

2021 Virtual Conference

**CSEB 2021: MEETING THE DEMANDS  
OF A RAPIDLY CHANGING WORLD**

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Canadian Society for Epidemiology and Biostatistics  
**CSEB-SCEB**  
Société Canadienne d'Épidémiologie et de Biostatistique

# Rapid Fire Presentations

BOOK OF ABSTRACTS

CSEB 2021

**ID: 4**

## **Prevalence and correlates of physical-mental multimorbidity in children and adolescents**

**Mark Ferro, University of Waterloo**

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**Primary Area of Focus:** Addictions & Mental Health (Addictions, Cannabis, Mental Health, Psychosocial Health)

**Secondary Area of Focus:** Multimorbidity (Definitions of Multimorbidity, Complex Patients, Comorbidity)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** To estimate the prevalence of mental illness in children with chronic physical illness (multimorbidity), examine agreement between parent and child reports of multimorbidity, and identify factors associated with child multimorbidity.

**Methods:** The sample included 263 children aged 2-16 years with a physician-diagnosed chronic physical illness and their primary caregiving parent who were recruited from the outpatient clinics at an academic pediatric hospital. Children were classified according to the International Statistical Classification of Diseases and Related Health Problems (ICD)-10. Parent and child-reported current mental illness was based on the Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID).

**Results or Preliminary Results:** Overall, 101 (38%) of children had a parent-reported mental illness; 29 (25%) children self-reported a mental illness. There were no differences in prevalence across ICD-10 classifications of physical illness. Parent-child agreement on the MINI-KID was low ( $\kappa=0.18$ ), ranging from  $\kappa=0.24$  for specific phobia to  $\kappa=0.03$  for attention-deficit hyperactivity. From logistic regression modelling (odds ratio [OR] and 95% confidence interval), factors associated with multimorbidity were: child age (OR=1.16 [1.04, 1.31]), male (OR=3.76 [1.54, 9.22]),  $\geq \$90,000$  household income (OR=2.57 [1.08, 6.22]), parental symptoms of depression (OR=1.09 [1.03, 1.14]), and child disability (OR=1.21 [1.13, 1.30]). Similar results were obtained when modelling number of mental illnesses.

**Conclusion or Next Steps:** Findings suggest that physical-mental multimorbidity is common and similar across different physical illnesses. Level of disability is a robust, potentially modifiable predictor of multimorbidity that can be assessed routinely by health professionals to initiate early mental health intervention to reduce the incidence of multimorbidity in children.

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**ID: 5**

## **Health-related quality of life in children and adolescents with and without physical-mental multimorbidity**

**Mark Ferro, University of Waterloo**

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**Primary Area of Focus:** Addictions & Mental Health (Addictions, Cannabis, Mental Health, Psychosocial Health)

**Secondary Area of Focus:** Multimorbidity (Definitions of Multimorbidity, Complex Patients, Comorbidity)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** This study compared health-related quality of life (HRQL) across physical illnesses; estimate parent-child agreement on HRQL reports; investigated HRQL of children with or without physical-mental multimorbidity and compared with population norms; and, examined if multimorbidity was associated with HRQL.

**Methods:** Children aged 6-16 years (n=198) with a physician-diagnosed chronic physical illness and their parents were recruited from a pediatric hospital. Physical illnesses were classified according the International Statistical Classification of Diseases and Related Health Problems (ICD)-10, mental illnesses were assessed using the Mini International Neuropsychiatric Interview for Children and Adolescents, and HRQL was measured using parent and child-reported versions of the KIDSCREEN-27. Children who screened positive for  $\geq 1$  mental illness were classified as having physical-mental multimorbidity.

**Results or Preliminary Results:** Overall, HRQL was similar across ICD-10 categories. Parent-child agreement was fair-to-good for all domains of HRQL, regardless of multimorbidity status. All parent-reported domains were significantly lower for children with multimorbidity compared to healthy norms. For child reports, HRQL was significantly lower for physical well-being (d=0.75 [0.46, 1.03]), psychological well-being (d=0.35 [0.07, 0.64]), and school environment (d=0.38 [0.10, 0.67]). Adjusting for covariates, number of mental illnesses was negatively associated with psychological well-being and school environment in dose-response manner.

**Conclusion or Next Steps:** Generally, children with physical-mental multimorbidity had lower HRQL compared to healthy children and those with physical illness only. Compromises to HRQL was inversely associated with the number of mental illnesses, particularly related to psychological well-being and school environment. Research evaluating interventions that target these domains of HRQL for children with multimorbidity is warranted.

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**ID: 8**

## **The Association between Parental Diabetes Diagnosis and Major Osteoporotic Fracture Risk in Offspring: A Population-based Cohort Study**

**Amani Hamad, University of Manitoba**

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**Primary Area of Focus:** Ageing & Musculo-Skeletal Health (Dementia, Palliative Care, Bone & Joint Health)

**Secondary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Previous research suggests an intergenerational influence of diabetes on bone health. We examined the association between parental diabetes diagnosis and major osteoporotic fracture (MOF) risk in offspring.

**Methods:** This population-based cohort study used de-identified administrative health data from Manitoba, Canada, which capture population-level records of hospitalizations, physician visits and drug dispensations. The cohort consisted of individuals 40+ years linked to at least one parent between 1997 and 2015. The exposure was a parental diagnosis of diabetes since 1970; the outcome was offspring incident MOF diagnosis in hip, forearm, spine, or humerus. Both measures were identified from hospital and physician visit records using validated case definitions. Multivariable Cox proportional hazards regression models tested the association of parental diabetes and offspring MOF risk.

**Results or Preliminary Results:** The cohort included 279,085 offspring; 89.4% were linked to both parents, 36.7% had a parental diabetes diagnosis. During a median follow-up of 12.0 years (IQR 6.0 – 18.0 years), 8762 offspring had a MOF diagnosis. After adjusting for fracture risk factors, parental diabetes diagnosis was not associated with MOF risk in offspring whether diagnosed in fathers (adjusted hazard ratio [aHR] 1.02, 95% confidence interval [CI] 0.97 – 1.08), mothers (aHR 1.02, 95% CI 0.97 – 1.07) or both parents (aHR 1.01, 95% CI 0.93 – 1.11). The results remained consistent in a stratified analysis by offspring sex, a secondary analysis based on MOF site, and planned sensitivity analyses.

**Conclusion or Next Steps:** The results indicate that parental diabetes is not associated with the risk of offspring MOF.

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**ID: 16**

**The Association between Religious Participation and Social Isolation in Middle-and Older-aged Adults: A Longitudinal Analysis of the Canadian Longitudinal Study on Aging**

**Kirsten Ming, University of Waterloo**

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**Primary Area of Focus:** Social Determinants of Health (Social Epidemiology, Measuring Social Determinants)

**Please select which type of submission best describes your abstract:** Works Proposed (in proposal stage)

**Objectives:** Social isolation is associated with poor health outcomes. Thus, researchers seek to identify exposures that are inversely associated with social isolation itself. Religious participation may be one such exposure since it has been positively associated with social support and social integration, two concepts related to decreases in social isolation. However, a limited amount of empirical research has investigated the association between religious participation and social isolation directly. Thus, our goal is to investigate the association between baseline religious participation and changes in social isolation over three years of follow-up in the Canadian Longitudinal Study on Aging (CLSA). We hypothesize that more religious participation will be associated with less social isolation.

**Methods:** The CLSA is a prospective cohort study of adults aged from 45-85 years at baseline. We will examine the association using the CLSA's Comprehensive Cohort, which contains 27,765 participants with baseline and follow-up data. Religious participation is measured with a question asking participants how often they took part in religious activities over the past 12 months (e.g., services, committees, choirs). Responses are recorded on a 5-point scale ranging from "at least once a day" to "never (referent)", with "never" serving as the reference category in regression models. Social isolation is measured with an index computed using Menec et al.'s published guidance, which tabulates the absence of social interactions and relationships, and a lack of participation in community activities, on a scale from 0 to 5, with higher scores suggesting greater social isolation. Social isolation index change scores (subtracting baseline [t0] from follow-up [t1]) will be regressed on religious participation, while controlling for baseline covariates such as age, sex, education, and living arrangements. Our regression analysis will account for the CLSA's complex survey design using sample weights and a geographical strata variable.

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**ID: 19**

**When more is not better: psychosocial stress in the development of depression**

**Yingying Su, University of Saskatchewan**

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**Primary Area of Focus:** Epidemiologic Methods (Study Designs, Ethics, Data Quality, Record Linkage, Cohort Studies)

**Please select which type of submission best describes your abstract:** Works Proposed (in proposal stage)

**Objectives:** Early-life stressful circumstances (i.e., childhood maltreatment, and parent-child relationship) and stressful lifetime events later in life increase the likelihood of depression occurrence later-on. However, there is a lack of research conducted to examine and articulate individual and cumulative effects of these stressors, different trajectories of stressful events in the development of depression. There is a paucity of research applying the biopsychosocial model proposed by Engel to take into account of genetic predispositions that may also alter the impact of stressors on depression. This present study aims to examine to what extent the experience of stressors across life influences the risk of depression via a pattern-centered approach and a stress process theoretical framework by controlling genetic predispositions.

