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RISK OF INCARCERATION FOR INDIVIDUALS WITH PRENATAL ALCOHOL EXPOSURE. \*S Lange, J Rehm, D Bekmuradov, A Mihic, S Popova (Dalla Lana School of Public Health, University of Toronto, Toronto, ON Canada)

Prenatal alcohol exposure is the leading cause of intellectual disability in the Western world. Due to the organic brain damage caused by alcohol, and the resulting cognitive, functional, and behavioural deficits, people with Fetal Alcohol Spectrum Disorder (FASD) are at high risk for becoming involved in the legal system, either as offenders or as victims, if appropriate diagnosis, interventions and support services are not initiated early in life and maintained throughout the life-course. The objective of this study was to estimate the risk of incarceration for youths (12–18 years) with FASD, compared to youths without FASD, in Canada. Using the epidemiological data available on the prevalence of incarceration in youths with FASD and data on the prevalence of incarceration in youths without FASD in the general population of Canada, it was estimated that youths with FASD are nineteen times more likely to be imprisoned than youths without FASD, on any given day in a specific year. These alarming study findings emphasize the need to incorporate screening for FASD as early as possible in the criminal justice process. It is crucial to better understand the mental disabilities of offenders prenatally exposed to alcohol and make appropriate referrals for mental health and other services.

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RISK FACTORS AND CORRELATES FOR STRESS AND DEPRESSION IN UNIVERSITY STUDENTS IN CANADA AND THE UNITED STATES. \*M Billard, S Bowers, J Gomes (Faculty of Health Sciences, University of Ottawa, Ottawa, ON Canada)

Unipolar major depression is one of the top ten contributors to global disease burden. Young people transitioning into college and university are particularly at risk of developing symptoms of stress and depression. The purpose of this research was to identify the major risk factors and correlates of depression and stress among Canadian and American undergraduate students. The search was conducted in the Ovid (Medline) database, using MeSH terms for disease terms (mental health, mental disorders, depression, depressive disorders, and stress (psychological)); risk terms (risk factors, indicators, and determinants); and hedge terms (university, post-secondary, and students). Inclusion criteria were country of origin (U.S. and Canada) and English language, and exclusion criteria were articles older than 15 years. The final search included eight articles from which data was collected. Identified risk factors and correlates of stress and depression were of behavioural nature or social or demographic nature. Positive risk factors/correlates for depression were marijuana use, social problem solving deficits, race [Black/Hispanic/multi-ethnic], smoking, and emotional abuse. Inverse risk factors/correlates for depression/stress were religiosity/spirituality, social problem solving abilities, vigorous physical activity, and social support. Statistically significant relationships between positive and negative risk factors and correlates, and stress/depression are identified in this review.

2

EFFECT OF HIGH-DOSE VITAMIN D SUPPLEMENTATION ON BLOOD PRESSURE DURING THE THIRD TRIMESTER OF PREGNANCY: A RANDOMIZED CONTROLLED TRIAL IN BANGLADESH. \*N Perumal, A Al Mahmud, A Baqui, R Raqib, D Roth (Dalla Lana School of Public Health, University of Toronto, Toronto, ON Canada)

Vitamin D is a nutritional factor hypothesized to mitigate and prevent hypertensive diseases of pregnancy due to its effect on placental immunomodulation, vascularisation, and blood pressure regulation. The aim of this study was to estimate the effect of high-dose prenatal vitamin D supplementation on blood pressure during the third trimester of pregnancy. A randomized, double-blinded, placebo-controlled trial involving 160 pregnant women in the third trimester of pregnancy was conducted in Dhaka, Bangladesh (2010–2011). Participants were randomized to receive either vitamin D3 (35,000 IU/week) or placebo until delivery. Blood pressure was measured at five timepoints and vitamin D status was assessed by serum 25-hydroxyvitamin D concentration. Generalized estimating equations were applied to longitudinally compare the change in systolic (SBP) and diastolic (DBP) blood pressure over time between the two groups. Participants in the vitamin D-supplemented group had statistically insignificant lower rates of increase in SBP ( $-3.2$  [ $-9.0, 2.8$ ] mmHg) and DBP ( $-2.4$  [ $-7.8, 3.1$ ] mmHg) compared to women in the placebo group during follow-up. In conclusion, this trial of vitamin D supplementation in pregnant Bangladeshi women did not demonstrate a significant effect of high-dose vitamin D supplementation on blood pressure during the third trimester of pregnancy.

