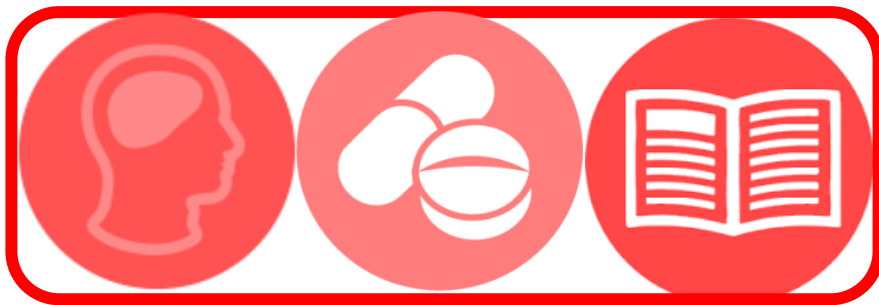




graduate research association of
students in public health

MAY 18TH 2016



**INNOVATIONS IN
PUBLIC HEALTH**

ACKNOWLEDGEMENTS

On behalf of Graduate Research Association of Students in Public Health (GRASP), we would like to welcome you to the 2016 Student Research Symposium.

Our theme for this year's conference, "*Innovations in Public Health*" is a testament to the growing recognition that improving health and healthcare requires innovative approaches that have the potential to drive change, redefine healthcare's economic and/or social potential, and better target individual and system-level determinants of health. Such an approach is increasingly recognized as a public health priority.

This year's symposium features submissions from undergraduate and graduate student researchers at York University in various health-related fields, to promote an integrative understanding of health.

We hope this year's conference provides you with ample opportunities for understanding, discovery, and interdisciplinary discussion.

Have fun!

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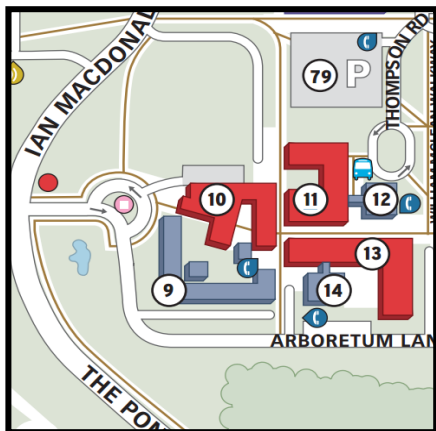
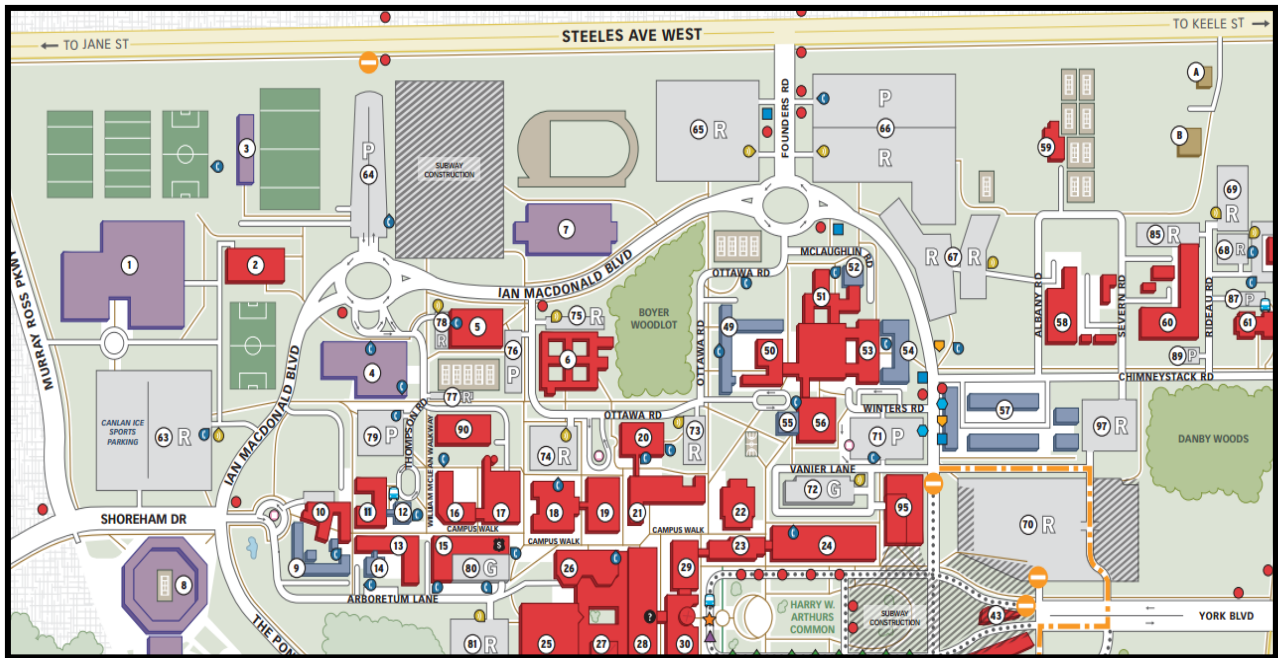
Shannon Goodall
Treasurer