**Methods:** Data analyzed are from the Social and Psychiatric Epidemiology Catchment Area of the South West of study (ZEPSOM). The ZEPSOM cohort is a large-scale, longitudinal, community-based, population cohort from Southwest of Montreal. The latent class analysis will be used to explore the clustering of stressors including childhood maltreatment, poor parent-child relationship, and stressful life events. The identified latent classes of stressors will be used as the primary exposure to examine its cumulative and individual effects on subsequent depression.

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**ID: 22**

## **Association between appendectomy and inflammatory bowel disease**

**Canisius FANTODJI, Université du Québec, Institut National de la Recherche Scientifique (INRS), Centre Armand-Frappier Santé Biotechnologie**

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**Primary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Secondary Area of Focus:** Clinical & Pharmacoepidemiology (Clinical Trials, Drug Safety and Effectiveness, Systematic Reviews, Clinical Outcomes)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Appendectomy may modulate the risk of inflammatory bowel disease through an effect on the gut microbiota. Our study investigated the associations of appendectomy with Crohn's disease (CD) and ulcerative colitis (UC), with an emphasis on the effect of time elapsed post-appendectomy and age at surgery.

**Methods:** Based on the Quebec Birth Cohort on Immunity and Health, this study included 400,520 subjects born in the province of Québec from 1970-1974 and followed until 2014. Appendectomy was defined from administrative health data. Cases of CD and UC were identified with validated algorithms, and separate analyses were performed. Cox proportional hazards models with time-dependent variables (appendectomy, age at appendectomy, time elapsed post-appendectomy) allowed for the estimation of adjusted hazard ratios (HR) and 95% confidence intervals (CI).

**Results or Preliminary Results:** A total of 2,545 (0.6%) cases of CD and 1,134 (0.3%) cases of UC were identified. Adjusting for sex and gestational age, appendectomy appeared to increase the risk of CD (HR=2.02; 95% CI: 1.66-2.44) and protect against UC (HR=0.39; 95% CI: 0.22-0.71). When cases occurring two years post-appendectomy were excluded, the association with CD was no longer observed (HR=0.99; 95% CI: 0.76-1.30), but the protective association for UC was strengthened (HR=0.29; 95% CI: 0.14-0.57). For every year elapsed post-appendectomy, the risk of CD and UC decreased by 6% and 11%, respectively. The risk of CD and UC increased with age at appendectomy (HR=1.06; 95% CI: 1.03-1.09 and HR=1.11; 95% CI: 1.02-1.21 for a one-year increase in age, respectively).

**Conclusion or Next Steps:** This study suggests a protective effect of appendectomy against UC. The increased risk of CD observed in previous studies may have been due to reverse causality. Further analyses will be necessary to fully characterize the effect of time elapsed post-appendectomy and of age at appendectomy.

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**ID: 25**

**Family structure, living arrangement and prostate cancer risk: A population-based case-control study in Montreal**

**Charlotte Salmon, Institut national de la recherche scientifique, University of Québec**

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**Primary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Secondary Area of Focus:** Social Determinants of Health (Social Epidemiology, Measuring Social Determinants)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Social isolation and limited social ties have been linked to a poorer prostate cancer prognosis. However, whether these could also influence the risk of developing this cancer remains largely unknown. Social interactions can foster health-related exchanges, support and have a stress-buffering role. This study assessed the association between the family structure and household living arrangement, and the risk of prostate cancer, globally and according to disease aggressiveness.

**Methods:** Data from the Prostate Cancer & Environment Study (PROtEuS), a case-control population-based study conducted between 2005-2012 in Montreal, Canada, were used. 1931 incident prostate cancer cases (436 with aggressive tumours) aged  $\leq 75$  years, and 1994 age-matched ( $\pm 5$  years) population controls were interviewed to elicit socio-economic, demographic, and lifestyle factors. Tumours with Gleason scores  $\geq 7$  [4+3] defined aggressive cancers. Information on the social familial environment included the number of people living with the subject, marital status, number of children and number of siblings around the time of diagnosis/interview. Unconditional logistic regression models were used to estimate odds ratios (ORs) and 95% confidence intervals (CIs), adjusting for potential confounders.

**Results or Preliminary Results:** We observed an increased risk of aggressive prostate cancer among single men (OR = 1.80, 95%CI 1.29-2.51), compared to men who were currently married or in common-law. Having a daughter was associated with a lower risk of aggressive cancer (OR = 0.76, 95%CI 0.61-0.96) but no association was observed with having a son. An inverse dose-response relationship was observed between the number of people living with the subject 2 years before the diagnosis/interview and the risk of prostate cancer (p trend

**Conclusion or Next Steps:** These results suggest a protective role of a rich family environment, especially feminine, on the risk of developing prostate cancer.

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**ID: 26**

## **Neighbourhood social deprivation and prostate cancer risk: results from the case-control study PROtEuS**

**Charlotte Salmon, Institut national de la recherche scientifique, University of Québec**

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**Primary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Secondary Area of Focus:** Social Determinants of Health (Social Epidemiology, Measuring Social Determinants)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Geographic variations in prostate cancer incidence suggest that spatially distributed determinants may play an etiological role. We assessed the association between neighbourhood social deprivation and prostate cancer risk, overall and by cancer aggressiveness.

**Methods:** A total of 1931 incident prostate cancer cases and 1994 population controls were recruited in the Prostate Cancer & Environment Study (PROtEuS), a case-control study conducted in 2005-2012 in Montreal, Canada. Interviews collected sociodemographics, lifestyle characteristics and lifetime residential addresses. Addresses were geocoded and linked to census-derived indices of social deprivation in dissemination areas (census areas inhabited by 400-700 persons), around the time of recruitment (2006) and about ten years prior (1996). Information extracted included the proportion of people living alone, of people separated/divorced or widowed, and single-parent families. Indicators were also investigated conjointly using the Pampalon index. Logistic regression models taking into account clustering effects were used to derive odds ratios (ORs) and 95% confidence intervals (CIs), adjusting for potential individual and area-level confounders (including material deprivation).

**Results or Preliminary Results:** Men residing in areas characterized by the greatest level of social deprivation at recruitment (based on Pampalon's index) had higher risks of prostate cancer (OR=1.42, 95%CI 1.12-1.80), following a dose-response gradient. The risk was most pronounced for high-grade prostate cancers (OR=1.70, 95% CI 1.14-2.53). When investigating area-based indicators separately, only living in neighbourhoods with higher percentages of people living alone was associated with prostate cancer risk. The OR was 1.36 (95%CI 1.01-1.83) for men living in areas corresponding to the upper quintile of the proportion of people living alone, compared to those who lived in the lowest quintile areas. No major differences were found for indicators measured in 1996.

**Conclusion or Next Steps:** Our findings suggest that recent area-based social deprivation is associated with a greater risk of prostate cancer, independently from area-based material deprivation and individual factors.

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**ID: 33**

## **Psychosocial stressors at work and inflammatory biomarkers: The PROspective Quebec Study on Work and Health**

**Caroline Duchaine, Laval University / CHU de Québec-Université Laval Research Center**

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**Primary Area of Focus:** Environmental & Occupational (Environmental Health, Occupational Health, Risk Assessment, Climate Change)

**Secondary Area of Focus:** Public Health / Population Health (Disease Prevention, Population Health, Population Health Interventions)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Low-grade inflammation has been associated with the risks of cardiovascular diseases, diabetes, depression and dementia. Psychosocial stressors at work have also been associated with these chronic diseases in longitudinal studies. Few longitudinal studies have evaluated the association between these stressors and inflammatory biomarkers such as C-Reactive protein (CRP) and interleukin-6 (IL-6). This study aimed to evaluate the associations of exposure to psychosocial stressors at work with CRP, IL-6, and both combined into an inflammatory index.

**Methods:** Data come from a cohort of 9188 white-collar workers recruited in 1991-1993 (T1) with two follow-ups after 8 (T2, 1999-2000) and 24 (T3, 2015-2018) years. Participants included in this study were randomly selected at T3 to give blood for further study on biomarkers (n=2557). Psychosocial stressors at work were assessed with validated questionnaires. CRP and IL-6 were measured using standardized protocols. Several covariates were included such as sociodemographic, anthropometric, lifestyles, and comorbidities. Prevalence ratios (PRs) for the highest quartile of CRP, IL-6 and inflammatory index at T3 according to psychosocial stressors at work measured at T2 were calculated using generalized estimating equations. Multiple imputation and inverse probability of censored weighting were done to correct for the differences between included and excluded participants because of death, lost to follow-up or refusal.

**Results or Preliminary Results:** In men, an association was observed between a combination of exposure to high psychological demand, low job control and low social support at work and the inflammatory index (PR of 1.42 (95% confidence interval: 1.06;1.90)).

**Conclusion or Next Steps:** This result suggests that psychosocial stressors at work may increase low-grade inflammation in men. Further studies are needed to clarify the effect modification by sex. As these stressors are frequent and modifiable, they could be part of the primary prevention for chronic diseases.

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**ID: 37**

**Control charts: a tool to visualize and analyze trends in chronic disease estimates from administrative health data**

**Naomi Hamm, University of Manitoba**

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**Primary Area of Focus:** Public Health / Population Health (Disease Prevention, Population Health, Population Health Interventions)

**Secondary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Case definitions used to estimate chronic disease prevalence and incidence in administrative health data assume homogeneity of the data over time. Changes in clinical guidelines, diagnosis coding practices, and healthcare processes may result in data heterogeneity, which could also affect trend estimates. Control charts, originally developed for industrial processes, are a potentially useful tool to describe and test the impact of data heterogeneity on disease estimates. Our purpose was to compare the stability of trends in disease prevalence and incidence across chronic disease case definitions using control charts.

