2024 DOCTORAL STUDENT FORUM POSTER PRESENTATIONS

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Presenter

Andrei Tuiu

Title

The Private Costs of Living with HIV in the Netherlands

Although in the era of effective antiretroviral therapy (ART) people with HIV (PWH) can live generally healthy lives, little is known about the private socioeconomic consequences of HIV. This is especially true of individuals diagnosed with a late-stage infection. Therefore, we analyze the impact on labor market outcomes of an HIV diagnosis in different clinical stages.

Using a unique dataset of 95% of PWH ever linked to care in the Netherlands, combined with administrative data on income and welfare receipt, we select a sample of around 5 thousand PWH newly diagnosed starting in 2013 and a random sample of the Dutch population and apply a staggered difference-in-differences design. Next, we investigate heterogeneity by the clinical stage of the infection at diagnosis (recent, established or late diagnosis with or without AIDS-defining conditions).

We find that PWH generally face lower earnings and employment probabilities, and higher probabilities of entering disability insurance compared to the general population. Our heterogeneity analysis shows that most of these effects are driven by the late diagnosis group, although the early and established groups also experience small and transitory effects. Further disaggregation shows that among individuals diagnosed late, those who develop AIDS-defining conditions face the most severe and lasting consequences.

The main policy implication of our findings is that despite good access to ART, PWH still experience negative consequences beyond health status, especially if diagnosed late. Thus, optimization of prevention and early detection strategies are essential to minimize the socioeconomic impact of HIV in the Netherlands.

Presenter
Astrid Persson

Title
Register data on long-term morbidity after ultra-hypofractionated radiotherapy for prostate cancer

In localized prostate cancer (PCa), the HYPO-RT-PC trial showed that a shorter radiotherapy treatment of 2.5w (ultra-hypofractionation [UHF]) has similar efficacy and long-term adverse effects compared to the standard 8w-treatment (conventional fractionation [CF]).

We compared genitourinary (GU) and gastrointestinal (GI) morbidity, and mortality from these conditions, between the trial arms using Swedish register data. Furthermore, the results were compared with a population-based group of men without PCa (CG).

Data from Swedish residents in HYPO-RT-PC and CG, matched with UHF on age and county, were retrieved from PCBaSe 5.0. Primary outcomes were potentially radiotherapy-related GU and GI events and associated mortality. International adverse events terminology was linked to diagnosis and intervention codes in broad (any condition associated with prostate radiotherapy) and narrow code sets (strongly associated conditions). In-patient care, interventions and death were events. Secondary outcomes were minor GU intervention and prolonged use of urinary antispasmodics and opioids via prescriptions. Outcomes were analyzed as time-to-event.

541 (~90%) per arm and 2705 in CG with median follow-up 10.7yr were included. There were no statistically significant differences between the arms (log-rank all p>0.12). At 10yr, there were 4–10% more GU and GI events for the broad code sets and 3–5% for the narrow compared with CG. Mortality was low (broad: 1.3%) and comparable with CG (1.8%).

Register data therefore show similar GU and GI morbidity after UHF and CF. It is higher compared to CG, but without difference in mortality.

Presenter

Barbara Paulina Maya Aramburo

Title

Study of a prebiotic fiber on ecology and metabolic exchange in a synthetic gut microbiota community to evaluate its potential effect on human health.

In this research, we study a prebiotic fiber on the ecology and metabolic exchange in a synthetic microbial community (SynCom) to evaluate its potential effect on human health. The SynCom comprises representative members of the human gut microbiota capable of fermenting inulin to produce short-chain fatty acids (SCFAs). Using batch cultures, we explore bacteria pairwise interactions based on metabolic exchange analysis and identify key taxa for a better understanding of the gut community ecology. Moreover, we estimate the dynamic of a SynCom through in silico modeling. We estimated species growth and SCFAs concentration from reported datasets (pH and optical density). We proved that our algorithm suits noisy environments.