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Undergraduate Liaison



CAMPUS MAP

Conference Location:
241 Calumet College



Building 10
on
York University Campus Map

CONFERENCE AGENDA

May 18th, 2016

8:30 am - 9:30 am	Breakfast and Registration
9:00 am - 10:00 am	Poster Set-Up
10:00 am - 10:45 am	Opening Remarks Key Note Address: Dr. Harvey A Skinner, Dean of the Faculty of Health, York University
11:00 am - 11:20 am	Presentation: The effect of family functioning on physical aggression in children of immigrant mothers: An analysis of the Survey of Young Canadians
11:20 am - 11:40 am	Presentation: Public and Private Food Safety Regulatory Systems: Exploring the Role of Third Party Auditors in Achieving Public Health Objectives
12:05 pm - 12:25 pm	Presentation: The existential meaning of healthy lifestyle modification for breast cancer survivors
12:25 pm - 2:00 pm	<p>Poster Presentations & Lunch</p> <p>Identifying Salient Beliefs regarding Physical Activity among Parents of Children with Disabilities: an Elicitation Study</p> <p>The effects of viscous soluble fiber on blood pressure: A systematic review and meta-analysis of randomly controlled trials.</p> <p>Problematization of Disability in Psychology</p> <p>The Effects of Creatine Monohydrate on Resistance Exercise</p> <p>What are the schisms between access to condoms and new infections among young people age 16-29 years old in Ugu District?</p> <p>Dissecting the Role of Connexin 36 and Calmodulin in the Plasticity of Electrical Synapses</p> <p>The effect of statins on the production of ATP via oxidative phosphorylation in pancreatic insulin secreting MIN6 clonal cells.</p> <p>The Challenge of Meeting the Health Care Needs of Older Adults a Retrospective Chart Review</p> <p>Augmenting surveillance to minimize the burden of norovirus-like illness in Ontario: using Tele-Health Ontario data to detect the onset of community activity.</p>

CONFERENCE AGENDA

2:00 pm - 2:20 pm	Presentation: Treatment Experiences of Women with Binge Eating Disorder: Methylphenidate vs. Cognitive Behavioural Therapy
2:20 pm - 2:40 pm	Presentation: Perceptions of Mental Health in the Toronto Muslim Community: Exploring a Model of Islamic Psychotherapy in Muslim Women
3:00 pm - 3:20 pm	Presentation: Immigrant and Refugee Experiences in Physical Activity and Sport: Shifting from an instrumental approach to focus on inclusion
3:20 pm - 3:40 pm	Presentation: At Both Ends of the Leash: An Exploration of the Mental Health Impact of Service Dogs in Canada
3:40 pm - 4:00 pm	Presentation: Caffeine and exercise: a systematic review on performance and physiological mechanisms of action
4:00 pm - 4:20 pm	Presentation: Assessing the feasibility and health factors of mixed-gender, long term housing residence for homeless youth.
4:20 pm - 4:40 pm	Presentation: The Association Between Obesity and Skin Cancer: A Matched Case-Control Design
4:40 pm - 5:00 pm	Concluding Remarks & Certificate Presentation

KEYNOTE SPEAKER

Harvey Skinner PhD, CPsych, FCAHS

Founding Dean, Faculty of Health, York University



Dr. Harvey Skinner is a Professor and founding Dean of the Faculty of Health, York University created July 1, 2006. This Faculty is on an ambitious mission to be an integrative force for promoting and transforming health – locally and globally. Previously, he was Chair of Public Health Sciences (now Dalla Lana School of Public Health), University of Toronto. He is an internationally recognized scholar (7 books, 150 articles) on what motivates individuals, organizations and communities to change, Dr. Skinner is a pioneer using Internet and mobile technology for prevention and healthcare (eHealth), and he has a special interest in global health. Dr. Skinner is a Registered Psychologist in Ontario and a certified trainer in Motivational Interviewing. In September 2007 he was inducted as a Fellow of the Canadian Academy of Health Sciences.