4

EFFECTS OF POLYBROMINATED DIPHENYL ETHERS ON THYROID HORMONES IN PREGNANT WOMEN AND THEIR NEWBORN CHILDREN. \*N Ste-Marie, SA Venners, GM Webster (Simon Fraser University, Burnaby, BC Canada)

Polybrominated diphenyl ethers (PBDEs) are flame retardants with widespread exposure. Although PBDEs are known thyroid toxicants in animal studies, human studies are sparse, especially during pregnancy and infancy when thyroid hormones are critical for early brain development. This study will examine associations between PBDE levels in maternal serum (at 15 weeks gestation), and thyroid hormones (free T4, total T4 and TSH) in both maternal serum ( $n=152$ ), collected in 2007–2008 at 15 and 18 weeks gestation) and umbilical cord serum ( $n=116$ ), using data from the Chemicals, Health and Pregnancy (CHiP) Study based in Vancouver, Canada. Median PBDE concentrations (ng/g lipid) were 9.1, 1.6, 1.9 and 3.2 for BDE 47, BDE 99, BDE 100 and BDE 153, respectively, and were similar to those in the Canadian population. Final results are forthcoming, as this is a proposed Master's thesis. However, PBDEs are hypothesized to be positively associated with free T4, and negatively associated with TSH - similar to previous studies of women later in pregnancy. This study will provide some of the first evidence about the thyroid disrupting potential of PBDEs during the most critical window of thyroid-mediated fetal brain development, and provide important missing information for ongoing risk assessments.

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EVALUATION OF THE MATERNAL MENTAL HEALTH PROGRAM.  
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The Maternal Mental Health Program (MMHP) in Saskatoon, Canada was developed to: 1) improve access to and quality of mental health care for preconceptional, pregnant, and postpartum women and 2) promote collaboration between a specialist mental health team and physicians using a shared care model of service delivery. The study evaluated the effects of the MMHP on anxiety and depression symptoms, the determinants of these symptoms, and participants' and physicians' satisfaction with the MMHP, using established questionnaires and Likert-style surveys. Descriptive and logistic regression analyses were performed. Participants included 99 women who completed the MMHP between 2006 and 2011 and 98 physicians who delivered care to childbearing women. There was a significant reduction in anxiety and depression symptoms among participants. Symptoms were associated with the social determinants of health. The majority of women ( $n=75$ , 75.8%) and physicians ( $n=75$ , 93.7%) were satisfied with the MMHP, in particular with: 1) accessibility, 2) comfort and skill level in treating maternal mental health patients, and 3) support from and competency of the staff. The MMHP exemplifies a shared care model in practice; however, to improve the mental health of women overall, the social determinants of health must also be addressed.

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EVALUATING ALLOGENIC ACELLULAR DERMAL MATRIX IN IMPLANT-BASED BREAST RECONSTRUCTION OF POST MASTECTOMY CANCER PATIENTS. \*I Nicolau, X Xie, N Dendukuri (Technology Assessment Unit, McGill University Health Centre, Montreal, QC Canada)

Acellular dermal matrix (ADM) is used in breast reconstruction surgery to increase implant expansion and improve capsular reinforcement. The objective was to conduct a systematic review and meta-analysis to assess the risk of postoperative complications in patients using ADM in implant-based reconstruction. Electronic databases and health technology assessment reports were searched. Meta-analysis was performed of the risk ratios of complications reported in studies that compared ADM to conventional reconstruction. There were 27 cohort studies and one systematic review eligible for inclusion published since 2005. The pooled risk of any complication with ADM was 20.8% (95% confidence interval [CI] 15.3, 27.7). The meta-analysis of nine comparative studies showed that ADM use was associated with a higher risk of implant loss (risk ratio [RR] 3.98; 95% CI 1.96, 8.11) infection without implant removal (RR 2.49; 95% CI 1.4, 14.37) and seroma (RR 2.72; 95% CI 1.75, 4.23), and lower risk of capsular contracture (RR 0.3; 95% CI 0.09, 0.998), compared to conventional reconstruction. The evidence suggests that there is a higher risk of certain types of complications with ADM use compared to non-ADM use. Further research is needed to assess the aesthetic outcomes of breast reconstruction surgeries using ADM.