**Methods:** Case definitions for juvenile diabetes were identified from the literature and applied to data at the Manitoba Population Data Repository between 1972 and 2018. Trends for each case definition were modelled using negative binomial regression with age, sex, and year covariates. Model-predicted case counts were graphed against observed counts. Control limits were set as predicted count  $\pm 0.8$  \* standard deviation; years with observations outside the limits were flagged as out-of-control. McNemar's test with Holm-Bonferroni adjustment was used to test for differences in the frequency of out-of-control years across case definitions.

**Results or Preliminary Results:** Eighteen case definitions for juvenile diabetes were identified. The proportion of out-of-control years for prevalence and incidence ranged from 0.43-0.76 and 0.57-0.76, respectively. McNemar's test found no significant difference in out-of-control years across case definitions. No significant differences were found when data were stratified by International Classification of Diseases (ICD) version. A sensitivity analysis with relaxed control limits (2 \* standard deviation) detected few out-of-control points (prevalence 0.02-0.40; incidence 0.19-0.33); there was no significant differences across case definitions.

**Conclusion or Next Steps:** Our study using control charts to compare stability of trends in prevalence and incidence across diabetes case definitions did not identify heterogeneity in longitudinal administrative health data. Future research will apply these methods to other diseases with varying accuracy in administrative health data.

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**ID: 40**

## **Risk Factors for Psychotic Disorders within Migrant Groups in Ontario, Canada**

**Kelly Anderson, Western University**

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**Primary Area of Focus:** Addictions & Mental Health (Addictions, Cannabis, Mental Health, Psychosocial Health)

**Secondary Area of Focus:** Immigrant Health (Refugee Health, Health of Recent Immigrants)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Migration is a well-established risk factor for psychotic disorder, however less is known about factors that modify the risk within migrant groups. We sought to assess whether pre-migration, migration-related, and post-migration factors were associated with an elevated risk of psychotic disorder among first-generation migrants, and to compare these with estimates for mood and anxiety disorders to explore specificity of effect.

**Methods:** We constructed a retrospective cohort of first-generation migrants to Ontario using population-based health administrative data (1992-2012; n=1,964,884). We identified non-affective psychotic and mood or anxiety disorders using standardized algorithms. We used Poisson regression models to estimate incidence rate ratios for each factor to assess its effect on psychosis risk, relative to migrants who did not develop psychotic disorder. We ran the same analysis for mood and anxiety disorders to explore whether any factors showed specificity for psychotic disorders.

**Results or Preliminary Results:** Our findings suggest that younger age at migration, male gender, being of African-origin, and not having proficiency in either national language had specificity of effect for a higher risk of psychotic disorders, whereas higher pre-migratory education and being married/common-law at the time of migration showed specificity of effect for a lower risk of psychotic disorders. Migrant subclass, rurality of residence after landing, and post-migration neighbourhood-level income showed similar effects across the disorders.

**Conclusion or Next Steps:** The findings from this study help to identify high-risk groups to target for intervention. Improving our understanding of key risk factors for mental disorders within migrant groups is crucial for informing prevention and early intervention efforts.

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**ID: 50**

## **Differential item functioning of the SF-12 in a population-based joint replacement registry in the presence of missing data**

**Olawale F Ayilara, Department of Community Health Sciences, University of Manitoba**

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**Primary Area of Focus:** Biostatistics (Statistical Methods, Modeling, Data Systems & Computer Software)

**Secondary Area of Focus:** Ageing & Musculo-Skeletal Health (Dementia, Palliative Care, Bone & Joint Health)

**Please select which type of submission best describes your abstract:** Works Proposed (in proposal stage)

**Objectives:** Patient-reported outcomes measures (PROMs), such as the 12-item Short Form health survey (SF-12), are comprised of questions (i.e., items) about the patient's perspective on their quality of life. Differential item functioning (DIF) arises when the probability of item response varies between groups (e.g., sex and age groups) after controlling for the underlying level of the latent (i.e., unobserved) trait. DIF may compromise the comparability of PROMs across groups. Missing item responses, which may occur if patients are too sick to answer, have difficulty understanding or interpreting, or are uncomfortable answering the questions, can mask the detection of DIF. The purpose of this study is to test for DIF on the SF-12 physical health and mental health questions in the presence of missing responses amongst patients that had total hip arthroplasty (THA) and total knee arthroplasty (TKA), which are procedures that can have a significant impact on quality of life.

**Methods:** Study data are from a comprehensive clinical registry that captures approximately 18,000 joint replacement surgeries for Manitoba. The assessment of patients who had THA and TKA between 2009 and 2015 prior to surgery will be analyzed. Missing responses will be addressed using: (a) list-wise deletion, where all patients with missing responses are removed from the analyses; (b) half-mean imputation, in which missing responses are filled in with the mean of the available responses if more than half of the response are available; (c) full information maximum likelihood; and (d) penalized non-negative matrix factorization, which approximately decomposes a non-negative matrix into the product of two low-dimensional matrices. Item response theory likelihood ratio tests with a multidimensional graded response model will be used to test for DIF by sex and age groups. Analyses will be stratified by joint type.

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**ID: 56**

## **Psychological Distress and Mental Illness in Emerging Adults with Learning Disabilities**

**Samantha Chown, University of Waterloo**

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**Primary Area of Focus:** Addictions & Mental Health (Addictions, Cannabis, Mental Health, Psychosocial Health)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Individuals with learning disabilities (LDs) have an increased risk for mental illness, and this association varies across sex, age, and co-morbidity status. However, there is little known about the association between LDs and mental illness in emerging adults (i.e., individuals 18-29 years). Thus, the purpose of this study was to investigate if (1) emerging adults with LDs were more likely to meet or exceed the clinical cut-point compared to those without, and (2) the association between LDs and psychological distress was modified by age, sex, attention-deficit/hyperactivity disorder (ADHD), or disability impairment.

**Methods:** The study used a sample of individuals aged 15-29 years (n=5630) from the 2012 Canadian Community Health Survey – Mental Health. The exposure was self-reported diagnosis of an LD, and the outcome was binary Kessler Psychological Distress Scale (K6) scores (i.e.,

**Results or Preliminary Results:** Individuals with LDs comprised 7.5% of the sample (n=421). Those with LDs reported a greater proportion with scores  $\geq 13$  (7.0% vs. 2.5%, p

**Conclusion or Next Steps:** This epidemiological investigation identified clinically important increased psychological distress in emerging adults with LDs. Age and sex were significant effect modifiers in the association. These findings suggest a need for improved resources in educational institutions and the workplace for emerging adults with LDs, especially for males and those at the end of this developmental period.

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**ID: 66**

**Longitudinal associations between physical activity and memory in the Canadian Longitudinal Study on Aging (CLSA): Considering other health determinants first**

**Nicole G. Hammond, University of Ottawa**

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**Primary Area of Focus:** Ageing & Musculo-Skeletal Health (Dementia, Palliative Care, Bone & Joint Health)

**Secondary Area of Focus:** Nutrition, Physical Activity & Obesity (Food Security, Nutritional Epidemiology, Physical Activity Interventions)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** To examine longitudinal associations between different intensities of physical activity and prospectively assessed memory in a sample of community dwelling mid-life and older adults.

**Methods:** We used baseline and first follow-up data from the Canadian Longitudinal Study on Aging (CLSA), a cohort study of 51,338 adults initially aged 45-85. The sample was free of cognitive impairment at baseline. Transportation and leisure time physical activity was assessed with a validated measure. Respondents reported their average daily number of hours spent engaging in five different forms of physical activity over the past week: walking, light, moderate, strenuous, and strength training activities. Memory was objectively assessed three years later using a neuropsychological instrument: the Rey Auditory Verbal Learning Test. Higher scores indicate better memory. We used linear regression modelling to examine crude, partial, and fully adjusted associations. Multiple demographic, health conditions, and social determinants were accounted for.

**Results or Preliminary Results:** In crude models, engagement in all forms of physical activity for

**Conclusion or Next Steps:** Some forms of physical activities performed between 1-2 hours daily may be prospectively associated with better memory. However, after full adjustment, the strength of associations were small and potential benefits may only be observed after many health and social considerations are first accounted for.

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**ID: 72**

## **Bi-directional relationships between physical activity and mental health among Canadian youth: a gender-stratified analysis of students in the COMPASS study**

**Marisa Claire Buchan, University of Waterloo**

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**Primary Area of Focus:** Nutrition, Physical Activity & Obesity (Food Security, Nutritional Epidemiology, Physical Activity Interventions)

**Secondary Area of Focus:** Addictions & Mental Health (Addictions, Cannabis, Mental Health, Psychosocial Health)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** The aim of this research was to examine the bidirectional association between self-reported anxiety and depressive symptoms and physical activity among a large sample of Canadian secondary school students.

**Methods:** Linked survey data were obtained from 28,567 grade 9 to 12 students across Canada participating in two waves of the COMPASS Study (2017-18; 2018-19). Autoregressive cross-lagged models were run to examine the reciprocal relationships between self-reported moderate-to-vigorous physical activity (MVPA) and symptoms of depression (CESD-10) and anxiety (GAD-7). Models were stratified by gender, and accounted for grade, ethno-racial identity, and school-level clustering.