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PRESENTATION ABSTRACTS

Public and Private Food Safety Regulatory Systems: Exploring the Role of Third Party Auditors in Achieving Public Health Objectives

Elizabeth Driscoll

Food safety, the concept that food will not harm consumers if it is prepared and eaten as intended, and is recognized as an important component of public health. Governments ensure food safety and thereby improve public health through the use of regulatory agents, inspectors who visit food premises to ensure that all applicable legislation is followed. These inspectors are recognized as public health practitioners and therefore have a responsibility to protect public health through food safety.

In the last decade, private food regulatory standards approximately equivalent to public food safety legislation have been adopted by food producers at the request of their customers, the food retailing industry. These private regulations were created by the food industry and are enforced by a third party auditor, an individual who visits food producers to ensure that the private food regulations are implemented correctly. As a result, there is now a parallel food safety regulatory system.

In January 2016, the Canadian Food Inspection Agency Issued its Private Certification Policy (Food Safety), which acknowledges these “voluntary, industry-adapted private certification schemes, and the role such private certification schemes may play in achieving compliance with CFIA food safety regulatory requirements” (CFIA, 2016). This public acknowledgement of the role and importance of private certification is a public health innovation which has the potential to transform the Canadian food safety governance.

This presentation will explore the role of the auditor in this public health innovation, with preliminary results from the author’s PhD dissertation research.

Bibliography

Canadian Food Inspection Agency. 2016. Private Certification Policy (Food Safety). Retrieved March 1, 2016 from <http://www.inspection.gc.ca/about-the-cfia/accountability/consultations/regulatory-risk-based-oversight/private-certification->

PRESENTATION ABSTRACTS

policy/eng/1452808755126/1452808821799?chap=0#c3).

The existential meaning of healthy lifestyle modification for breast cancer survivors

Shira Yufe, Karen Fergus & Dana Male

Breast cancer (BC) survivors often struggle with existential difficulties. Living with uncertainty, “survivor loneliness,” and fear of disease recurrence are often confronted after one’s attention to treatment subsides. These issues are compounded by weight gain, with approximately 70% of women being overweight at diagnosis and additional weight gain often resulting from treatment.

BC survivors are usually informed by their healthcare providers that excess adiposity is associated with a greater risk of BC recurrence. Therefore, a healthy lifestyle program post-treatment is an optimal time to offer a therapeutic, group-based environment. In this program, participants may work through existential concerns by exercising agency over aspects of their lives (food and physical activity) that are, to a degree, more controllable.

Four BC survivors from the Odette Cancer Centre at Sunnybrook Health Sciences Centre participated in a pilot healthy lifestyle and weight management group. The participants followed an individualized, eating and activity plan for eight weeks and attended weekly, psycho-educational group sessions.

Results from our recorded sessions with the participants revealed an underlying tension in lifestyle modification after BC treatment; that is, health behavior change is a way to cope with the fear of cancer recurrence, yet long-term lifestyle changes are often burdensome and difficult to achieve.

PRESENTATION ABSTRACTS

This presentation will go into depth concerning the existential issues associated with breast cancer, with a focus on embracing healthy lifestyle change not only as a weight management goal, but also as a means of regaining a sense of personal control and improving overall quality of life.

Treatment Experiences of Women with Binge Eating Disorder: Methylphenidate vs. Cognitive Behavioural Therapy

Elnaz Moghimi, Caroline Davis, Lena Quilty, Yuliya Knyahnytska

Binge eating disorder (BED) is characterized by extreme overconsumption of food in a short period of time that evokes feelings of guilt and distress. The binges are also uncontrolled, recurrent and persistent without compensatory weight-loss behaviors such as those found in bulimia nervosa. The most common treatment for BED is cognitive behavioral therapy (CBT), which has been shown to reduce binge-eating frequency, but rarely leads to adequate weight reduction. Recently, methylphenidate, a dopamine transporter blocker, has been proposed as a pharmacological treatment for BED, since the drug has been associated with loss of appetite, reduced food intake and weight loss. A recent clinical trial compared methylphenidate vs. CBT therapy in overweight women with BED. Subsequent to the completion of the trial, the current qualitative study will be implemented to understand the perceptions and experiences of the patients towards methylphenidate and CBT treatments and their feedback on their level of adherence and the efficacy (or not) of the treatment. An in-depth interview will be used to understand both the therapist's and participant's experience through their narrative account. The purpose is to understand how and why the treatment may have affected the participant's eating behaviours in general and their binge episodes specifically. Results of this study will be used to provide insight into key characteristics and behaviours that may serve to determine the most effective treatment for BED patients.

