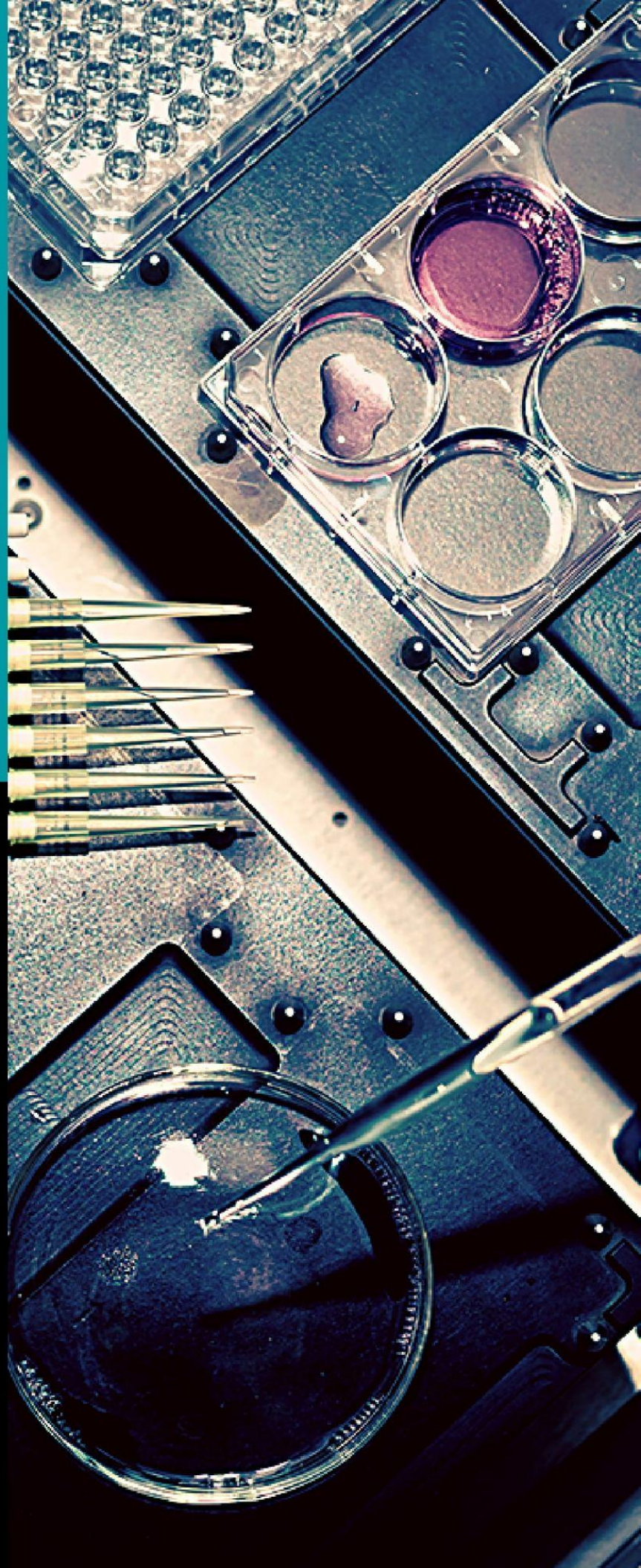# SYMPOSIUM

FEATURES

> Exploring Healthcare under an Intersectionality Lens

> New Age Technology - A look at Stress and Anxiety in Virtual Reality

> Cannabis, Breastfeeding and Neurodevelopment

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CONTENTS

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Yi Ran Wang, So Yun Chae, Martin Markus

Empathy Evolution of Medical Students

Background: Emotional Intelligence (EI) is a strong and important asset amongst medicine-focused professionals.

Aim: To compare the emotional intelligence level's similarities and differences of medical students in their first- and fourth- year, particularly examining their emotional awareness, control, diagnosis, and responses

Methods: A quantitative, questionnaire-based survey was first conducted among 184 first-year medical and dentistry students using the Emotional Intelligence Assessment Questionnaire. The questionnaire was divided into 4 separate categories namely: a) Emotional Awareness (EA), b) Emotional Control (EC), c) Emotional Diagnosis (ED), and d) Emotional Response (ER). A single cohort of students filled out the same survey in their first and in their final fourth year of medical school. The participants' responses were based on a 0-5-10-point scale.

Results: When comparing the four EI categories, better performances were found for emotional diagnosis and emotional response for students both in their first-and final years which seemed to be mainly a contribution of female students. Overall, medical students were found to show improvement in emotional diagnosis scores in their final year. While female students have worsened emotional awareness scores and improved emotional diagnosis scores, male students' scores remained consistent.

Conclusion: First- and fourth-year medical students showed better performance in emotional diagnosis and emotional response compared with emotional awareness and emotional control. Medical education seems to improve emotional diagnosis scores and have a bigger effect on female students. **(226)**

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Jovia Wong, Avleen K Mokha, Samantha Wunderlich, B.A.&Sc., Myriam L.H. Beauchamp, M.S.SLP, Ph.D., & Mayada Elsabbagh, Ph.D.

