Abstract: Evaluating the effects of cannabidiol use during pregnancy on offspring pancreatic development and function in rats: potential impacts for human and environmental health

Introduction: Δ9-tetrahydrocannabinol (Δ9-THC) and cannabidiol (CBD) are the two main components of Cannabis sativa. In the United States, 1 in 20 women report consuming cannabis while pregnant, which is likely an underestimate due to self-reporting. A recent study has shown that in utero Δ9-THC exposure impairs female offspring glucose homeostasis and endocrine pancreatic development in the rat. Yet, contributions of in utero CBD exposure in pancreatic development and function remains largely unknown. This is concerning since CBD has become increasingly accessible and consumed since the legalization of cannabis in 2018 in Canada.

Project Goal and Objectives: A one health approach was used to investigate the potential effects of CBD use during pregnancy on offspring pancreatic development and function in a rat model, the effects of CBD consumption on other animal species and the impacts of CBD production on the environment. Key stakeholders interested in CBD consumption and production were identified and mapped.

Methods: Pregnant rats per treatment received daily intraperitoneal (i.p) injections of either a vehicle (1:18 cremophor: saline i.p), a low dose of CBD (3 mg/kg i.p), or high dose of CBD (30 mg/kg i.p) from gestational day 6 to parturition. Pancreatic development and function was assessed in male offspring at 3 weeks and 3 months of age through a glucose tolerance test and assessment of pancreas morphometry by immunofluorescence. A scoring review was conducted to provide an overview of current key findings related to the effects of cannabis cultivation on the environment and the effects of CBD as a therapeutic agent in domestic dogs. Key stakeholders were identified by reviewing grey literature and mapped using Kumu software.

Results: The preliminary findings at 3 months showed a significant increase in the area under the curve for blood glucose in offspring exposed to a low dose of CBD. No significant changes in fasting insulin concentration and indices of insulin resistance (HOMA-IR, HOMA-B) were observed. It is expected that cannabis cultivation will negatively impact the environment and CBD consumption will have mixed effectiveness as a therapeutic agent in dogs.

Discussion: These findings indicate that fetal CBD exposure may predispose offspring to develop glucose intolerance. The potential adverse effects of CBD makes its consumption and production concerning for the health of humans, animals and the environment.

**Abstract:** Colonization silenced indigenous voices in healthcare policies, leading to culturally inappropriate healthcare services and on average, indigenous peoples are disproportionately affected by substance misuse in Canada. This led researchers to develop services, like social prescription programs to help meet this need. However, these programs are new, and an evaluation plan is required to ensure it works in the context of indigenous health and substance misuse. The aim of this project is to create an evaluation plan for the pilot social prescription program taking place in the Whitefish River First Nation community that includes the environmental, animal, and human factors that influenced the observed community public health outcomes.

**Methods:** Kumu software will be used to create a stakeholder map. Apart from the individuals directly involved in the project additional stakeholders will be identified through literature analysis. A program logic model will be created following the W.G Kellogg (2004) 5 category model. Interviews of staff members involved in the project implementation will be conducted by myself under the supervision of Dr. Gerald McKinley. A qualitative analysis will be completed following the framework method by Gale et al., (2017) with modifications to the first and second steps.

**Expected Results:** I am expecting to identify factors that encouraged and deterred participant attendance. I am also looking to identify natural and built social environmental, and animal factors that influenced the observed outcomes, and to draw evaluative conclusions about the quality, value, and significance of the program to the community.

**Significance:** This project will help expand the applications of social prescription programs in Canada. Additionally, the social prescription program being evaluated has a large environmental and animal component, and as such, requires a one health approach to be fully comprehensive.
**Abstract:**