The effect of family functioning on physical aggression in children of immigrant

PRESENTATION ABSTRACTS

mothers: An analysis of the Survey of Young Canadians

Theresa H.M. Kim, MSc, PhD Candidate; Sukhleen Deol, MSc Candidate; Monica Lee, BSc

Candidate; Sumaira Khan, BSc Candidate; Hala Tamim, PhD (Supervisor)

Background: Children of immigrant mothers are at higher risk for behavioural problems such as physical aggression compared to native-born counterparts. Children brought up in a good family functioning environment are less likely to develop behavioural problems however, this relationship is not observed among children of immigrant mothers. This study aims to examine the effect of family functioning on physical aggression in preschool children of immigrant mothers.

Methods and Analysis: This is based on a secondary data analysis of the Survey for Young Canadians. Data analysis is limited to children 4-6 years born from immigrant mothers. The outcome is physical aggression (score above the 80th percentile indicates high physical aggression), and the independent variable is family functioning (score ≤ 14 indexed as good family functioning). Multiple logistic regression will be performed, adjusting for covariates: *maternal factors* (age, education, marital status, language, health status, depression, parenting style, and social support) and *child factors* (age, sex, health status, and siblings), and *home factors* (province, household income, neighbourhood safety and quality).

Implications: With the increasing number of immigrants in Canada, little is done in public health to ensure their health. The number of immigrant women is projected to increase from 20.3% (in 2006) to 27.4% by the year 2031. As the number of female immigrants increase in Canada, behavioural problems in their children become of greater importance. These results may allow researchers at the federal level to develop programs for immigrants that will foster a more cohesive family environment to ensure healthy child development.

PRESENTATION ABSTRACTS

Perceptions of Mental Health in the Toronto Muslim Community: Exploring a Model of Islamic Psychotherapy in Muslim Women

Kashmala Qasim

Background: The Islamic community in Toronto, Ontario is a visible minority that makes lifestyle choices within a specific religious framework. Studies have shown greater cultural stigma related to mental health and help-seeking behavior, especially in Muslim women. Aim: The purpose of this study is 1) To understand how South Asian Muslim women in Toronto understand mental health in light of their religious beliefs and 2) To examine the effectiveness of counseling for depression.

Method: South Asian, Muslim women (n = 20) will be invited to participate in a focus group relating to perceptions of mental health. Participants will then be randomly assigned to one of four groups for 12 weeks: 1: Pastoral counseling with Cognitive-behavioural therapy (CBT) conducted by a Muslim mental health care practitioner; 2: CBT only conducted by a non-Muslim practitioner; 3: CBT only conducted by a Muslim practitioner; and 4: Waiting list. We will assess acceptability of the treatments using the Client Satisfaction Questionnaire-8, pre- and post-treatment depression with the Beck Inventory, as well as a semi-structured interview for a qualitative analysis of the patient-therapist relationship. Results: We expect that incorporating traditional Islamic counseling with research-based CBT will produce higher levels of satisfaction with counseling, especially when delivered by a Muslim mental health practitioner. Conclusion: The findings from this study will assist mental health practitioners to develop culturally sensitive, community-based models of psychotherapy especially for Canadian Muslim women.

Immigrant and Refugee Experiences in Physical Activity and Sport: Shifting from an instrumental approach to focus on inclusion

Hisham Shokr

The topic of migrant experiences in physical activity and sport is an important one for at least three reasons. Firstly, in our era of globalization, the stock of internation-

PRESENTATION ABSTRACTS

al migrants has considerably grown, especially from South to North. It then becomes appropriate to consider how these migrants will take part in their new societies and specifically for the purpose of this research, how they will take part in sport and physical activity. Secondly, in Canada and in the United States when migrants first arrive they are on average healthier than the average nonimmigrant citizen; in literature this is referred to as the healthy immigrant effect. However, their health status typically declines with increasing length of residence in the host country. In turn, the use of physical activity and sport programs tailored to these populations may be instrumental in reversing this negative health trend. Lastly, researchers have concluded that migrants' participation in physical activity and sport programs, in new host countries, are on average below rates of participation for nonimmigrants. Again the question of how migrants experience physical activity and sport comes to the forefront. The focus of my presentation will be on assessing the current literature on migrant experiences in physical activity and sport. I propose a shift away from a focus on acculturation to a needed focus on belonging and social inclusion.