Examining the barriers and facilitators to accessing healthcare and to receiving equitable health services: a literature review

Introduction: With the increasing immigrant populations in different countries around the world, healthcare providers (HCPs) and policymakers need to understand how individuals with limited English proficiency (LEP) access healthcare, and how to address the challenges that these speakers face. Therefore, this literature review examined the current scholarship to determine: what are the barriers and facilitators to 1) access healthcare; and once accessed, to 2) receive equitable health services.

Methods: Search terms, developed by identifying key words, and their combinations were entered into PubMed, yielding 7531 articles. 14 were included for this project and themes were developed.

Results: Barriers to accessing healthcare include language-discordant interactions, use of ad hoc interpreters and limited locations to access care. Additional barriers include the lack of available healthcare services, negative HCP attitude and behaviour, and parental LEP. Facilitators to accessing healthcare include language-concordant interactions, and use of professional interpreters. Once healthcare has been accessed, patients face barriers to equitable healthcare such as the additional physician and total clinic time spent. Experiences facilitating equitable healthcare services included staffs' respect towards the patient, support and acceptance from staff and HCPs, and HCPs taking time to repeat themselves more slowly and simply for interpreters. Recommendations such as increasing language-concordant HCPs, inquiring about the patient background and organizing educational interventions were put forth to improve the experiences for LEP patients.

Conclusion: This literature review identified the barriers and facilitators not only for LEP patients to access healthcare, but also to receive equitable services. These barriers and facilitators are important for HCPs and policymakers to consider to reduce the healthcare disparities of this high-risk population. **(265)**

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Helen Alemu, Yuvika Dandiwal (co-authors)

A Survey of Affective Computing for Stress and Anxiety in Virtual Reality

Introduction: Virtual Reality (VR) is a rapidly developing tool with promising advancements in the health sciences and applications ranging from medical training, eHealth interventions, pain management and education. As the rates of stress and anxiety have continued to rise at dramatic rates in recent decades, effective ways of objectively assessing and quantifying these conditions have also continued to be explored. Affective computing (AfC) is one such technique with popularity in the field, which uses signals, devices, software and machine models to recognize, interpret and infer human emotion. Physiological measurements, a subset of affective computing, may be useful in providing an objective evaluation for stress and anxiety when used in conjunction with VR. This paper examines various methods of AfC detection in VR research setups for measuring stress and anxiety. Additionally, it explores how these detection methods have been used in the assessment of cybersickness.

Methods: We surveyed current VR studies that summarized the most common physiological measurements used to characterize stress, anxiety, and cybersickness.

Results: Methods monitoring heart rate, skin conductance, muscle movement, respiration rate, eardrum temperature, and brain activity with EEG were involved. The modalities that used more compact equipment or wearables were advantageous to the nature of the VR headsets.

Discussion: Researchers studying stress and anxiety, and cybersickness have an array of AfC detection methods to choose from that can be integrated into VR setups. As AfC devices continue to be developed to be more convenient, accessible and less invasive, the future of affect research in VR looks even more promising. **(253)**

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Beulah Omo-Idowu, Yasmine Coovadia, Fiona Howse, Danielle Berbrier, Domenica Cirone, Charlotte W. Usselman

The effect of gender identity on cardiovascular health in women with polycystic ovary syndrome

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder amongst premenopausal women. A key feature of PCOS is hyperandrogenism, which often leads to male pattern hair growth, an effect which may to contribute to women with PCOS identifying with masculine gender identities. Importantly, PCOS is also associated with cardiovascular (CV) comorbidities including hypertension, which consequently increases CV disease (CVD) risk. While it has been observed that young men are at higher risk of CVD than similarly aged women, the evidence is limited as to what role gender plays in CV health and whether women with PCOS are at higher risk of CVD based on their gender identity. Therefore, the primary purpose of this study was to assess the differences in self-identified masculinity and femininity scores between lean women with PCOS and control women without PCOS. A secondary purpose was to determine whether masculinity acts a predictor for resting blood pressure in women with PCOS and controls. Based on the above evidence, we hypothesized that women with PCOS will have a more masculine gender identity than controls. Due to conflicting information regarding the impact of gender identity on CVD risk, we tested the null hypothesis, thus hypothesizing that there would be no difference in the effect of masculinity and femininity on resting blood pressure. We tested premenopausal women with PCOS (n=7) and healthy premenopausal women (n=7) of similar age (20±1 y vs 21±1 y, respectively; P=0.4) and body mass index (24.7±2.6 kg/m2 vs 24.2±2.4 kg/m2 ; P=0.7). Blood pressure (BP) measurements were obtained using manual sphygomomanometry following a minimum of 15 minutes of supine rest. Gender was assessed on a 7-point scale via self-report using the GENESIS-PRAXY questionnaire at home. Our results and analyses are currently pending. However, we expect the outcomes of this study to align with our hypotheses. **(311)**

Avleen K Mokha, B.A.; Jovia Wong; Samantha Wunderlich, B.A.&Sc.; Myriam L.H. Beauchamp, M.S.SLP, Ph.D.; Mayada Elsabaggh, Ph.D.

