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The 2024 ASPIRE Research Program Symposium Abstract Booklet

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Abstract:
The ASPIRE (Advocacy, Support, Perseverance, Innovation, Research, Experience) Research Program, founded by Shania Sheth and Siddharth Seth, provides students with early research experience and the opportunity to conduct their own research project. In teams of 2-5, our cohort of 30 undergraduate students worked together over a span of 4 months to create and execute a novel research project on a topic of their choice. Students received guidance by experienced student research mentors throughout the process, allowing students to develop and refine essential skills. This year, the program focused on teaching students about how to develop effective search strategies, how to perform data extraction, and how to thematically analyze research papers to construct a well-structured narrative review. Within their teams, students presented results of their narrative literature reviews in the form of research posters at the ASPIRE Research Symposium, a full-day event filled with guest speakers and networking opportunities. Presented in this abstract booklet is the culmination of months of hard work, dedication, and achievement. We hope you enjoy reading through the 2024 ASPIRE Research Program abstracts. We are very excited to see what our aspiring researchers achieve next! For future opportunities, please reach out to aspire.research.program@gmail.com.

Keywords: The ASPIRE Research Program; undergraduate research; narrative literature review; poster presentations; research competition

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Conference Abstracts

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We are the ER - Exploring the Factors, Impacts, and Interventions for Burnout in Canadian ER Staff: A Narrative Literature Review

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Background: Burnout is a complex state characterized by the union of physical overwork and mental stress. Few studies have analyzed the prevalence of burnout in Canadian emergency rooms (ER). This narrative review aimed to understand the factors that contribute to burnout, its impact on ER staff, as well as possible interventions.

Methods: The literature search was completed using the PubMed and the Web of Science databases. Keywords used included "burnout," "ER doctor" (or "emergency room doctor" or "emergency room physician"), and "Canada" to obtain current literature on the experiences of Canadian ER staff. The exclusion criteria included papers written in languages other than English and studies conducted outside of Canada.

Results: The literature search resulted in 12 relevant studies. The results were analyzed narratively to investigate the risk factors and protective factors for burnout. The analysis yielded several key themes surrounding the factors, impacts, and interventions for burnout. Themes that correlated with increased burnout included poor mental health, high physician turnover, low productivity, and the burden of responsibility. Themes that correlated with decreased burnout included identity, camaraderie, connection, and positive systemic change.

Conclusion: This study underscores the numerous factors that contribute to and protect against burnout in ER staff, demonstrating how burnout is a negative byproduct of ER work and a factor that contributes to a less efficient workplace. Formal interventions to prevent burnout should be implemented for ER staff. Future research could investigate emergency rooms in rural communities to elucidate understanding of how circumstances may differ from urban areas.

Exploring the Protective Factors for Melanoma: A Narrative Literature Review

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Introduction: Melanoma is one of the most aggressive forms of skin cancer and a leading cause of mortality in Canada and the United States. This narrative literature review aims to analyze the social, biological, nutritional, and behavioral protective factors identified in these two countries in order to provide a foundation for public health initiatives.

Methods: The literature search was completed using the PubMed and the Web of Science databases. The keywords searched included "melanoma," "protective factor," "USA," "United States" or "Canada." Articles written after 2014 and in English were included.

Results: The literature search resulted in 63 relevant articles which were analyzed narratively to categorize different protective factors for melanoma. The four focuses were social, biological, nutritional and behavioural factors. Social determinants included policies, initiatives, ethnicities, genders, income and education levels. Biological processes focus on the impacts of various genes, including MC1R, ER/IGF1R, AHR and CDKN2, and hair properties on melanoma. Nutritional-related factors consisted of estrogen, antioxidants and natural extract. Behavioral patterns encompassed sunscreen application, protective cloth usage, awareness, circadian clock and risk examination. The results provided an in-depth analysis of these different protective factors and their effectiveness in preventing melanoma.

Conclusion: This narrative literature review highlights the social, biological, nutritional, and behavioral protective factors that mitigate the risk of melanoma. Public health initiatives in Canada and the United States can leverage these factors to enhance health outcomes. Additionally, ongoing research and the implementation of evidence-based interventions are essential for advancing the current melanoma prevention model.