At Both Ends of the Leash: An Exploration of the Mental Health Impact of Service Dogs in Canada

Devon MacPherson

Based off the interdisciplinary work titled, *At Both Ends of the Leash: An Exploration of the Mental Health Impact of Service Dogs in Canada*, this oral presentation will explore some of the systemic barriers that Service Dog teams face in Canada. After completing a qualitative, phenomenological study with four people who share their lives with Service Dogs, including insights from the authors personal experience with her Service Dog, this presentation will speak to the multifaceted roles of Service Dogs, the current 'fake' Service Dog epidemic, competing rights concerns, the right to privacy, costs associated with obtaining a Service Dog and also the ethical considerations for the Service Dog themselves. As the demand and acknowledgement of Service Dogs for mental health continues to grow, this research is imperative in order to not only maximize the benefits for the human and reduce the attitudinal and systemic barriers faced by the Service Dog team, but also to ensure the well-being of Service Dogs themselves. Along with this, the current involvement of the

PRESENTATION ABSTRACTS

Canadian Government in Service Dog research, as well as the widespread advocacy work taking place globally, only further solidify this topic as an important area of discussion under the umbrella of public health.

Caffeine and exercise: a systematic review on performance and physiological mechanisms of action

Mahshad Kolahdouzan & Kashif Khan

Caffeine (1,3,7-trimethylxanthine) is the most widely used psychoactive drug in the world, with the average Canadian consuming approximately 210-238 mg/d. At average consumption levels, caffeine's main mechanism of action is through the inhibition of adenosine receptors, namely

A1R and A2AR. Currently, no study has summarized the evidence regarding caffeine and its ergogenic aid in different forms of exercise. The aim of this systematic review is to perform a qualitative analysis on caffeine consumption at different dosages and its ergogenic effects in resistance and aerobic exercise. Through the inhibition of A2AR, caffeine reduces Ca^{2+} release, reducing pain and discomfort. As well, upon consumption, caffeine reduces levels of prostaglandin, an inflammatory mediator associated with pain. The reported reduction in RPE during exercise, through these mechanisms, may explain the ergogenic effects of caffeine in resistance and aerobic exercise. Contrastingly, caffeine consumption was associated with 30% decrease in whole-body glucose disposal during exercise. The effects of caffeine on resistance exercise are equivocal, however studies suggest that it is through the RPE and fatigue-reducing mechanisms that caffeine consumption leads to better performance. In aerobic exercise, caffeine improves peak and mean power output and reduces the time-to-trial in trained, but not necessarily in untrained subjects. Caffeine's ergogenic effects may be dependent on interindividual variability, such as CYP1A2 (caffeine metabolizing enzyme) polymorphisms and level of tolerance. Future research needs to investigate the effect of caffeine on resistance exercise with consistent methodology, in order to reach a consensus in literature.

PRESENTATION ABSTRACTS

Assessing the feasibility and health factors of mixed-gender, long term housing residence for homeless youth.

Adele Heagle

Youth homelessness is a major public health concern within the Canadian population and Guelph community. This project's purpose is to assess the feasibility of creating a gender-neutral residence for homeless youth at Wyndham House by better understanding its health impact. An extensive literature review found mental, physical, sexual health, and substance abuse are key factors in homeless youth's overall wellbeing. Furthermore, positive gender dynamics are imperative in creating engaging and effective programming. Next, homeless youth residents and staff of Wyndham House participated in surveys and one-on-one interviews that assessed health factors and opinions on mixed gender housing. The results were analyzed using logistics regression models through SPSS software. The findings suggest that males and females have distinct concerns on what would allow for a safe gender-neutral space. Understanding each gender's health concerns is necessary and these results showcase the need for individualized health-based programming to create a positive living environment at Wyndham House. This research adds to the literature on this promising direction of mixing genders within youth homeless shelters, which results in more efficient resource allocation and positive gender dynamics, resulting in an increase in overall health of the residents.

The Association Between Obesity and Skin Cancer: A Matched Case-Control Design **Will Lizardo, Lilian Raiber, Rebecca Christensen, and Kathy Do**

Obesity is associated with an increased risk for certain types of cancers. However, the association between obesity and skin cancer still remains unclear. Two National Health Insurance Survey cycles were used. Cases were matched to controls (1:5 ratio) based on age (± 2.5 years) and region of the United States stratified by sex. BMI (kg/m^2) was calculated using self-reported height and weight, and categorized according to WHO guidelines: normal weight ($18.5\text{-}24.9\text{kg}/\text{m}^2$), overweight ($25.0\text{-}29.9\text{kg}/\text{m}^2$), and obese ($\geq 30\text{kg}/\text{m}^2$). Skin cancer status was based on self-reported diagnosis by medical professional. Sex specific multivariable conditional logistic re-