**Results or Preliminary Results:** Autoregressive associations show that neither symptoms of anxiety nor depression, at baseline, were predictive of mean MVPA at follow-up – consistent for the full sample and among both boys and girls. Higher MVPA among boys at baseline was associated with lower symptoms of both anxiety ( $\beta = -0.03$ ,  $p=0.002$ ) and depression ( $\beta = -0.05$ ,  $p$

**Conclusion or Next Steps:** In our large sample of Canadian secondary school students, associations between physical activity and symptoms of mental disorder were not bi-directional, and these relationships differed in girls and boys. This study illustrates the complex nature of the relationship between physical activity and symptoms of mental disorder among youth. While results support the benefits of promoting physical activity among boys to prevent or manage internalizing symptoms, the relationship among girls warrants further investigation.

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**ID: 77**

## **Head and neck cancer risk prediction model incorporating lifestyle factors, HPV infection status and genetic markers**

**Sanjeev Budhathoki, Lunenfeld-Tanenbaum Research Institute**

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**Primary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Secondary Area of Focus:** Genetic & Molecular Epidemiology (Genetic Epidemiology, Genomics, Bioinformatics, Molecular Epidemiology)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Head and neck cancer is the 7th most common cancer worldwide. Many patients are diagnosed with advanced stage disease and have poor prognosis (5-year survival 5% to 40%). Identification of those at increased risk may improve early detection strategies and reduce the number of deaths resulting from this disease. We aimed to develop a prediction model based on lifestyle and demographic risk factors, human papillomavirus (HPV) infection status and genetic factors (combined in a polygenic risk score), and estimated 5-year absolute risk of developing head and neck cancer, oral cavity cancer and oropharyngeal cancer.

**Methods:** A total of 12,125 head and neck cancer cases and 5,968 controls from 5 large North American and European studies were included. The data was split into a training set (70%) for model development, and a testing set (30%) for model performance evaluation, including discriminative ability and calibration. The 5-year absolute risk was estimated by combining relative risk estimated from the risk model with the age-specific incidence rate and population distribution of risk factors after accounting for competing risk.

**Results or Preliminary Results:** In the hold-out testing set, the risk models including age, sex, smoking and drinking history, body mass index, ethnicity, education, family history of head and neck cancer and polygenic risk score showed reasonable predictive accuracy for oral cavity cancer (AUC=0.73), and further including HPV serological markers showed good discriminatory accuracy for oropharyngeal cancer (AUC=0.95). The absolute risk estimates showed distinct trajectories by risk factor profiles, and the risk was generally higher among individuals with heavy smoking, heavy drinking, HPV seropositivity and those with higher polygenic risk score.

**Conclusion or Next Steps:** These risk models may be helpful for identifying subjects at higher risk of developing head and neck cancer who would benefit most from targeted preventive measures and/or screening programs.

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**ID: 81**

## **Temporal Analysis of the Impact of COVID-19 on Mental Health Emergency Presentations in Alberta**

**Laura Rivera, University of Calgary**

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**Primary Area of Focus:** Addictions & Mental Health (Addictions, Cannabis, Mental Health, Psychosocial Health)

**Secondary Area of Focus:** Health Informatics, Services & Systems (Health Services Research, Health Systems & Policy Studies)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** The COVID-19 pandemic and accompanying global disruption had a significant negative impact on mental health of Canadians. Emergency departments (ED) serve as important and commonly utilized health resources for individuals seeking urgent mental health care. This study aims to: 1) characterize the impact of the COVID-19 pandemic on the volume, types, and severity of mental health presentations to EDs in Alberta, and 2) assess the utilization of community mental health resources in the COVID-19 era.

**Methods:** This is a prospective cohort study that will use linked healthcare administrative data (the Discharge Abstract Database and the National Ambulatory Care Reporting System) and ICD-10 diagnoses to determine trends in individuals presenting with mental health concerns to EDs in Alberta. Our index date of March 15, 2020 is when the Alberta Government initiated the first lockdown period, and we will use a cohort observation window that will look forward to December 31, 2020 and look back to January 1, 2017. Interrupted time series analysis generating incidence rate ratios will characterize temporal trends in mental health visits in relation to the introduction and loosening of public health restrictions in the province of Alberta. This project has received ethics board approval from the University of Calgary.

**Results or Preliminary Results:** The study is currently in the data analysis stage, with the healthcare data being analyzed to determine temporal trends in emergency mental health presentations. With the preliminary data showing an overall decline in all ED presentations in March 2020, we expect to see a similar drop in mental health visits.

**Conclusion or Next Steps:** The degree of this decline and potential return to baseline, may serve as indicators of the impact of the COVID-19 pandemic on the mental well-being of Canadians. We anticipate that this analysis will be of great relevance to mental health clinicians and policymakers.

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**ID: 82**

## **Effect of Transitions between International Statistical Classification of Disease (ICD) Versions on Chronic Disease Prevalence Estimates from Administrative Health Data**

**Ridwan Sanusi, University of Manitoba**

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**Primary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Secondary Area of Focus:** Biostatistics (Statistical Methods, Modeling, Data Systems & Computer Software)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Diagnosis codes in administrative health data are routinely used to monitor trends in disease prevalence and mortality. The International Statistical Classification of Diseases (ICD), which is used to record these diagnoses, has been updated multiple times to reflect advances in health and medical science. Our objective was to test if transitions between ICD versions are associated with changes in chronic disease prevalence estimates from administrative data.

**Methods:** Administrative data (i.e., hospital, physician claims) were from Manitoba; ICDA-8 (1970-1979), ICD-9-CM (1980-2018), and ICD-10-CA (2005-2018; hospital data only) codes are captured in the data. We estimated age- and sex-adjusted prevalence for selected chronic diseases, including breast cancer, mood and anxiety disorders, diabetes, anemia, and asthma using negative binomial regression with adjustment for autocorrelation. We used statistical control charts, an efficient tool to monitor and signal changes in trend estimates, to assess the impact of changes in ICD versions on prevalence estimates. Hotelling's T2 statistic was used to simultaneously monitor the regression estimates (slopes and intercepts) and gives an out-of-control signal when estimates were beyond control limits set using  $\alpha = 0.01$ .

**Results or Preliminary Results:** Prevalence estimates for mood and anxiety disorders, diabetes, and asthma ranged from 0.1-1.6 per 1,000 population, while anemia and breast cancer prevalence ranged from 1.0-14.0 per 1,000 population over time. The control charts revealed non-significant changes in the prevalence of diabetes and asthma when transitioning between ICD versions. However, breast cancer, mood and anxiety disorders, and anemia showed significant changes in prevalence estimates when transitioning from ICDA-8 to ICD-9-CM.

**Conclusion or Next Steps:** Several investigated chronic diseases showed a significant change in trend slopes and intercepts when transitioning from ICDA-8 to ICD-9-CM, while other diseases were not affected by transitions between ICD versions. Other data and environmental factors that may influence trend estimates could be considered in future studies.

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**ID: 84**

## **Interactive Visualization for Intersectional Data**

**Ruo Su Zhang, University of Western Ontario**

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**Primary Area of Focus:** Issues in Equity, Diversity & Inclusiveness (Social & Political Dimensions of Disparities in Health)

**Secondary Area of Focus:** Biostatistics (Statistical Methods, Modeling, Data Systems & Computer Software)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Objective: Intersectionality is a theoretical framework explaining how effects generated by interactions between social positions are not additive; that is, the unique experiences of an individual is not simply the sum of their race, gender, education, or other social statuses. The value of incorporating intersectionality into quantitative population health research has been recognized—however, researchers face challenges in effectively visualizing intersectional health data using standard data visualization techniques due to the size and complexity of these high-dimensional datasets. The objective of this project is to develop an interactive data visualization tool for intersectional health data that is accessible to people with no programming experience.

**Methods:** Methods: R, a free statistical software and programming language, is used to build the tool. The R package Shiny is used to create interactive HTML elements on the user interface. Plots are generated using the R package ggplot2.

**Results or Preliminary Results:** Preliminary Results: A viable prototype tool has been developed and can be viewed at ([https://rzhan374.shinyapps.io/IG\\_Pilot/](https://rzhan374.shinyapps.io/IG_Pilot/)). The tool automatically generates interactive univariate plots and scatterplots using the data uploaded by the user. These plots can be modified in real-time by specifying different settings, including changing the plot type, grouping data by variables of interest, and sub-setting data to focus on important intersections. Usability testing was conducted in September 2020, where several undergraduate biostatistics students tested the navigability and functionality of the prototype tool.

**Conclusion or Next Steps:** Next Steps: 1) Improving the layout of the user interface and the tool workflow in response to feedback from usability testing. 2) Adding statistical comparisons between subgroups to supplement visualizations. For example, a user generates side-by-side boxplots comparing BMI by educational level; the tool could test for statistical difference in BMI between the subgroups of education level. 3) Investigating and incorporating statistical techniques to manage multiple comparisons risk in interactive data visualization.

