RESEARCH SCHOLAR PROGRAM – 2018

SUPERVISOR & PROJECT INFORMATION FORM

Please complete and return, via email only (crems.programs@utoronto.ca) by ***November 3rd 2017*** *(forms received after this date will not be posted).*

Supervisor Information

Name: Andrea D. Furlan

Email: andrea.furlan@uhn.ca

Degree: MD, PhD

SGS Appointment (IMS, IHPME, LMP etc..): IMS

Academic Rank: Associate Professor

Field of Research: Health Services Research, epidemiology

Research Institution Affiliation (if applicable): Toronto Rehab - UHN

Allocation of student contact time (number of hours per week YOU are available to the student for any concerns or to review progress): 3 hs/week

Project Information

Title: Investigating the effects of opioids on safe driving using a high-fidelity driving simulator

Description (max 500 words):

In this multi-year project, we are investigating the effect of opioids on driving performance. Canada is the second largest user of opioids per capita in the world, and the province of Ontario has the highest rate of prescriptions in the country. Driving a motor vehicle is a complex task requiring attention, concentration, eye-hand coordination, motor control, and visual/auditory/proprioceptive information processing. Because opioids have a broad impact on the central nervous system, they can affect these processes, and may impair driving as a result. Our goal in this research is to examine if there is any significant effect of opioids on driving simulator performance and to provide a scientific basis for future guidelines on opioid use.

At Toronto Rehab we have a high-fidelity driving simulator (DriverLab) which consists of an Audi A3 inside a 360 degree projection dome on the top of a motion base. Participants will be recruited from UHN hospitals. The study design is a non-randomized, between subjects, mixed factorial design. We will recruit participants to these groups: (1) no chronic pain and no opioids (Healthy volunteers as a control group), (2) chronic Pain(CP) without opioids, (3) CP with Short-acting opioids, (4) CP with low doze-long-acting opioids without benzodiazepines, (5) CP with low dose-long-acting opioids with benzodiazepines, (6) CP with high dose long-acting opioids without benzodiazepines, (7) CP with high dose long-acting opioids with benzodiazepines. Each group will include approximately 20 participants.

Each subject will participate in two-day test sessions. On day 1, we will conduct several assessments which include the brief pain inventory (body pain diagram; pain intensity and pain interference with daily activities), general health questionnaire, screening for psychological symptoms (depression, anxiety and somatization), useful field-of-view (UFOV) test, questionnaires on current medications, driving habits, demographics, and a battery of psychomotor and cognitive tests (including MoCA, The Conners' Continuous Performance Test, The Paced Auditory Serial Addition Task, Halstead-Reitan Finger Tapping Test).
On day 2, the participants will drive in the driving simulator under different scenarios including daytime highway without secondary task (which require visual and cognitive attention), daytime highway with secondary tasks, daytime urban road without traffic, daytime urban road with traffic, nighttime highway without secondary task (assumed as the most challenging case in terms of sleepiness). We will record: the participants' driving performance (speed, lateral position, steering wheel manipulation, reaction time to some events, etc.), eye movement (to measure their attention and sleepiness) and vital signs (heart rate and blood pressure).

The data collected will be analyzed statistically. A two-sample t-test will be used to compare the outcomes across the groups. Analysis of covariance (ANCOVA) will be used to account for other factors that may influence the outcomes (covariates). Multivariate regressions will also be used to examine the significant factor to affect participants' performance.

If human subjects are involved, have Ethics been obtained?

☒ YES ☐ NO ☐ Application Submitted ☐ N/A

Do you expect this work will be published within the 20 months?

☒ YES ☐ NO ☐ Uncertain

Student's roles and responsibilities (please be specific)

Please indicate who will serve as the student's direct report (PI, PhD student, technician etc…)

Role:
The student will be involved in the overall process of the project as a research assistant. The process will include;
- Recruiting participants: apply screening questionnaire over the telephone and make appointments for experiment sessions. Explain the study and obtain consent.
- Conducting experiments: the student will attend the participants during experiment sessions to give instructions to them, to collect verbal and behavioral responses and to watch the participant's condition (i.e., if they feel sick).
- Data management: The student will enter data into the computer and prepare tables and initial statistical analyses.
- Publication: the student will be involved in preparing posters, abstracts for conference and in initial drafts of manuscripts.

The student will be directly supervised by a research coordinator and will report to the PI.