PRESENTATION ABSTRACTS

gression analysis examined the association between BMI and skin cancer while adjusting for smoke status, annual household income, family history of skin cancer (FHSK), and skin sensitivity to sun exposure (SE). The association between BMI and skin cancer was non-significant for both sexes ($P>0.05$). For women, the odds of having skin cancer significantly increased for those with FHSK (OR=2.9, CI=2.21 – 3.77), income <\$20,000 (OR=1.88, CI=1.23–2.89), and tanning (OR=1.96, CI=1.36–2.83) or burning (OR=3.39, CI=2.41–4.78) from SE. For men, FHSK (OR=2.2, CI=1.63–3.02), and tanning (OR=2.1, CI=1.46–3.12) or burning (OR=2.9, CI=2.03–4.43) from SE were significantly associated with an increased odds of having skin cancer. While mechanistic changes to the skin may occur with obesity, this study suggests that obesity is not associated with an increased odds of having skin cancer regardless of sex. However, future research is necessary to assess whether this lack of association remains using a more comprehensive evaluation of lifetime SE.

POSTER ABSTRACTS

Identifying Salient Beliefs regarding Physical Activity among Parents of Children with Disabilities: an Elicitation Study

Sunita Tanna

Parental support is an important contributor to physical activity (PA) among children and youth with disabilities (CWD), yet predictors of parental support are not well understood. Purpose: To examine salient beliefs related to parental support among parents of CWD. Methods: Parents of CWD (N=28; Mage = 39.7, 92.5 % female) completed an online questionnaire designed to elicit behavioural, normative and control beliefs based on an adapted Theory of Planned Behaviour (TPB). Content analyses identified parents' salient beliefs about a) PA participation and b) supporting PA for CWD. Results: Salient beliefs included: a) behavioural beliefs for PA such as health benefits, feelings of normalcy, social interactions; b) behavioural beliefs for supporting PA such as bonding, parent PA participation and safety; c) normative beliefs regarding the importance of schools and doctors; d) control beliefs for PA regarding availability, quality and accessibility of programming, and e) control beliefs for supporting PA including time, cost and transportation. Conclusion: Findings suggested that parents hold a range of beliefs toward PA and supporting their child's PA. Control beliefs were most prominently discussed. These data will inform the development of a questionnaire to identify key predictors of parental support, preferred sources and methods of communication for information and interventions regarding CWD PA. Information gained from this study will contribute to our understanding of parental support and examine the applicability of the TPB in identifying predictors of parental support for PA among CWD.

The effects of viscous soluble fiber on blood pressure: A systematic review and meta-analysis of randomly controlled trials.

Kashif Khan

Background: Dietary fiber intake has been established as a means to reduce risk for cardiovascular disease (CVD). Objective: To conduct a systematic review and meta-analysis of randomly controlled trials (RCTs) to investigate the distinctive ef-

POSTER ABSTRACTS

fect of viscous soluble fiber consumption on systolic (SBP) and diastolic (DBP) blood pressures. Methods: MEDLINE, Embase, and Cochrane databases were searched. We included RCTs assessing the effect of diets enriched with viscous soluble fiber from five dietary sources: β -glucan, guar gum, konjac, pectin, psyllium. The data from each study were pooled using the generic inverse variance method with random effects models and expressed as mean differences (MD) with 95% confidence intervals (CI). Results: 22 trials (N = 1477) were included in the final analysis. A median dose of 8.7 g/day of viscous soluble fiber for a median duration of 6 weeks significantly reduced SBP (MD = -1.39 mmHg [95% CI: -2.60, -0.18]) and DBP (MD = -0.76 [95% CI: -1.35, -0.17]) compared to control diets. At the same median dose and duration, viscous soluble fiber was found to significantly reduce SBP (MD = -3.02 [95% CI: -5.25, -0.79]) and DBP (MD = -0.90 [95% CI: -1.57, -0.23]) in subjects with hypertension. No significance was found for type II diabetes mellitus or hypercholesterolemic subjects. Conclusion: These results suggest that consumption of viscous soluble fiber has a lowering effect on blood pressure, especially in hypertensives. Inclusion of soluble fiber in habitual diets may be a strategy in treating and reducing risk for CVD

Problematization of Disability in Psychology

Hanna Moldavski

The major focus of this paper is to examine various ways in which people with disabilities are turned into problems by psychologists as well as other professionals. This paper will cover the models that are used to view disability. These models include: *Medical and Biomedical Model*, *Social Model* as well as *Post-Social Model*. The *Medical and Biomedical Models* were and still are the most common models used in psychology to view disability. The shifts between the models and their implications on perception of disability within the social, professional and academic context are discussed. Moreover, psychology's field direct contribution to turning intellectual disabilities into problems will be covered. To support this claim, psychology's role in making standardized intelligence tests as defining standard of normalcy will be examined. In addition to that, current views in psychology towards people with disability and disability condition will be presented by summarizing APA and DSM 5

POSTER ABSTRACTS

guidelines regarding assessing and treating individuals with disabilities. This paper will review both the impressive positive changes that have occurred in disability research and practice over a very short period of time, starting from around 1970s. The limitations in the field will also be reviewed and will cover both physical and non-physical disabilities.