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SASKATCHEWAN MASSAGE THERAPISTS' ATTITUDES TOWARD RESEARCH AND THE PROVIDER CHARACTERISTICS THAT INFLUENCE THEIR USE OF RESEARCH. \*D Gowan-Moody, A Leis, M Epstein, K Premkumar, S Abonyi (Department of Community Health & Epidemiology, College of Medicine, University of Saskatchewan, Saskatoon, SK Canada)

Massage therapists (MTs) are increasingly becoming important providers of health and wellness care. Conducted in Saskatchewan, Canada in 2009–2010 the study aimed to determine if massage therapists held positive or negative attitudes toward research and to explore the association between attributes of providers and reported use of research. The study was conducted in two phases using a sequential explanatory mixed methods design. In phase one, a mail-out survey was sent to all 815 members of the Massage Therapist Association of Saskatchewan (MTAS). In phase two, interviews with six members further explored their attitudes toward research. Survey data was analyzed using SPSS. Univariate and logistic regression analysis was conducted. Qualitative data was explored using thematic content analysis. Forty-one percent of the questionnaires were completed and returned. Survey results revealed that most study participants held positive attitudes toward research. The factors most strongly associated with self-reported research use included a positive attitude toward research-based practice and searching research databases. While case study participant's attitudes toward research were largely positive they described experiencing some frustration with accessing and understanding research. Greater emphasis on research literacy training in pre-service and continuing education is necessary to support massage therapists in using research their work.

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THE ASSOCIATION BETWEEN CONDOM USE AND THE QUALITY OF RELATIONSHIPS IN THE SOCIAL NETWORKS OF VULNERABLE PEOPLE. \*M Aglipay, A M Jolly, J Wylie, T Ramsay (Department of Epidemiology and Community Medicine, University of Ottawa, Ottawa, ON Canada)

Social network patterns influence risk behaviors for HIV and other infectious diseases. This study hypothesizes that condom use is related to the closeness of participants to social network members, length of time known and multiple roles. Using respondent driven sampling, social network data were collected from underhoused people, sex workers, people who use drugs, and street youth ( $n=226$ ) from Ottawa, Canada in 2010. Social network members who provided support but engaged in risky drug/sex behavior were defined as 'negative support.' Stratified by recruitment tree, condom behavior and social network relationship associations were tested by  $\chi^2$ . 31.0% of participants were female, 86.6% were Caucasian, 54.9% had less than high school education, and 73.0% were sexually active in the last 6 months. The mean age was 41.4 years (SD = 10.6). A greater likelihood of using condoms was significantly associated with a lower proportion of negative support social network members known for greater than one year ( $P=0.04$ ) and modestly associated with the absence of a negative support social network member with multiple roles ( $P=0.08$ ). Future work will determine whether these variables are independent predictors of condom use. Studying the quality of relationships strengthens interventions that mobilize social support for health protection.

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INFLUENCE OF NEIGHBORHOOD BUILT ENVIRONMENT ON MODERATE TO VIGOROUS PHYSICAL ACTIVITY IN 10–14 YEAR OLD CHILDREN. \*T Katapally, N Muhajarine (Community Health and Epidemiology, College of Medicine, University of Saskatchewan, Saskatoon, SK Canada)

This paper uses data from Smart Cities Healthy Kids ([www.smartcityshealthykids.ca](http://www.smartcityshealthykids.ca)), an ongoing mixed methods, population health intervention study which aims to understand the influence of neighborhood built environment on children's physical activity. Neighborhoods of Saskatoon were categorized into 3 development eras based on their urban form and vintage. Built environment data were collected using replicable observation tools. A questionnaire was administered to children to capture their perception of factors that influence their physical activity. In the summer of 2010, for one continuous week, Actical accelerometers were used to measure physical activity of 455 children aged 10–14 years. Moderate to vigorous physical activity (MVPA) was derived from accelerometer data and used as the outcome variable. Statistical analyses were conducted using SPSS 19 and HLM 7. Robust differences were observed in MVPA accumulation with high values during school days and low values during weekend days. Based on this pattern, MVPA was categorized into school days and weekend days, and multilevel models were fitted for each category. Determinants of MVPA varied between school days and weekend days. Density of destinations, which was previously reported to improve the likelihood of physical activity in adults, was detrimental in children, suggesting a differential built environment impact.