It is well known that the human gut microbiota comprises a large and dynamic community of microorganisms considered critical drivers of host health. How microorganisms interact and coexist strongly influences the dynamics and constitution of natural ecosystems. Prebiotic fiber and its byproducts, such as SCFAs, are key mediators of broad beneficial effects, determining which species will dominate. In this context, in vitro cultures suggest essential information about how the gut microbiota is modulated based on faster testing substrates such as inulin in controlled consortia exhibiting stable behaviors. SynComs could emulate natural microbiomes, facilitating the elucidation of intricate microbial interactions. In silico studies improve the understanding of assembly dynamics, structural adaptability, function, and interactive complexities within the community.

This approach shows promise in expediting the dynamic characterization of gut microbiota while mitigating costs and time commitments associated with conventional methodologies.

<u>Presenter</u>
Fanny Adistie

<u>Title</u>
Development of end-of-life care provision model for paediatric patients in intensive care units in Indonesia

The aim of my research is to develop a theoretical model for end-of-life care provision, as part of palliative care, for children and their families experiencing dying and death in PICUs in Indonesia. The study driven is driven by concern for paediatric death in PICU. When curative interventions in the paediatric intensive care units (PICU) are no longer effective, or when the prognosis for seriously ill children is highly unclear but likely to result in death, care is transitioning from curative to palliative or end-of-life care. The existing paediatric palliative care models have not explicitly addressed end-of-life care provision in the PICU. Moreover, they were developed in different countries and may not be succesful if they are directly transferred to Indonesia due to the particular aspects of the Indonesian healthcare system and cultural beliefs that need to be considered.

The study design is a constructivist grounded theory with three work packages, including (1) conducting a systematic integrative review, (2) qualitative interview with healthcare professionals (HCPs) and bereaved parents in four PICUs in West Java, Indonesia, which are analysed using constant comparative analysis, and (3) developing a theoretical model for end-of-life care provision in PICUs.

The findings from the systematic integrative review identified three elements of end-of-life care provision, (1) assessment of entering the end-of-life stage, (2) discussion with parents and decision making, and (3) end-of-life care processes during the dying phase, at the time of death. Qualitative data has been obtained from 25 HCPs and 16 bereaved parents and is currently analysed.

Presenter
Itzel Andrea Trevino Garza

Title
Adversity in Childhood and nutritional status of children aged 3-5 years of state centers of childhood development in Nuevo Leon, Mexico

Adverse Childhood Experiences (ACEs) encompass traumatic events such as abuse, neglect and household dysfunction, correlating with adverse health outcomes later in life. The resulting toxic stress during childhood adversity, characterized by a high allostatic load, contributes to an inadequate nutritional status, predisposing individuals to obesity, poor dietary choices, and sedentary behaviors, ultimately increasing the risk of chronic diseases. This research aims to evaluate the relationship between childhood adversity and nutritional status indicators in children aged 3-5 years attending State Centers of childhood development in Mexico. By understanding the impact of adversity in childhood on nutritional status, the findings of this research can inform targeted interventions and policy development aimed at promoting better health outcomes for the wellbeing of children in early childhood education settings. Among 437 children surveyed, as reported through ACEs screening by their parents or caregivers, 40.3% exhibited at least 1 ACE, with 3.2% reporting 4 or more ACEs. Preliminary findings from our research, based on complete anthropometric measurements obtained from a subset of 116 children among the surveyed group of 437, reveal that 62% presented a healthy weight, 5% were underweight and 32.8% were classified as overweight, obese or severely obese. Moreover, among these children, 75% displayed a high waist-to-height ratio, indicating central obesity, which poses a risk for developing metabolic syndrome, dyslipidemia and diabetes. Early childhood lifestyle modifications and educational interventions are crucial for preventing these conditions, emphasizing the importance of ACEs and their impact on nutritional status early in life.

Presenter

Jinyong Cao

Title

Individual Rumination in adult cancer care: A concept analysis

Background: The diagnosis and treatments of cancer may impose severe trauma to an individual. Individual rumination might be an important cognitive factor influencing the coping outcomes of cancer-related trauma in adult cancer patients. To date, the concept of individual rumination in adults with cancer has not been analyzed in detail, to conceptualize rumination in the context of cancer could inform targeted interventions and support strategies.