Examining the barriers and facilitators to bilingual development in children with neurodevelopmental disorders

Introduction: Neurodevelopmental disorders (NDDs) can be associated with language disorders. Yet, studies show that children with NDDs can learn to speak two languages proficiently. However, bilingual children with NDDs face more barriers when it comes to becoming bilingual those without NDDs. This project reviews existing literature on bilingualism in NDDs with the goal of bridging the gap between research findings and clinical reality.

Methods: Search terms were developed to conduct a database search. A total of 2,333 results were imported into a systematic review software. Articles were included in the literature review if they examined the perspectives of family members, educators, or clinical professionals. Notes were taken on themes emerging from the shortlisted articles.

Results: Findings are organized into levels: family, education, and clinical professionals. At the family level, barriers included advice from educators and clinicians to raise children in a monolingual environment and parents' fear that bilingualism would hinder their child's language development. Facilitators included knowing that bilingualism can foster family bonds and personally knowing children with NDDs who became successful bilinguals. At the education level, the main barriers found were having instructors with an English-only mindset and the absence of policies addressing the language needs of children with NDDs. A notable facilitator was having instructors who viewed bilingualism as positive for cognitive development. Lastly, barriers at the clinical level included being treated for NDDs in the majority language, with the use of tools inappropriate to the family's cultural background. In contrast, facilitators included having clinicians with diversity training and resources to stay updated with the latest research on bilingualism in NDDs.

Conclusion: In sum, there are far more barriers than facilitators to bilingualism for children with NDDs. This finding is particularly detrimental given that research shows bilingualism does not further aggravate language difficulties in this population. **(299)**

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UNKNOWN AUTHOR

Cannabis usage during lactation and its effects on neurodevelopment of breastfed infants: A Systematic Review

Cannabis is one of the most used substances globally and its usage is ever increasing in the modern era. The pharmacologically psychoactive substances found in cannabis are cannabinol (CBD) and Tetrahydrocannabinol (THC). Cannabis use during lactation and breastfeeding postpartum is under detected and under reported. Studies have shown that cannabinoids can transfer into breastmilk but the impact on infants is still unknown. This review aims to summarize the existing literature on the neurodevelopmental effects of marijuana on breastfed babies and the assessment of the transfer of cannabis and its related metabolites through breastmilk.

After conducting searches on several online databases and studying the available literature from the beginning of time, we found that cannabis use during lactation could lead to a decreased psychomotor developmental index and that marijuana was detectable in samples of breastmilk of consuming mothers. However, these outcomes were only found in mothers with high frequency use of cannabis and there was considerable bias in the reporting of marijuana consumption. Other studies indicate that there may be little to no significant difference in the mental and motor development of infants. Furthermore, it was discovered that marijuana in breast milk did not interfere with lactation.

The recommended course of action for clinical practice is to continue to follow current mandates and abstain from marijuana consumption postpartum. However, there is still a lack of clear evidential information due to the limitation in the validity of studies. We propose a longitudinal observational study to further understand the implications of cannabis consumption postpartum on infants and its transfer efficiency into breastmilk. **(259)**

Malak Salim

Defining sport injury

Injury within sport is not only common but expected. However, the frequency and occurrence of sports injuries are difficult to determine due to the lack of an established definition for injury. This is further complicated by the "unique" definitions of injuries as determined by sport unions and organizations. As such, within the epidemiological literature there is wide variation regarding the definition, and categorization of sports injury. Due to the wide variation of definitions, data collection, interstudy comparison as well as the categorization and identification of the mechanism behind sport injuries becomes difficult. The aim of this paper is to perform a comprehensive literature review to determine an operational definition for sports injury, as well as provide a reference for epidemiologist to better understand the injury mechanism using sport. Searches were conducted across several electronic databases: JSTOR, NCBI, PubMed, McGill University Libraries, and BMC Public Health. Seventeen peer reviewed articles were selected for analysis. The literature indicated that sport injury maybe best defined as the loss of bodily function or structure that is caused by a sudden transfer of energy. This sudden transfer of energy must occur during a sport game or training and must become the object of clinical examination. However, when determining the prevalence and occurrence of sport injury, both healing, and recurrent injuries must also be defined to avoid variations within the classification of injuries as well as for data collection.

It is relevant to provide a working definition for sports injury that extends across all sports, in order to prevent inconsistencies in reported data and facilitates interstudy comparisons of results. In future, operational definitions for healing and recurrent injury should also be explored and established to better prevent variation in sports injury categorization and for data purposes.

Keywords: Injury, sports injury, prevalence, injury mechanism, tissue types, structures. **(300)**