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**ID: 99**

## **Tracking Canada's response to COVID-19: CIHI's Intervention Scan and Interactive Timeline**

**Kinsey Beck, CIHI**

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**Primary Area of Focus:** COVID-19 (Health Impacts, Surveillance, Policy)

**Secondary Area of Focus:** Public Health / Population Health (Disease Prevention, Population Health, Population Health Interventions)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** The COVID-19 pandemic, and responses continues to evolve rapidly across Canada. Health systems are relying on Federal/Provincial/Territorial (FPT) policy interventions and public health measures to reduce transmission, improve health outcomes, and manage health workforce capacity. The Canadian Institute for Health Information (CIHI) developed and maintains a comprehensive public repository of interventions across Canada, to enable the monitoring and management of the current pandemic, as well as retrospectively evaluate Canada's COVID-19 response.

**Methods:** Routine and systematic web searching captured information on COVID-19 interventions such as case management, vaccines, distancing, health workforce capacity, health services and travel restrictions. Key sources include: FPT governments, public health agencies, and professional regulatory bodies. Regional and municipal interventions are only included if announced at the FPT level. Data is checked for validity, standardized for language and added to the COVID-19 Intervention Scan (excel file) and Intervention Timeline in Canada (visualization). Daily COVID-19 case counts sourced from the COVID-19 Canada Open Data Working Group are included in the visualization for context.

**Results or Preliminary Results:** The COVID-19 Intervention Scan and Intervention Timeline in Canada provide high-quality information for health system managers, public health planners and researchers. The scan can be used together with scientific evidence and other data (e.g. mortality rates, use of health services) to better understand when policy and other measures were implemented to limit the spread and improve health outcomes related to COVID-19. It has been used by public health units to develop their own tracking initiatives, Canadian researchers and federal agencies to inform modeling and analysis, and International research groups as a key source of Canadian data.

**Conclusion or Next Steps:** The systematically collected and organized COVID-19 interventions available in CIHI's COVID-19 Intervention Scan and Intervention Timeline in Canada provide an evolving repository of information to support ongoing and future work to understand Canada's pandemic response.

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**ID: 107**

## **Risk prediction models for lung cancer mortality in an Asian population based on China Kadoori Biobank**

**Matthew Warkentin, Lunenfeld-Tanenbaum Research Institute, Sinai Health System**

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**Primary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Secondary Area of Focus:** Public Health / Population Health (Disease Prevention, Population Health, Population Health Interventions)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Lung cancer is a leading cause of mortality globally. Early detection of lung cancer through screening can markedly improve prognosis. Statistical models can identify high-risk individuals for screening, however, models have primarily been developed in North American cohorts of smokers. Much less is known about risk factors for never-smokers, which represent a growing proportion of lung cancers, particularly for Asian populations. In this study, we develop and validate risk-prediction models in an Asian cohort separately for ever- and never-smokers.

**Methods:** This study was performed using the China Kadoorie Biobank (CKB), a prospective cohort of 512,715 individuals with up to 12 years of followup. We modeled the cumulative incidence of lung cancer mortality, accounting for the competing risk of death due to all other causes, using cause-specific flexible parametric survival models separately for ever- and never-smokers. Predictors were chosen based on prior knowledge of their role in lung cancer, or by meaningfully improving model performance. Model performance was assessed using the time-dependent area under the ROC curve (AUC) and comparing predicted and observed risks for concordance.

**Results or Preliminary Results:** Predictors assessed in the the never-smoker lung cancer mortality model were age, sex, household income, lung function, family history of cancer, and indoor air pollution. The ever-smoker model additionally assessed smoking status (former vs. current), duration, intensity, and years since cessation. The maximum observed 5-year lung cancer mortality risks were 9.2% and 1.6% for ever and never-smokers, respectively. The 5-year test set AUC for the ever and never-smoker models were 0.82 and 0.78, respectively.

**Conclusion or Next Steps:** Our risk-prediction models accurately identify Asian ever- and never-smokers at high-risk of death due to lung cancer, and found never-smokers with risks exceeding common screening eligibility thresholds who could likely benefit from lung cancer screening. This study is among the the first to develop and validate risk models specifically for Asian never-smokers.

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**ID: 119**

**Trends in hospitalization rates of lab-confirmed COVID-19 patients treated at a large academic health center in the U.S., March-August, 2020**

**Ban Majeed, Augusta University**

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**Primary Area of Focus:** COVID-19 (Health Impacts, Surveillance, Policy)

**Secondary Area of Focus:** Epidemiologic Methods (Study Designs, Ethics, Data Quality, Record Linkage, Cohort Studies)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Leveraging the system of the Electronic Medical Records (EMR) to address timely epidemiological questions about COVID-19, we examined the overall, and by age, time trends of hospitalization rates in adult lab-confirmed COVID-19 patients in a large academic health center (March-August, 2020).

**Methods:** Data were collected using EMR and data mining tool, the Integrating Biology and the Bedside (i2b2). The study included (N=9,116) COVID-19 lab-confirmed patients (aged 18+) treated at our health center in March 1st – August 31st 2020. Hospitalization rate was defined as the number of new hospital admissions of COVID-19 patients per week divided by the total number of new confirmed COVID-19 cases.

**Results or Preliminary Results:** Overall, the rate of hospitalization for adult patients in this health center was 4.8% (95% CI, 3.94 – 5.83). Test of consistency of hospitalization rates over time showed an overall decreasing trend (p-value = 0.013). During the spring months, hospitalization rates in patients aged 18-44 was 1.18% (0.6 – 2.24) and in patients aged 45-64 was 6.37% (4.78 – 8.41). Compared to younger patients, older patients had higher hospitalization rates (8.87%, 6.52 – 11.94). Among those aged 65+ hospitalization rate was significantly higher in summer (16.04%, 95% CI, 13.8 – 18.56; p=0.0003) than in spring.

**Conclusion or Next Steps:** Admission rates of COVID-19 patients, seen at our health center prior to any known outpatient treatment of COVID-19 and prior to the first vaccinations, are consistent with the national rate of hospitalization in the U.S. We document a decreasing time trend in hospital admission during the first six months of this pandemic and hypothesize that this trend to be caused by the increase in testing (mass testing). The observed seasonal variation could be due to ending of the stay at home order for elderly and vulnerable population; changes in virulence and infectivity of coronavirus; and outbreaks at community settings where elderly individuals reside.

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**ID: 120**

**Pedestrian injury in Ontario 2003-2017: A preliminary analysis of health care utilization data**

**Anne Harris, Ryerson University**

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**Primary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Secondary Area of Focus:** Healthy Cities (Health Impacts of Urban Planning, Walkability)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Pedestrian road injury imposes a substantial morbidity burden and risk can be a barrier to uptake of active transportation. Surveillance of pedestrian injury using police data primarily records collisions but misses falls that occur while walking. This analysis uses health care data to describe both fall and collision pedestrian injuries in Ontario 2003-2017.

**Methods:** We used Discharge Abstract Database (DAD) hospitalization data and National Ambulatory Care Recording System (NACRS) emergency department (ED) visit data, linked to the Registered Persons Database (RPDB) at the Institute for Clinical and Evaluative Sciences (ICES). Pedestrian injury diagnostic codes ascertained cases, along with fall injury codes that indicated location of injury as “street and highway”. This preliminary numerator-only analysis examined simple counts by age and sex.

**Results or Preliminary Results:** Over the course of follow-up, more than 14,400 hospitalized pedestrian collisions were recorded, exceeded by falls in the street or highway (>17,500). ED visits exceeded hospitalizations approximately 10-fold. Pedestrian injuries were more common in women. Falls made up a higher proportion of ED visits in those over 65 years, but the burden of pedestrian fall injuries was high for all age groups. Hospitalization for falls was rare under age 19, but was about half of all pedestrian injuries for ages 20-64 and more than half of pedestrian injuries for those over 65.

**Conclusion or Next Steps:** Denominators are required for interpretation and time trends and should account for amount of walking rather than crude population counts. The inclusion of falls is critical to accurate surveillance of active transportation injury.

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**ID: 121**

## **The Effect of Disease Co-occurrence Measurement on Multimorbidity Networks**

**Barret Monchka, University of Manitoba**

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**Primary Area of Focus:** Biostatistics (Statistical Methods, Modeling, Data Systems & Computer Software)

**Secondary Area of Focus:** Multimorbidity (Definitions of Multimorbidity, Complex Patients, Comorbidity)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Multimorbidity, the co-occurrence of two or more chronic diseases, is a complex phenomenon. Network analysis, a technique for describing relationships, is a potentially useful tool for multimorbidity analyses. Our objective was to compare chronic disease networks constructed using different measures of disease co-occurrence.

**Methods:** A retrospective cohort study was conducted using four years of Manitoba hospital and physician administrative records (2015/16 – 2018/19, 1.5 million individuals). Chronic disease diagnosis codes were grouped into 184 categories. Disease networks were constructed using seven co-occurrence measures: joint prevalence, relative risk (RR), phi ( $\phi$ ), lift, cosine, Jaccard, Kulczynski. Each network was limited to the 200 strongest associations. Disease importance was measured using degree centrality and limited to the top 20. Community detection, a technique for detecting highly-connected nodes (i.e., diseases), was used to identify clusters and similarity between networks was measured using the adjusted Rand index (ARI), with higher values indicating greater similarity. Network edges (i.e., relationships) were described using disease prevalence categories: low (

**Results or Preliminary Results:** RR and lift disproportionately detected relationships between pairs of low prevalence diseases, while the majority of relationships identified using the other co-occurrence measures included moderate to high prevalence diseases. Networks had a median 50% agreement (Q1-Q3: 20%-70%) in their selection of the top 20 most central diseases, ranging from 95% agreement between Cosine and Jaccard to 0% between joint prevalence and lift. Disease clusters differed between networks with a median ARI of 0.08 (Q1-Q3: 0.06-0.26) and the number of clusters varied from 1 (joint prevalence) to 17 (phi).