Objective: To conceptualize rumination in adult cancer care.

Design: A concept analysis.

Data sources: The main disciplines involved were psychology, nursing, medicine, and public health. Studies published between earliest date available to April 2024 were systematically searched in PsycINFO, PubMed, Web of Science, CINAHL, Scopus Databases. Additional records were identified by manually searching reference lists of relevant studies.

Methods: Walker and Avant's method of concept analysis was employed to clarify the antecedents, attributes, and consequences of rumination in adults with cancer.

Results: 46 included articles provided data for rumination conceptualization. This analysis identified two defining attributes: intrusive rumination and deliberate rumination. Antecedents of rumination were cancer-related adversity and pre-existing susceptibilities, and consequences of rumination, which comprise proximal reaction, transitional challenges and coping, and long-term adaption and growth.

Conclusion: Drawing from current knowledge, this conceptualisation of individual rumination based on the defining attributes, antecedents and consequences formed a preliminary conceptual model, which could enhances comprehension and precision regarding rumination in the context of adults with cancer. This model can be further tested and may inform the interventions for adults with cancer focusing on individual rumination.

Presenter
Kimmy Raven

Title
Using AI to predict and improve alert adherence through personalized alert design

Introduction
Prescribers ignore 49-96% of all medication-related alerts. Alert fatigue, a desensitization caused by the presentation of too many alerts, plays a role in alert handling. Several determinants are known to influence alert handling, such as relevance of the content of the alert, but it is unclear whether all factors influencing alert handling have been identified. Objective: To identify new, non-trivial determinants of influence on medication-related alert handling by prescribers, based on the relationships found among data.

Methods
Subgroup discovery was chosen for the analysis to investigate to which extent it can derive associations between determinants of influence on alert handling from data. The feasibility of using subgroup discovery for the identification of determinants of influence on alert handling was tested on alert-interaction and user data from the testing environment of the electronic health record. Currently, the analysis is being repeated on clinical alert-interaction and user data. A quantitative evaluation will be performed to evaluate the identified subgroups and to interpret the results.

Preliminary results
All tested subgroup discovery algorithms were able to generate output on the data from the testing environment. Results from the testing data do not yet provide any useful insights on alert handling, but they show that subgroup discovery is usable on alert-interaction and user data. Subgroup discovery can be effectively used to identify which elements can be found in alert-interaction and user data that influence the handling of medication-related alerts by prescribers.

Presenter

Lerato Khensani Landela

Title

Evaluation of eye-care service utilisation patterns: development of strategies to improve optometric services in an urban slum (Diepsloot, South Africa)

People living in the rural and isolated areas of the world are typically of lower socioeconomic status and may not always have access to adequate eye care services. In South Africa, there appears to be a lack of information on eye care service utilisation of populations living in urban slums in relation to the burden of eye diseases.

This study aims to evaluate eye-care service utilisation patterns and to develop strategies to improve optometric services in the Diepsloot urban slum (South Africa)

The study will be conducted using a mixed-method approach. The quantitative aspect will entail a cross-sectional study whereby data will be collected at two clinics in Diepsloot township. The data will be captured in the format of questionnaires and eye screening by a trained optometrist. Qualitative data collection will be in the form of structured questionnaires and interviews with Optometrists and healthcare facility management involved in providing eyecare services in urban slum communities. The data collected from the study will be triangulated to answer the study objectives. Data will be captured on an electronic database, exported to Microsoft Excel, and imported to Social Sciences (SPSS, version 28 .0.1.0). It will be analysed through inferential and descriptive analyses.

The study will also provide beneficial information regarding the prevalence of eye conditions in an urban slum community in the Gauteng province of South Africa and further highlight utilisation patterns and uptake of eye care services to populations living in urban slums. This information will serve as a needs-based assessment for eye care providers and policymakers involved in servicing these communities to provide a community-based approach to treatment and management interventions.