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DOWN SYNDROME TRENDS IN SASKATCHEWAN OVER A SIX-YEAR PERIOD: COUNTING PREVIOUSLY UNACCOUNTED FOR PREGNANCIES. \*B Winquist, N Muhajarine (Department of Community Health and Epidemiology, College of Medicine, University of Saskatchewan, Saskatoon, SK Canada)

The live-birth prevalence of Down syndrome (DS) has either declined or stabilized in many countries, despite the increase in the average age of mothers. Studies have linked lower DS live birth rates to the introduction and expansion of prenatal screening programs, however little is known about its impact in Canada. A population-based, prospective, cohort was compiled drawing from regional and provincial databases, and included all pregnancies to Saskatchewan residents from 2000–2005. To assess the impact of ToPFCA on live birth DS rates, the authors calculated annual rates that included and excluded DS-affected pregnancies terminated following prenatal screening/diagnosis. Of cases diagnosed during pregnancy, 73% of Down Syndrome cases were terminated (12.6% of all DS cases). The birth prevalence and birth incidence rates increasingly diverged from 11.7 and 11.7 per 10,000 births in 2000 respectively; 12.5 and 13.2 in 2001; 14.6 and 15.4 in 2002; 14.4 and 16.8 in 2003; 15.2 and 18.4 in 2004; 14.4 and 17.7 in 2005. The average annual percent increase was 3.8% for the live birth trend line over the 6-year period and 7.4% for the incidence line. Study results provide evidence that the practice of ToPFCA lowered the annual DS live birth rate from 2001 and forward. The greatest impediment to basic CA surveillance in Canada is the national surveillance system's inability to capture ToPFCA, which prevents systematic investigation of risk factors and trends in maternal, perinatal, and infant health.

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UNDERSTANDING THE EFFECTS OF NEIGHBORHOOD DESIGN AND BUILT ENVIRONMENT ON ACTIVE TRANSPORTATION AMONG CHILDREN IN THE CITY OF SASKATOON. \*N Marwa, N Muhajarine (Johnson Shoyama Graduate School of Public Policy, Saskatchewan University, Saskatoon, SK Canada)

Prevalence of childhood obesity and overweight has increased two- to three-fold within a generation in Canada and in the United States; this has attracted serious public health concern. The study examined the impact of neighborhood design and specific built environment factors on active transportation to school among children 10–14 years in the city of Saskatoon, Canada. Neighborhood Active Living Potential tool and the Irvine-Minnesota Inventory were used to determine the built environment factors within a range of neighborhood designs, from grid pattern, mixed grid to curvilinear pattern. A self-reported questionnaire collected data from 1610 children on modes of transport to school and other places, and a range of active transportation determinants. Multilevel logistic regression analysis estimated adjusted associations. The children are more likely to report that they walk or bike to school, if they are: boys, from higher SES families, older, and have more siblings. In addition, children from neighborhoods with high-density, grid-pattern road network are more likely to report active transportation; the further the neighborhoods from the grid-pattern core, the less likely were the children to engage in active transportation. Safety has a significant influence on the use of active transportation. There is a need for tailored policy intervention to improve safety and children's activity friendly neighborhoods.

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ASSOCIATION OF VITAMIN D WITH CURRENT ASTHMA AND LUNG FUNCTION IN CHILDREN: RESULTS FROM THE CANADIAN HEALTH MEASURES SURVEY. \*SJ Niruban, K Alagiakrishnan, J Beach, A Senthilselvan (School of Public Health, University of Alberta, AB Canada)

Asthma is a common chronic condition in children. Vitamin D provides immunity against infections resulting in decreased asthma exacerbation. The objective of the study was to determine the association of vitamin D level with current wheeze and lung function parameters. The Canadian Health Measures Survey is a cross-national survey conducted by Statistics Canada in 2007–2009. The presence of current wheeze was determined from the questionnaire. Serum vitamin D (25-hydroxyvitamin D [nmol/L]) level was categorized into  $\leq 49$ , 50–74 (moderate), and  $\geq 75$ . Logistic and linear regression incorporating survey design and bootstrap weights were used. In total 1,213 children (males 52.5%; females 47.4%) of ages 6 to 12 years participated in the study. Prevalence of current wheeze was 11.4%, 4.1%, and 7.1% among lower, moderate, and higher vitamin D categories, respectively. After controlling for potential confounders both the lower and higher categories were associated with current wheeze compared to moderate category (OR: 3.26; 95% CI: 1.16–9.17 and OR: 2.14; 95% CI: 1.07–4.28, respectively). Lung function parameters varied significantly between vitamin D levels with the highest mean values observed in the moderate category. Optimal respiratory outcomes observed in moderate vitamin D level suggest that monitoring vitamin D level should be considered in children.