**Conclusion or Next Steps:** Disease co-occurrence measures have a considerable effect on the structure of multimorbidity networks, including which diseases are considered influential and how disease clusters are defined. Co-occurrence measures should be selected considering research objectives and the prevalence relationships of greatest interest.

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**ID: 127**

## **Changes in chronic disease risk factors among Canadian adults with and without a child in the household during the COVID-19 pandemic**

**Alessandra Andreacchi, McMaster University**

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**Primary Area of Focus:** COVID-19 (Health Impacts, Surveillance, Policy)

**Secondary Area of Focus:** Nutrition, Physical Activity & Obesity (Food Security, Nutritional Epidemiology, Physical Activity Interventions)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** To describe changes in chronic disease risk factors (alcohol, tobacco, junk food/sweets, and screen use) and current exercise among adults with and without a child

**Methods:** A repeated cross-sectional study was conducted using data on Canadians  $\geq 25$  years of age who participated in the the Canadian Perspective Survey Series (CPSS). Surveys were completed in late March (CPSS1, N=4,383), early May (CPSS2, N=4,367) and mid-July 2020 (CPSS4, N=4,050). Participants reported whether they had increased, decreased, or not changed their alcohol, tobacco, junk food/sweets and screen use habits, and whether they currently exercised indoors or outdoors. Weighted estimates for the proportion of respondents at risk for each outcome are reported separately for participants with and without a child in the household at each time point.

**Results or Preliminary Results:** Adults with a child in the household were consistently more likely to report increased consumption of alcohol, junk food/sweets, and screen use at all three survey time points, compared to adults with no children. In CPSS1, 18.9% of adults with a child in the household vs. 11.3% for no children increased alcohol, 32.0% vs. 21.8% increased junk food/sweets, and 81.8% vs. 75.7% increased screen use. Around one-third of adults reported they were not exercising outdoors and over 40% reported not exercising indoors over the three surveys, but this did not consistently differ based on the presence of a child in the household.

**Conclusion or Next Steps:** Our preliminary results suggest chronic disease risk factors increased in a high proportion of Canadian adults since the onset of the pandemic, and for several risk factors the increase was substantially greater for adults with children in the household compared to adults without children. Next steps include investigating these associations by age, sex and other socio-demographic factors.

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**ID: 132**

## **Incidental detection of differentiated thyroid cancer and access to diagnostic imaging in Ontario, 2003–2017**

**Todd Norwood, University of Toronto/Ontario Health**

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**Primary Area of Focus:** Health Informatics, Services & Systems (Health Services Research, Health Systems & Policy Studies)

**Secondary Area of Focus:** Spatial Epidemiology, Mapping & GIS (Geographical Epidemiology, Surveillance Systems, Methods)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Previously, we showed that a substantial proportion of differentiated thyroid cancer (DTC) cases in Ontario were associated with pre-diagnostic, non-thyroid-specific head, neck or thoracic imaging procedures. We designed a study to evaluate the contribution of geographic access and capacity of advanced diagnostic imaging to this incidental detection of DTC.

**Methods:** A retrospective cohort of patients with a primary DTC diagnosis, 2003-2017, was extracted from the Ontario Cancer Registry. Drivetimes from patient residence to publicly-funded imaging facilities were calculated, with incidentally-detected cases (IDCs) matched by pre-diagnostic modality. Annual, standardized and migration-adjusted health region (local health integration network, LHIN) imaging capacity by modality was used for capacity. Random effects regression models (logit link) were used to evaluate drivetime and imaging capacity associations with IDCs, adjusted for sex, age and urban-rural covariates.

**Results or Preliminary Results:** Of 32,000 eligible patients, IDCs comprised 10% of female and 17% of male cases. Computed tomography (CT) was associated with 68% of IDCs. The proportion of IDCs was higher in LHINs outside of Ontario's largest urban areas (range: 9%, Central LHIN to 20% in North West LHIN), and mean drivetimes increased with rurality (large urban area 8 min.; rural area 46 min.). Imaging capacity increased substantially (e.g., four-fold) between 2003 and 2017 for each LHIN, with larger increases in northern LHINs. Adjusted results show that CT capacity is associated with 25% higher odds ( $p$

**Conclusion or Next Steps:** Next, employ spatio-temporal Bayesian hierarchical models to adjust the parameter estimate standard errors appropriately for spatial correlation. Then, evaluate and geographically map the random effects to further assess that imaging capacity, rather than geographic access to imaging facilities is associated with IDCs.

**AuthorNames:** Todd Norwood, University of Toronto/Ontario Health; Therese Stukel, ICES; Emmalin Buajitti, Dalla Lana School of Public Health; Lorraine Lipscombe, Women's College Hospital; Laura Rosella, Dalla Lana School of Public Health, University of Toronto

**First Name:** Todd

**Last Name:** Norwood

**Organization:** University of Toronto/Ontario Health

**ID: 135**

## **Early Substance Use and Later Depressive Symptoms among Canadian Adolescents: Examining the Association using Intersectionality Theory**

**Tess Marusyk, Queen's University**

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**Primary Area of Focus:** Addictions & Mental Health (Addictions, Cannabis, Mental Health, Psychosocial Health)

**Secondary Area of Focus:** Social Determinants of Health (Social Epidemiology, Measuring Social Determinants)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Substance use has been associated with depression in adolescence and earlier initiation (before age 14) may be especially problematic. Social locations, such as those defined by gender, race, or socioeconomic status (SES), have been associated with early adolescent substance use and adolescent depression. However, their effects have primarily been examined independently, whereas Intersectionality Theory suggests they work synergistically. In a Canadian context, the objectives are to (1) provide a descriptive analysis of early substance users considering intersecting social locations (gender, race, and SES); (2) examine the overall association between early substance use and depressive symptoms later in adolescence; and (3) evaluate potential differences in the relationship at different intersections of gender, race, and SES.

**Methods:** This study provides a contemporary analysis using nationally representative data from the 2018 Health Behaviour in School-aged Children study. The sample includes students in grades 9 and 10 (n=8,462). Reported alcohol, cigarette, or cannabis use prior to age 14 is considered early substance use. Depressive symptoms are measured by asking, "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?". A descriptive and a multilevel, multivariable analysis is being conducted. Two- and three-way stratification by gender, race, and SES is being used.

**Results or Preliminary Results:** Approximately one in four adolescents reported early substance use. Over one-third of adolescents reported experiencing recent depressive symptoms. Early substance use was associated with later depressive symptoms (p

**Conclusion or Next Steps:** This analysis using an intersectional lens may help better explain the relationship between early substance use and later adolescent depression. Differences found in the relationship across intersections of social locations may help identify particular subgroups at greater risk.

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**Organization:** Queen's University

**ID: 136**

**A multi-year quality improvement program to strengthen the safety culture in an academic, tertiary care, pediatric hospital setting**

**Zheng Jing (Jimmy) Hu, McMaster University**

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**Primary Area of Focus:** Maternal & Child Health (Perinatal & Neonatal, Maternal Health, Child Health)

**Secondary Area of Focus:** Epidemiologic Methods (Study Designs, Ethics, Data Quality, Record Linkage, Cohort Studies)

**Please select which type of submission best describes your abstract:** Works Proposed (in proposal stage)

**Objectives:** Strengthening safety culture is imperative for healthcare organizations to tackle systems-level issues such as patient safety incidents, adherence to best practices, or healthcare practitioners' well-being. At McMaster Children's Hospital (MCH) NICU, its safety culture challenge is to deliver high quality of care, and as a teaching hospital, provide an optimal, safe, inclusive, and equitable learning experience for all learners from diverse cultural backgrounds. This project aims to transform the Safety Culture of MCH NICU from bureaucratic to generative, based on the Manchester Patient Safety Framework.

**Methods:** We will advance Safety culture by implementing Continuous Quality Improvement (CQI) interventions to effect six primary drivers: psychological safety, Joy-in-work, EDI, Teamwork and Communication, an "All Teach All Learn" learning system, and Leadership Matters. The proposed projects are characterized as transactional and transformational QI projects. The former directly targets identified gaps in workflow, workload, and staffing composition; The implementation process of transactional projects will follow the Model for Improvement framework, starting with stakeholder engagement, and followed by identifying problems using process charts, Pareto charts, and Ishikawa diagrams, identify outcome, process, and balancing measures to evaluate our implementation progress, and strategies to sustain the benefits of the interventions. Transformational projects are directed towards organizational culture and behavioural development. They include, (1) Implementing the Joy-in-Work framework to reduce burnout, improve psychological safety, and increase learners' autonomy and engagement in QI efforts. (2) diffusing hierarchical barriers and equity, diversity, and inclusion training. (3) Developing relationship-centred mentoring and incorporating competence-by-design into the education program. (4) Leadership training using various frameworks. (5) Utilize novel systems-analysis and systems-change methods, such as Theory U, to transform our organizational culture. All projects are guided by an evolving driver diagram that works towards developing a robust CQI system that fosters a generative safety culture.