The Effects of Creatine Monohydrate on Resistance Exercise

Amrita Khemraj & Frank Rubino

● Creatine monohydrate (CrM) is a very popular ergogenic aid for resistance exercise. It leads to muscle hypertrophy and improved muscular performance through the maintenance of ATP levels via the creatine kinase (CK) reaction, as well as through gene regulation, satellite cell proliferation, and activation of the mTOR pathway via IGF-1 upregulation. The objective of this systematic review is to investigate the effects of CrM on resistance exercise across several populations including: gender, age and training status. CrM supplementation improves maximal upper body strength in trained men by 3-7%, whereas those who are untrained show improvement as great as 20%. Maximal upper body strength in women can also be improved by as much as 18% with long-term CrM supplementation. Furthermore, elderly individuals experience improvement in maximal upper body strength by as much as 15% following CrM supplementation, in addition to significant improvements in functional performance by up to 18%. Although the effects of CrM on resistance exercise performance have been extensively studied, further research is needed in order to determine the best methods of optimizing supplementation through dosing protocols and supplement timing.

What are the schisms between access to condoms and new infections among young people age 16 – 29 years old in Ugu district?

M. Barry

Background: This research aims at understanding the disconnections between the rising infection cases, and access to condoms among youth age 16-29years with a particular focus on women in Ugu District. Located along the coast strip of KwaZu-

POSTER ABSTRACTS

lu Natal (KZN) with a population size of about 732,643, approximately 84% of its population resides in rural settings. Faced with a high youth demographics, the district is also confronting the challenge of new HIV infections among youth, although generalized, its concentration among women is concerning. Hence, this paper focuses on mapping-out the triggers and drivers of this trend. Methods and data collection: This research is based on the findings of longitudinal studies focusing on young women age 16-29 years residing in Ugu District in KwaZulu Natal due to the increasing rates of infection among this group. Using scholarly materials, focus groups, qualitative interviews, and government literature to contextualize, locate and identify the triggers, and drivers of this trend and its concentration among young women, while using other similar contexts to formulate a framework and map-out strategies to mitigate the trend. The sample for this study was both gender binary and hetero-centric. Results: The current disconnection or negative correlation between condom use and new cases of HIV infections among young people age 16-29 years in Ugu District municipality, KwaZulu Natal, may be attributed to a number of underlying factors including the social determinants of condom use for HIV prevention in the district, the quality of condoms distributed and promotion campaigns, perceptions, the presence of gender-based disparities that characterize the rate disparities, and the hetero-centric approach to scale-up access to condoms in the District. Conclusions: Addressing the underlying factors that trigger a disconnection between the increasing availability of free condoms in Ugu District will help find a common ground to tackle the issue of infections among young people age 16-29 years old in Ugu District. Structure condom promotion and distribution methodologies that reflect the realities of young women, include young people at risk in program formulation, restructuring of the grassroots peer-education approach, engage historically disenfranchised communities, and address gender-based disparities. These approaches could also be applicable to other districts in the province with similar patterns such as Uthungulu, Uthukela, Umgungundlovu and Ethekekwini.

Dissecting the Role of Connexin 36 and Calmodulin in Neuroplasticity

Ryan Chi-Fung Siu

Only very recently it has been demonstrated that electrical synapses synchro-

POSTER ABSTRACTS

nize neural activity on millisecond timescales via cooperative interactions with chemical synapses and that this interaction contributes to mechanism for neuroplasticity. To thoroughly establish the molecular framework of this intricate interaction, this study focuses on the major electrical synaptic protein connexin 36 (Cx36), and its interaction with two calcium dependent proteins, calmodulin (CaM) and calmodulin kinase II (CaMKII). The run-up phenomenon involving the interaction of Cx36 and CaMKIIa has been described by our group as a physiological signature of plasticity at electrical synapses. On the basis of this result, we have proposed that chemical and electrical synapses share, at least in part, a molecular machinery involving CaMKII and CaM to achieve plasticity.

