protocol for a secondary analysis of surveillance data in Southern and Eastern Europe, and Central Asia. PLOS ONE 18(10): e0292041. https://doi.org/10.1371/journal.pone.0292041
3. Hoxha I, Apuk V, **Kryeziu B**, Rashiti P, Aliu M, Aquines AG, Khan O, Nguyen HTH. (2023) Management of Non-Communicable Diseases in Kosovo: A Scoping Review. Int J Environ Res Public Health. 13;20(4):3299. doi: 10.3390/ijerph20043299. PMID: 36833997; PMCID: PMC9961581.

5. Teaching activities

1. Course targeting PhD students on sample size calculation using OpenEPI (https://www.openepi.com/Menu/OE_Menu.htm). Lecture, demonstration and practical (duration: 1.5 hours) Audience: 25 PhD student in Public Health in the University „Hasan Prishtina". The evaluation of participants suggested that the session was useful and provided better insight into sample size calculations for different study designs.
2. Training the interviewers and data entry officer clerks on how to properly use REDCap for entering the data at the beginning of the vaccine effectiveness study. The training took 8 hours and included lectures and practice using case studies. Participants provided positive oral feedback about the course and, as a post-course test, they successfully entered some data in REDCap.
3. Training on SARI surveillance and enhancement of surveillance towards a vaccine effectiveness study. This training targeted all the study coordinators and nursing staff who played active role in the SARI sentinel surveillance in Kosovo (n=12). It included a lecture, demonstration and a practical session (duration: 4 hours). A pre-and post-test suggested that participants were prepared for the implementation of VE study in Kosovo.

6. Other activities

During his MediPIET Fellowship, Besfort also participated in several other activities, which improved his skills as an epidemiologist, including:

- Conducted COVID-19 surveillance and contact tracing.
- Conducted field work during different outbreaks.
- Participated in decision-making of adapting changes in recommendations for COVID-19.
- Prepared the daily, weekly, monthly and annual bulletins for COVID-19, influenza and different communicable diseases (including data analysis).
- Provided information from literature review to colleagues.
- Participated in health education campaigns.
- Participated in different projects such as Optima HIV, Spectrum HIV, Point prevalence survey of healthcare-associated infections and antimicrobial use with ECDC and WHO
- Participated in communication activities about COVID-19 vaccination through videoclips.
- Participated in Ministry of Health assignments as member of different working groups.
- Participated in meetings in the National Institute of Public Health, NGOs and other stakeholder meetings.
- Provided communication and presentation in different online and face-to-face workshops both nationally and internationally.
- Actively participated and made oral presentation in different national conferences.

7. MediPIET modules attended

- Introductory Course – Part 1, September 20 – October 8, 2021, Online.
- Inject day: Phylogeny, October 20, 2021, Online.
- Inject days: Operational Research, October 26 & 27, 2021, Online.
- Inject days: Data Collection, November 10 & 11, 2021, Online.
- Outbreak Investigation module, December 6 – 10, 2021, Online.
- Multivariable Analysis module, March 14 – 18, 2021, Online.
- Multivariable Analysis inject day, March 30, 2022, Online.
- Project Review module I & Introductory Course -Part 2, April 20 – 29, 2022, Spetses, Greece, Face-to-face.
- Rapid Assessment and Survey Methods (RAS) & Mass Gatherings, June 6 – 10, 2022, Stockholm, Sweden, Face-to-face.
- Project Review Module II, August 29 – September 2, 2022, Lisbon, Portugal, Face-to-face.
- Time Series Analysis module, November 7 – 11, 2022, Bilthoven (Utrecht), Netherlands, Face-to-face.
- Chemical, Biological, Radiological and Nuclear Awareness and Mitigation (CBRN) Module, February 13 – 17, 2023, Petrovac, Montenegro, Face-to-face.
- Vaccinology Inject day, March 29, 2023, Online.
- One Health & Vectorborne Diseases module, 2 – 4 and 15 – 17, May, 2023, Online.
- Project Review module 2023, 28 August – 1 September, 2023, Lisbon, Portugal, Face-to-face.

8. Supervisor conclusion

As a supervisor of Besfort Kryeziu, I am very grateful for MediPIET for providing opportunities for the fellows and helping them learn more about the beauty of field epidemiology. Besfort will be a great asset for the National Institute of Public Health of Kosovo and he will contribute to building capacity that will ensure public health protection. Besfort's determination was unmatched and we are very happy that he could achieve his full capacity during the fellowship. He shared compasion for the work and it was very easy to work with him. For me as a supervisor, it was easy to help and collaborate with him. He also had great support and mentorship from his scientific coordinator, Kostas Danis. Since the beggining of fellowship, up to today, his work has improved so much and he is still looking to learn more. I am happy to provide more help and insighst for him. *Pranvera Kaçaniku – Gunga*.

9. Personal conclusions of fellow

As I have just completed my MediPIET fellowship, I am reflecting on the invaluable experiences and knowledge that I have gained during this transformative journey. This program has been a pivotal chapter in my professional life, providing me with the tools, insights, and skills necessary to excel in the world of field epidemiology.

I learned a lot about public health and increased my knowledge during those two years. Everything regarding applied epidemiology was also very beneficial, especially outbreak investigation, surveillance, studies, laboratory aspects, public health recommendations and risk assessment. One of the most valuable gainss through this fellowship, was the enhancement of my knowledge regarding biostatistics and data analysis, from data management and descriptive statistics to multivariable analysis. The inclusion of statistical analysis using R statistial software will be very beneficial for my career and I want to thank MediPIET for making it easier for me to learn and expand my knowledge of this program. Also, I learned a lot regarding teaching methods and ethical principals in more detail.

Throughout the fellowship, I had the privilege of working with a dedicated team of experts, mentors and colleagues at ECDC, WHO and Epiconcept, who guided me in applying epidemiological principles to real-world public health challenges. The networking was also the gem of this fellowship, considering that it opened the horizon for me to connect with the different parts of the world.

As I graduate from this fellowship program, I am confident that the knowledge and skills I have gained during MediPIET, will serve as a solid foundation for my future career. I am excited to continue contributing to public health in my country Kosova and globally, and I am deeply grateful for the opportunities and support I have received throughout this fellowship.

10.   Acknowledgements

I would like to thank my MediPIET supervisors Pranvera Kaçaniku – Gunga and Arijana Kalaveshi for their support, knowledge, discussion and teaching me about epidemiology and public health science. They provided me with project opportunities and supported me to complete my fellowship. I couldn't be more thankful to my scientific coordinator, Kostas Danis, who was always available and greatly supported me in this journey, taught me so much, guided me in many different areas, made me a better epidemiologist, and became a role model for my future career. In addition, I would like to thank my other scientific coordinator, Liese von Gompel, who for six six months worked with me and supported me at the beginning of my fellowship. I would also like to thank my PhD co-mentors, Isme Humolli and Mark Katz who helped me a lot with their experience, consultation, and suggestion for my assignments. A big thank you to all my colleagues from the National Institute of Public Health of Kosovo, WHO Prishtina, WHO Euro and Epiconcept for their support and commitment during my 2-year fellowship with MediPIET. Last but not least, I want to thank all my colleagues from Cohort 4 and colleagues from ECDC, for sharing their experiences and great moments over the last two years. Those who I didn't mention are a lot, because I've been lucky enough to be surrounded by the best colleagues, friends and teachers. I am grateful to all of you!