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**ID: 141**

## **Effets d'une supplémentation en acides gras oméga-3 à longue chaîne sur la qualité de vie des patients atteints de cancer de la prostate: un essai clinique randomisé**

**Hanane Moussa, Centre de recherche du CHU de Québec-Université Laval, Axe Oncologie, Québec, QC, Canada.**

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**Primary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Secondary Area of Focus:** Clinical & Pharmacoepidemiology (Clinical Trials, Drug Safety and Effectiveness, Systematic Reviews, Clinical Outcomes)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Le cancer de la prostate (CaP) et ses traitements sont associés à de nombreux symptômes des domaines sexuels, urinaires et psychologiques. Les acides gras oméga-3 à longue chaîne (LCn3) semblent avoir un effet protecteur contre le CaP probablement via leurs propriétés anti-inflammatoires. Les observations cliniques indiquent un effet possible de l'inflammation sur la qualité de vie (QdV). L'objectif de cette étude était d'évaluer le lien entre une supplémentation en acide eicosapentaénoïque (MAG-EPA), un sous-type de LCn3, et la qualité de vie (QdV) chez des patients atteints de CaP.

**Methods:** Une étude clinique randomisée de phase IIb a été conduite auprès de 130 hommes traités par prostatectomie radicale à l'Hôtel-Dieu de Québec. Les participants ont été randomisés à une dose quotidienne de 3g de MAG-EPA ou de placebo. La QdV générale et spécifique au CaP a été évaluée à l'aide de questionnaires validés: EPIC-26 (score 0-100; score élevé = meilleure fonction urinaire, sexuelle, hormonale et intestinale), IPSS (score 0-35; score faible = absence de symptômes urinaires) et SF-36 (score 0-100, score élevé = meilleure fonction mentale et physique). Ces questionnaires ont été complétés lors de la randomisation, et à tous les 3 mois post-chirurgie pendant un an. Les analyses ont été faites en utilisant « l'intention de traiter ». Les modèles linéaires mixtes ont été utilisés pour évaluer ces associations.

**Results or Preliminary Results:** Aucune différence significative n'a été observée entre les deux groupes de l'étude pour tous les scores de QdV évalués. Les résultats préliminaires ont cependant montré une amélioration des symptômes urinaires chez tous les participants.

**Conclusion or Next Steps:** Les analyses préliminaires n'ont pas permis d'identifier de relation significative entre les différents scores de QdV et une supplémentation quotidienne en MAG-EPA chez les hommes atteints de CaP. Des analyses per protocol et de sous-groupes seront effectuées.

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**ID: 142**

## **Eight Year Analysis of Frequent Pediatric Emergency Department Use in Southern Ontario**

**Gianluca Calcagno, McMaster University**

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**Primary Area of Focus:** Health Informatics, Services & Systems (Health Services Research, Health Systems & Policy Studies)

**Secondary Area of Focus:** Public Health / Population Health (Disease Prevention, Population Health, Population Health Interventions)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Frequent use of the emergency department (ED) has been a topic of study due to its complex nature. However, pediatric patients who frequently present to the ED are a distinct population that has remained understudied in literature. The objective of this study was to characterize pediatric patients who display high frequency use of the ED among residents of the Hamilton Niagara Haldimand Brant Local Health Integration Network in Ontario, Canada.

**Methods:** A descriptive analysis of high frequency use of the ED (5+ per year) during an eight-year period was undertaken among patients, 0-17 years old. The individuals were divided into eight cohorts to identify how many years they had remained a high frequency user of the ED over this timeframe. Information on ED visits, hospitalizations and patient characteristics between 2012/13-2019/20 was analyzed using data obtained from Integrated Decision Support (IDS).

**Results or Preliminary Results:** 13,809 children (average age: 7.4 years) were found to have high frequency use of ED services. There were a total of 198,356 ED visits with an average of 14.4 visits per patient over the eight years. 125,941 visits were high acuity (Canadian Triage and Acuity Scale: CTAS 1-3) of which 2,206 (1.8%) were CTAS 1. Of the total, 6,249 children (45.3%) had 15,806 hospitalizations (1-48 per person, average 2.5 hospitalizations) and spent 73,942 days in hospital (range: 1-580, average 11.8 days) over 8 years. The most common diagnoses for the children were brain injury (n=4,261, 30.9%), other perinatal conditions (n=3,165, 22.9%), and asthma (n=2,101, 15.2%).

**Conclusion or Next Steps:** Data tracking persistent high frequency use of the ED in the pediatric population is currently quite limited and as such, findings from this study may inform upstream community interventions. The data are undergoing a further analysis to provide more information on the reasons for ED visits and hospitalizations.

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**First Name:** Gianluca

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**Organization:** McMaster University

**ID: 144**

## **Analysis of Highly Frequent Emergency Department Use in Southern Ontario**

**Joshua Rafael, McMaster University**

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**Primary Area of Focus:** Health Informatics, Services & Systems (Health Services Research, Health Systems & Policy Studies)

**Secondary Area of Focus:** Public Health / Population Health (Disease Prevention, Population Health, Population Health Interventions)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** The term “highly frequent user” has been used in the literature to refer to patients who visit the emergency department (ED) up to 30+ times per year. There is no consensus on the number of visits required to qualify as a highly frequent user, and there is a paucity of studies on these individuals’ use of EDs in Canada. The objective of this study is to characterize the highly frequent user population of hospital EDs in an area of Southern Ontario, Canada (population: 1.5 million).

**Methods:** This study was a descriptive analysis of eight years of data from 2012/13 to 2019/20 focusing on individuals residing in the Hamilton Niagara Haldimand Brant Local Health Integration Network (HNHB LHIN) who were highly frequent users of the ED (50 or more visits per year). Data on patient characteristics, ED visits, and hospitalizations were obtained from the National Ambulatory Care Reporting System, the Ontario Mental Health Reporting System, and the Discharge Abstract Database from Integrated Decision Support (IDS).

**Results or Preliminary Results:** 319 residents of the HNHB LHIN experienced highly frequent use of the ED with 50 or more visits during one or more of the eight years of study. 179 individuals had one year of highly frequent ED use; 69 had two years; 24 had 3 three years; 24 had four years; and 23 had five or more years. On average, patients were 45 years old (SD: 16 years), ranging from 18-89 years old. There were 178 males (56%) and 141 females (44%). Based on the administrative data, 199 (62%) individuals had a history of homelessness or of being precariously housed.

**Conclusion or Next Steps:** A closer analysis of socioeconomic status using the Ontario Marginalization Index will be undertaken based on neighbourhood-level geographic location. In addition, ED visit data will be examined to assess reasons for presentation to hospital.

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**Organization:** McMaster University

**ID: 145**

**A simple semiparametric approach to predict infected counts using the effective reproductive number**

**Razvan Romanescu, CHI**

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**Primary Area of Focus:** Biostatistics (Statistical Methods, Modeling, Data Systems & Computer Software)

**Secondary Area of Focus:** COVID-19 (Health Impacts, Surveillance, Policy)

**Please select which type of submission best describes your abstract:** Works Proposed (in proposal stage)

**Objectives:** To develop a medium term infectious disease prediction model, based on the effective reproductive number ( $R_t$ ). The prediction performance of this model will be demonstrated on counts of Covid-19 cases.

**Methods:** Network based models of infectious disease spread represent a significant improvement over standard SIR models, which assume a mass action mode of transmission. However, their adoption in practice is lagging, because they require information about the contact network distribution of the underlying population, which is not easily obtainable. This project seeks to bridge the gap between theoretical complexity and practice by proposing a semiparametric form of  $R_t$  as the basis for predictive modeling. This form is flexible enough to accommodate  $R_t$  as implied by standard network degree distributions (such as Poisson, discrete exponential, and power law), yet can be fitted directly to observed count data, without requiring extra knowledge of the underlying population. The benefit of this method compared to the more standard approach which estimates the current value of  $R_t$  and uses it to predict counts in the short term, is that whole time curve for  $R_t$  can be fit, and predictions can be made further into the future with more accuracy, by taking into account the decay in  $R_t$ . This method will be assessed on the basis of its expected prediction error in comparison to existing methods for predicting infectious counts.

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**Organization:** CHI

**ID: 146**

## **Improving Wellbeing and Quality of Life in Continuing Care Through Implementation of SMART Technologies and Services**

**Susan Kirkland, Dalhousie University**

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**Primary Area of Focus:** Public Health / Population Health (Disease Prevention, Population Health, Population Health Interventions)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Older adults value autonomy and independence and ‘aging in place’ has become a research and policy focus in Canada to support adults in their homes and communities as they age. SMART technology has enormous potential to foster healthy aging and independence in continuing care for older adults with impairment-related and/or aging-related disabilities. However, assistive technologies often fail to be taken up by older adults, or cannot be sustained, either because they hinder rather than facilitate daily living, or there are no long-term supports in place to maintain their functional operation. Working as a team of academic, community, and industry partners, this project explores how SMART devices can be successfully implemented in continuing care by 1) combining proprietary SMART devices with training resources and 2) allowing these SMART devices to be customized to meet client needs within their environment.

**Methods:** Using a participatory lens, we involve older adults and carers in the co-development of our SMART solution, implementation tools, and project processes. Project processes and tools are also co-developed by partners to support integration with organizational policies and practices. Our evaluation is longitudinal and will involve multiple data collection methods, including design workshops, surveys, semi-structured interviews, field observations, and organizational document review.