<u>Presenter</u>
Muna Juma Al Mushaikhi

<u>Title</u>
Opportunities for enhancing unintentional child injury prevention in children aged under five years in Musact Oman: A mixed methods study

Unintentional child injuries present a pressing issue in Oman, with thousands of children requiring emergency medical care, hospitalisation, and long-term rehabilitation annually. To comprehensively address this concern, this research project employed a multi-phase approach, integrating a systematic review with a convergent mixed-method methodology. Through this approach, the study aimed to explore the opportunities, needs, and challenges associated with preventing unintentional injuries among children under five years old in Muscat, Oman.

To elucidate the factors contributing to injury occurrences and safety practices, the study engaged a convenience sample of 360 caregivers in an online questionnaire. Additionally, 20 healthcare professionals from primary healthcare were interviewed to gain insights into the challenges and opportunities for enhancing awareness of child injury prevention. The study's findings highlighted the multifaceted nature of factors influencing safety practices in Omani households, encompassing social, behavioural, and environmental dimensions. The research revealed significant gaps in caregivers' awareness of safety measures and beliefs surrounding injury prevention. It also sheds light on limited societal support for health education, the scarcity of safety equipment in stores, and the inadequate availability of nurseries. Despite these challenges, the study identified several promising avenues for bolstering safety practices, including targeted health promotion initiatives and the implementation of legislative measures.

Nevertheless, the study underscored various obstacles hindering efforts to raise safety awareness and effectively implement prevention strategies. By unravelling these complexities, the research provides valuable insights for policymakers, healthcare professionals, and community stakeholders dedicated to safeguarding Oman's children's well-being.

Presenter
Nishant Mishra

Title
Semi-Supervised Learning for Adverse Drug Event Detection in Dutch Clinical Notes using Open Source LLMs

Abstract
Detecting adverse drug events (ADEs) from clinical notes is crucial for patient safety and healthcarequality improvement. However, manually annotating large volumes of clinical data for training classifiers is expensive and time-consuming.

Semi-supervised learning (SSL) presents a promising avenue to leverage the abundance of unlabeled data alongside limited labeled samples. In this study, we propose a novel method for ADE detection from Dutch clinical notes using SSL techniques coupled with open-source Language Model-based methods (LLMs). This method aims to implement and analyze a teacher-student paradigm with a feedback loop, where a large generalized LLM acts as a weak supervisor, by using instruction tuning or in-context learning. This happens cyclically to incorporate incremental unlabeled data to improve the downstream model performance. The pseudolabeler is also constantly improved every cycle based on feedback from the final model output by tuning the prompt. Not only does this model improve performance and efficiency by augmenting data and leveraging unlabeled data, it also leads to knowledge/data distillation from large, generic models to smaller, specialized models. Additionally, it helps save resources in annotation costs.

The method is expected to surpass state-of-the-art models in the problem of ADE detection and we will benchmark this both on publicly available datasets as well as our internally curated corpus of Dutch ICU clinical notes from AMC. It will also provide more control and explainability in the end-to-end process. We also discuss the ethical considerations, limitations, and possible improvements to the method.

Presenter
Patricia Nefertari Ramirez Flores

Title
Effect of the β-Naphthoflavone and sorafenib combination against hepatic cancer cell model: Participation of Dp71 and the dystrophin-associated protein complex

Background
Hepatocellular carcinoma is the third cause of cancer-related death in Mexico and worldwide. Current pharmacological therapies are less effective with poor survival prognosis. Cancer development occurs mainly by accumulation of mutations in tumor suppressor genes, stability genes, and oncogenes. Dp71 has a controversial role in cancer development, and little is known about its role in liver cancer. Likewise, Dp71 interacts with the dystrophin-associated protein complex (DAPC) and alterations in this complex have also been related to cancer. Previously, we have identified that β-naphthoflavone is capable of repressing dystrophin Dp71 expression in vitro and in vivo, therefore, it is important to know if it also has an effect on DAPC.