In this study, we analyzed the interaction of Cx36 and CaM through mutagenesis of the Cx36 (G276-R278) and CaM (CaM1234) constructs with the spatial microscopic analysis FRET. By analyzing the difference in successful energy transfers, the critical residue was determined to be W277 of the Cx36 protein, which was supported with the thermodynamic analysis ITC. CaM mutant also supported Ca²⁺ activation of CaM/ Ca²⁺ binding is required for the Cx36-CaM interaction to occur. Ethidium bromide uptake of Cx36-W277 also showed functional differences upon ionomycin stimulation. In addition, results strongly suggesting that CaM interaction plays already a prominent role before Cx36 is inserted into the gap junction plaque. Hence, this interaction may play a crucial priming role for subsequent activities of Cx36 and a key regulatory step in neuroplasticity.

The effect of statins on the production of ATP via oxidative phosphorylation in pancreatic insulin secreting MIN6 clonal cells.

Maansi Malhotra

Background: Mitochondria are vital for synthesizing ATP through oxidative phosphorylation, which is required to maintain cell viability and cellular processes. In pancreatic beta cells, ATP is an important factor for regulating insulin secretion. Cholesterol synthesis can be reduced by inhibiting 3-hydroxy-3-methyl-glutaryl-Coenzyme A (HMG-CoA) reductase, the rate limiting enzyme, with statins. Statins

POSTER ABSTRACTS

are effective in the treatment of cardiovascular disease, but are associated with an increased risk of diabetes. Inhibition of cholesterol synthesis impairs ATP production in skeletal muscle, however less is known about how this pathway controls oxidative phosphorylation in beta cells. **Objective:** The purpose is to investigate the impact of inhibiting the cholesterol synthesis pathway via statins on mitochondrial ATP production in pancreatic beta cells. **Methods and Results:** A significant reduction in glucose-stimulated insulin secretion by statins was observed compared to control in the clonal beta cell line, MIN6 cells. Mitochondrial O₂ respiration was measured using Oroboros high-resolution respirometer from MIN6 clonal beta-cells treated in the absence or presence of statins under direct, acute (2 h) or chronic (48 h) periods. There were no significant reductions in any of the treatment groups compared to the control. However, during the chronic treatment, cells treated with atorvastatin increased mitochondrial respiration by ~ 45-51% when compared to cells treated with pravastatin and fluvastatin. Flow cytometry measurements showed no significant change in the viability of the treated cells. **Conclusion:** Statin induces decreased insulin secretion in pancreatic beta cells. However, in this study mitochondrial dysfunction did not appear to be implicated in this effect.

The Challenge of Meeting the Health Care Needs of Older Adults a Retrospective Chart Review

Victoria John

As the older adults of Ontario go through the phases of aging, some might experience functional deficiency and loss of independence in Activities of Daily Living (ADL). With rehabilitation and facilitation of essential health services, older adults will have tremendous opportunities in the pursuit of self-sufficiency and functional independence. The current study focused on detailing a quick-paced rehabilitation program provided to older adults in northeastern Ontario. The program of interest was the Assess-Restore program provided by the St. Joseph's Continuing Care Centre (SJCCC) in Sudbury, Ontario. The study involved a retrospective chart review of 144 patients treated in the past four years, which facilitated the examination of patient charts, as well as the extraction and analysis of their functional status and capabilities prior to admission (PTA) and at discharge. Data were extracted from the Resi-

POSTER ABSTRACTS

dent Assessment Instrument-Minimum Data Set Version 2.0 (RAI-MDS), which is part of the “PointClickCare” system. Although the study did not find significant changes in the level of functionality and selfsufficiency, it succeeded in effectively promoting functional restoration allowing the majority of patients to return to a level of independence in the community and avert subsequent need for residential care rather than risk further functional deterioration.

Augmenting surveillance to minimize the burden of norovirus-like illness in Ontario: using TeleHealth Ontario data to detect the onset of community activity.

● **Stephanie Lesia Hughes**

● Norovirus is the most common cause of gastroenteritis worldwide, with the total number of cases per year in Ontario second only to the common cold. It is highly infectious and causes outbreaks in closely confined populations, such as long-term care homes and hospitals. Action to reduce the number of cases is required due to its large economic burden. Although laboratory surveillance is practiced in Ontario, it is highly subject to under-reporting and data gaps. Creation of a syndromic surveillance early warning system using TeleHealth Ontario call data will better monitor the spread of disease and detect outbreaks earlier than conventional methods to reduce their scope. This project aims to analyse elements of norovirus syndromic surveillance systems and reporting methods, and to create a norovirus early detection system to detect outbreaks as early as possible to minimize the burden of disease.