The United Nations’ 17 Sustainable Development Goals (SDGs) provide a framework for a sustainable future by recognizing the complex relationships between various topics in human health and the environment. However, many of the totalled 231 SDG indicators were created based on a global scale, and therefore, are not always applicable or available in data within specific cities. To properly use and benefit from the SDG framework in local areas, it is important to adapt the list of indicators to fit the city’s unique state and needs. Additionally, the One Health approach is essential in understanding the importance of stakeholder collaboration and interconnections between human health, animal health, and the environment when implementing the SDG framework. Thus, the main goal of this thesis is to make recommendations on localizing the SDG framework with a focus on the city of London, Ontario. To achieve this, data sources that measure progress of London’s existing localized indicators will be summarized in a report, different SDG localization methods in other cities will be explored, and various stakeholders involved in the SDG framework will be mapped using the software Kumu. Preliminary findings show that although a list of localized indicators has been created for London, around half of them do not have available or reliable data sources. Without data to measure progress within the indicators, this would call for modification of London’s localized indicators or new initiatives that collect the SDG data needed on a local scale. Additionally, none of the localized indicators address animal health, an important pillar of the One Health paradigm. Thus, London will need to consider creating new indicators related to animal health to fill this gap. Ultimately, this project will help further the knowledge of how to localize and implement the SDG framework and provide London with its next steps in measuring SDG progress.
Health is impacted by many factors of which approximately eighty percent are non-clinical factors rooted in the social determinants of health shaped by the social and built environment that a person lives in. Social prescriptions are action-oriented plans that are aimed at addressing the social determinants of health that are impacting an individual’s health. In particular social prescription programs are often associated with increasing participants sense of community and improving their feelings of social connectedness. One type of social prescriptions is green or park prescriptions. Green prescriptions are based on having participants interact with the environment while participating in outdoor activities such as park visits, nature walks or gardening. One Health is an area of study that examines the connections between humans, animals and the environment. For my thesis project I will be translating social prescription research in to a One Health training model to teach adolescents about the relationship between the natural environment, built environment, and human health in an urban setting. The goal of the social health program is to increase physical activity levels and adolescent’s feelings of social connectedness within their community. In order to measure if participants overall health related quality of life improves after participating in the workshops pre-program and post-program data will be collected. Pre-program data collected will consist of the UCLA Loneliness Scale which will be used to assess the participants feelings of loneliness, the Perceived Stress Scale and Health Related Quality of Life will be used to assess the participants overall well-being, in addition physical health data will be collected to measure the participants BMI, and time spent outdoors will be collected by asking participants to self-report the amount of time they spend outdoors in their community. These measures will then be collected again at the conclusion of the workshops and then post-program at the 6-month time point. I hypothesize that participation in the One Health education program will increase participant’s time spent outdoors in green spaces which will lead to an increased sense of belonging and feelings of social connectedness in their community and as a result there will be an improvement in the youth’s overall health related quality of life.

Abstract:

Evaluation of a One Health Education Program in Youth to Improve Their Health-Related Quality of Life

Presenter’s Name: Sutherland, Janice
Additional Author(s): McKinley G, Frisbee S

Evaluation of healthcare facilities and services provided for tuberculosis and zoonotic tuberculosis in Kajiado County, Kenya

Abstract:

Tuberculosis (TB) remains the leading cause of death globally from a single infectious agent. An estimated 10 million people develop active TB and 1.4 million die from TB annually. While Mycobacterium tuberculosis is the primary infectious agent causing TB in humans, Mycobacterium bovis, the causal agent of bovine TB, can also be transmitted to humans, causing zoonotic tuberculosis (ZTB). In Kenya, specifically, in Kajiado County, the Maasai ethnic group is at an increased risk of ZTB due to their socio-cultural-economic practices and close interdependence with animals.

Objectives: To evaluate current capacities, logistics, and infrastructure in place for diagnosis and treatment of TB and ZTB within healthcare facilities located in rural Kajiado County, Kenya. Knowledge, attitudes, and practices (KAP) among healthcare workers were also explored as part of initial data collection.

Materials and methods: A questionnaire was developed and delivered by collaborators at Talaku- A Community Based Organization in Kajiado to 25 healthcare facilities. These healthcare facilities were selected purposively based upon accessibility in these remote areas. The questionnaire was given to three health workers at each healthcare facility during January-February, 2022. The questionnaire included twenty-six quantitative/ qualitative questions regarding TB/ZTB diagnostic and treatment capacities, availabilities, and knowledge, attitudes, and practices regarding TB and ZTB among healthcare workers. Descriptive analysis for continuous and categorical data will be utilized.

Results: As of February 11, 2022, data collection was completed, and data are available from sixty-nine responders at 25 different facilities. Data formatting and cleaning is being conducted, analysis will take place in early March, and available results will be presented at PaLM research day.

Conclusions: We are confident that the results from this study will positively contribute to 1) create awareness for TB and ZTB, diseases that continue to be neglected, especially in marginalized rural communities, and 2), providing new information to key local stakeholders in Kenya, thus contributing by providing key knowledge and information to guide further work towards addressing the challenges posed by TB and ZTB, and thus improve healthcare facilities services and capabilities available to people in these rural and marginalized communities in Kenya.

Presenter’s Name: Zhang, Joel
Additional Author(s): Leseni T, Olea Popelka F

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