Objective
To determine the effect of the xenobiotic β-naphthoflavone combined with the first-line treatment for HCC, sorafenib, on Dp71 and the DAPC expression and location in HepG2 cells.

Methods
Treatments with DMSO and β-NF/sorafenib will be performed on HepG2 cells to extract RNA and proteins. Gene expression will be evaluated by RT-qPCR (For Dp71, CYP1A1 and GAPDH) and protein expression by western-blot (Dp71, α- and β-dystroglycan, β-syntrophin, α-dystrobrevin, Dystrophin, Dp71, nNOS, CYP1A1). The migratory and proliferation potential of the cells will be evaluated by injury and clonogenic assays, respectively. The in vivo effect of β-naphthoflavone will be evaluated in mice with a HepG2-EGFP xenograft treated with β-naphthoflavone/sorafenib, and tumor volume and markers of tumor development will be analyzed.

Partial Results
Protein and RNA samples from the treated cultures were obtained and validated, where we confirmed the cytochrome induction by β-naphthoflavone.

Presenter
Pushpita Samina

Title
Economic evaluation of tuberculosis (TB) preventive therapy in Bangladesh

Tuberculosis (TB) stands as the second-largest infectious disease killer worldwide, claiming over 1.3 million lives annually, with a disproportionate burden falling on lower middle-income countries (LMICs). Despite this, the global TB incidence has remained stagnant for decades, exacerbated by the absence of an effective adult TB vaccine. Nevertheless, addressing both active and latent TB infections offers a pathway for curbing TB incidence. Latent TB, characterized by dormant infection without active disease manifestation, presents a challenge in detection and treatment. My thesis endeavors to provide data-driven guidance for the programmatic implementation of TB preventive therapy in high-incidence LMICs, focusing on Bangladesh. In partnership with the local research organization, icddr,b, I aim to conduct a comprehensive evaluation encompassing three key components. Firstly, the research will scrutinize the cost-effectiveness of various shorter-regimen drugs for preventive therapy on a larger scale in Bangladesh. Secondly, I will investigate the potential of a simple digital adherence technology, iDOTS, to cost-effectively enhance TB preventive therapy implementation. This entails evaluating its ability to help remind the patients to take medicines and report their adherence status to the health worker. Lastly, the thesis will assess the effectiveness of a newly developed diagnostic tool for latent TB infection detection. This thesis endeavors to fill critical knowledge gaps in Bangladesh's limited capacity for health technology assessment and the prevalence of healthcare decisions made without sufficient evidence. The research aims to provide actionable recommendations for policymakers and healthcare practitioners by adopting a programmatic perspective and employing rigorous data-driven methodologies. Ultimately, this endeavor seeks to contribute towards more effective TB prevention and control strategies in Bangladesh and similar LMIC contexts.

Presenter
Wei Wei

Title
Investigating the resilience promotion process among colorectal cancer survivors

Colorectal cancer is the third most common cancer around the world. Colorectal cancer survivorship is extending due to the development of screening and treatment techniques, which brings a huge burden to the survivors and society. How to improve the cancer survivors' quality of life is a universal concern. Mental health is considered an important aspect for all cancer survivors. Regarding enhancing mental well-being, psychological resilience is seen as the most powerful positive psychological variable and predictor of mental health well-being. However, there is a dearth of literature focusing specifically on resilience promotion implementing multiple methods to comprehensively assess how resilience affects colorectal cancer survivors' well-being.

Starting from this gap, this study seeks to provide a broader understanding of the experiences and requirements of colorectal cancer survivors in resilience promotion based on a multifaceted approach. The first phase is a data-based convergent mixed-method systematic review. The second phase and the third phase will be an exploratory sequential research design which is undergoing. This study will provide a broad awareness of psychological resilience development among colorectal survivors which contribute to guiding the health professionals and caregivers as well as colorectal survivors themselves for practical implementation. Hence, this research will contribute to the growing body of literature on resilience promotion in healthcare and inform the development of effective interventions to enhance the resilience of colorectal cancer survivors.