**Results or Preliminary Results:** A pilot study of this project identified that a rehabilitation team is key to enabling the integration and uptake of SMART devices into continuing care. The rehabilitation team includes an occupational therapist and rehabilitation assistants who are critical in supporting older adults use of SMART devices to meet their needs (e.g., connecting with family through video calls) around attaining greater autonomy and independence.

**Conclusion or Next Steps:** The goal of our SMART solution to develop a cost-effective, sustainable, and scalable intervention that enhances the independence, autonomy, and wellbeing of older adults aging into disabilities in continuing care.

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**First Name:** Susan

**Last Name:** Kirkland

**Organization:** Dalhousie University



**ID: 147**

## **Temporal trends and geographic variation in lung cancer risk in Essex County, Ontario, 1999-2018: findings from the MOSAIC study**

**Amidu Raifu, Ontario Health (Cancer Care Ontario)**

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**Primary Area of Focus:** Spatial Epidemiology, Mapping & GIS (Geographical Epidemiology, Surveillance Systems, Methods)

**Secondary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** To evaluate neighbourhood-level lung cancer risk associations with social determinants of health in a region in Ontario that has experienced higher lung cancer incidence compared to provincial rates.

**Methods:** A retrospective cohort of lung cancer patients aged 20 to 84 at diagnosis, between 1999 and 2018, was extracted from the Ontario Cancer Registry (OCR). Patients were geographically located to census dissemination areas (DAs; average population 400-700 people) areas using residential postal code at diagnosis. We fit observed cases and age-adjusted expected cases under a Poisson distribution using a spatio-temporal model with conditional autoregressive priors. The model allows the estimation of rate ratios (RRs) and adjusts for overdispersion and spatial correlation. The spatio-temporal model was used to capture the changing spatial dynamics in Essex County over two decades. Covariates included diagnosis period, area-based social determinants of health indicators (Ontario Marginalization Index (ON-Marg) material deprivation, dependency, residential instability) and prevalence of ever-smokers.

**Results or Preliminary Results:** The cohort comprised 5,352 patients across 649 DAs in Essex County. Over the past two decades, the adjusted RRs show no significant change in lung cancer incidence rates. Adjusted RRs for material deprivation quintiles show significantly increased incidence of lung cancer among people residing in more marginalized areas (RRs, Q3=1.19 (CrI: 1.06, 1.34), Q4=1.37 (CrI: 1.21, 1.57), Q5 (most marginalized) =1.68 (CrI: 1.47, 1.91). No significant associations were detected for dependency and residential instability. Prevalence of ever-smokers is associated with an 8-fold increase in incidence rates.

**Conclusion or Next Steps:** Material deprivation was significantly associated with lung cancer risk in Essex County. Map the spatial random effects and identify clusters of increased lung cancer risk before and after adjustment for the social determinants of health indicators. We will examine whether these clusters have persisted over time and their associations with the area-based covariates. We will also examine sex-specific, or sex-adjusted models.

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**First Name:** Amidu

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**Organization:** Ontario Health (Cancer Care Ontario)



**ID: 150**

## **Quality of life for men at risk of prostate cancer: A descriptive analysis from a large Canadian cohort**

**Roxane Tourigny, Centre de recherche du CHU de Québec-Université Laval, Axe Oncologie, Québec, QC, Canada.**

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**Primary Area of Focus:** Chronic Disease & Injury (Injury, Cancer, Diabetes, Cardiovascular Disease & Stroke, Respiratory, Other Chronic/Neurological Disability, Health Impacts, Prevention, Screening, Treatment)

**Secondary Area of Focus:** Addictions & Mental Health (Addictions, Cannabis, Mental Health, Psychosocial Health)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** Prostate cancer is the most common cancer among Canadian men and have a major impact on quality of life. However, little is known about quality of life from men at risk of prostate cancer. Here, we aim to describe the quality of life of a large Canadian men cohort at risk of developing prostate cancer.

**Methods:** General- and prostate cancer-related quality of life was collected for 2,055 men at risk of prostate cancer enrolled in a multicentric prospective observational study called BIOCaPPE\_GRÉPEC. In this clinical study, quality of life was evaluated using validated questionnaires, including 1-Hospital Anxiety and Depression Scale (HADS); 2-36-Item Short-Form Survey (SF-36) 3-International Prostate Symptoms Score (IPSS); 4-Sexual Health Inventory for Men (SHIM).

**Results or Preliminary Results:** General quality of life analyses were conducted with 2,014 participants, while prostate cancer-specific quality of life analyses were conducted with 2,010 participants. Among these, 274 (13.6%) were classified as borderline and 122 (6.1%) as abnormal cases of anxiety; 94 (4.7%) were classified as borderline and 39 (1.9%) as abnormal cases of depression; 1,067 (54.0%) had moderate to severe lower urinary tract symptoms and 155 (7.8%) had severe erectile dysfunction symptoms. The majority of participants had a health-related quality of life similar or better than Canadian men in general, for all domains and components evaluated. Finally, 1,096 participants (55.5%) were satisfied with their quality of life caused by urinary symptoms.

**Conclusion or Next Steps:** This study is the first description of the quality of life in such a large Canadian cohort of men at risk of prostate cancer. Our results suggest that the majority of men at risk of prostate cancer perceive their health-related and prostate cancer-related quality of life adequate, despite the majority of these men have moderate to severe lower tract urinary symptoms. Symptoms related to anxiety, depression and erectile dysfunction are less common.

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**ID: 154**

**Impact of COVID-19 pandemic on mental health: a survey of nurses at the front line**

**Ban Majeed, Augusta University**

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**Primary Area of Focus:** COVID-19 (Health Impacts, Surveillance, Policy)

**Secondary Area of Focus:** Addictions & Mental Health (Addictions, Cannabis, Mental Health, Psychosocial Health)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** This cross-sectional study investigated the impact of COVID-19 pandemic on the mental health of nursing staff in a large academic hospital. We estimated prevalence of anxiety/depression, growth, resilience, healthy behavior, and substance abuse. Mental health outcomes were compared by age, race/ethnicity, and history of treating COVID-19 patients.

**Methods:** Data were collected using Qualtrics, an online survey platform, from 09-10, 2020. All active nurses at the academic hospital received invitation to participate via the official email listserv. Of 2,034 nurses invited, 213 participated in the study. Survey included questions from well-established measures on anxiety/depression (4-point scale), 5-point scales assessing growth and resilience, and number of days (0-7) of healthy behavior and substance abuse. Age, race, and history of treating COVID-19 patients was also included. A sum score for each set was calculated. Group mean differences were examined using t-test and ANOVA.

**Results or Preliminary Results:** Overall, 23.9% of participants screened positive for anxiety/depression, mean growth score was low, 6.3 ( $\pm 4.6$ ); and mean resilience was moderately high 21.9 ( $\pm 5.4$ ). Ranging from 0-26, average number of days of healthy coping behavior (meditation, extra exercise, relaxing and connecting socially) was 10.0 ( $\pm 5.5$ ). Black nurses had higher growth scores than white nurses (p

**Conclusion or Next Steps:** This study highlights high resilience and healthy coping behaviors in nurses, especially in black nurses and those aged 65 and older. Close attention to nurse mental health status by hospital administration is needed to ensure early detection and treatment of anxiety/depression.

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**Organization:** Augusta University

**ID: 157**

## **The prevalence of self-reported psychological functional limitations in samples of Ontario post-secondary students**

**Dan WANG, Ontario Tech University**

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**Primary Area of Focus:** Addictions & Mental Health (Addictions, Cannabis, Mental Health, Psychosocial Health)

**Please select which type of submission best describes your abstract:** Works Completed or in Progress

**Objectives:** To estimate the one-month prevalence of moderate-extreme psychological functional limitations across a range of student characteristics.

**Methods:** We conducted a cross-sectional study of post-secondary students enrolled in two faculties at Ontario Tech University and at the Canadian Memorial Chiropractic College in October-November, 2017. We measured moderate to extreme psychological functional limitations related to symptoms of depression, anxiety, and stress using questions from the WHO-Model Disability Survey. We measured the overall one-month prevalence and prevalence ratio (95%CI) across a range of student characteristics: sociodemographic, morbidity, food security, sleep quality, physical activity, substance use, social support, and academic-related factors.

**Results or Preliminary Results:** The study included 1,392 students (participation rate 46.9%). Across samples, the one-month prevalence of moderate-extreme functional limitations related to psychological symptoms ranged from: 1) 50.8-64.7% for anxiety; 2) 41.2-60.8% for stress; and 3) 29.4-43.6% for depression. Overall, compared to those who reported good sleep quality, those with poor sleep quality had the highest prevalence of psychological functional limitations. The association was the largest among students in the Faculty of Health Sciences for functional limitations related to stress symptoms (prevalence ratio=1.22; 95% CI 1.16, 1.29). Additionally, the prevalence of functional limitations related to symptoms of depression and stress was higher among those with insufficient social support compared to those with sufficient social support. Students without food security had a higher prevalence of functional limitations related to depression symptoms. Finally, females had a higher prevalence of functional limitations related to anxiety symptoms compared to males.

**Conclusion or Next Steps:** Moderate to extremely severe psychological functional limitations were common in our samples of post-secondary students. Our cross-sectional study suggest that a significant burden of psychological disability exists within the post-secondary student population. Moreover, our study provides preliminary findings to formulate hypotheses about potential risk factors. Cohort studies are needed to identify those risk factors.

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