Exploring the Impact of Database Inequities in Digital Health Tools: A Narrative Review

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Introduction: In the world of digital healthcare, modern technologies are constructed utilizing databases that do not include data from minority populations, resulting in an exacerbation of healthcare disparities. This study aims to critically examine how inequities manifest in digital health tools.
Methods: A literature search was conducted through PubMed using keywords such as "Database inequities," "Culturally Relevant Services," "Healthcare," and "Digital Health." The search yielded 162 results of which 38 studies met the inclusion criteria. The exclusion criteria included papers written before 2014, papers written in languages other than English, and papers that lacked relevance to the topic.
Results: Health inequities within digital health tools can be categorized into two main themes: barriers to accessing culturally relevant care and discrepancies within genomic databases. It was found that digital health tools lack cultural specificity for various groups as they fail to accommodate linguistic diversity and differences in technological abilities across an array of populations, leading to the exacerbation of health inequities. Furthermore, studies showed that historical mistrust of the healthcare system by marginalized communities has directly contributed to reduced willingness for patients to provide consent to obtain genomic data.
Conclusion: This study comprehensively explored how health inequities can be exacerbated due to modern digital health tools due to barriers in accessing care and an underrepresentation of diverse groups in genomic databases. Future research should explore strategies to reduce barriers to accessing digital health tools and increase the diversity in genomic databases.

Exploring the Health Inequities in Hematopoietic Stem Cell Transplantation: A Narrative Literature Review

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Introduction: Hematopoietic stem cell transplantation (HSCT) is an advanced procedure with the potential to treat various conditions, including various cancers and bone marrow disorders. Despite its efficacy, inequities in accessing HSCT exist, particularly among racial minorities, low-income communities, and older adults. This narrative literature review aims to highlight these disparities and propose solutions to improve access and health outcomes especially in the United States.
Methods: A comprehensive literature search was conducted using PubMed and Web of Science databases. Keywords included "Stem Cell Transplantation," "Health Inequities," "Access to Treatment," and "Socioeconomic Factors." Studies published from 2014 onwards in English were included.
Results: The literature search resulted in 21 relevant papers. The results were analyzed narratively and revealed several key themes. Racial disparities resulted in reduced HSCT access for minorities. Black and Hispanic patients were less likely to receive HSCT compared to White patients. Studies further indicated longer wait times for African American and Hispanic individuals between diagnosis and treatment initiation. Physician referrals exhibited biases with reduced rates of HSCT initiation for racial minorities. Younger patients were more likely to receive stem cell therapy compared to older individuals. Low-income communities lack the necessary technology for early diagnosis and treatment planning where individuals with inadequate health insurance face additional financial barriers to access HSCT.
Conclusion: Evidently, there are significant inequities in accessing HSCT for many individuals highlighting the need for a multi-faceted approach towards mitigating the barriers to care. By ensuring equitable access to HSCT, health outcomes can be improved for all patients, regardless of their identity.

Exploring the Underrepresentation of Cisgender Women in Canadian Clinical Trials: A Narrative Literature Review

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Introduction: There are significant differences in sex-specific drug responses that are often overlooked when prescribing medications. However, there is a significant underrepresentation of cisgender women in clinical trials in Canada resulting in a lack of adequate and appropriate care for women. Thus, this narrative literature review aims to identify factors contributing to this underrepresentation and discuss the associated consequences in order to advocate for improved equity in clinical trials.

Methods: The literature search was completed using the PubMed database. Keywords included "Underrepresentation," "Canada," "Women," "Woman," "Female," "Females," "Clinical Trials," and "RCT." Exclusion criteria included non-English language, non-Canadian papers, and papers written before 2014.
Results: The literature search identified 7 relevant papers and the results were analyzed narratively. The analysis highlighted five factors related to the exclusion of cisgender women in clinical trials. These factors included teratogenic concerns, drug complications from hormonal variation, lack of voluntary enrollment of cisgender women, lack of cisgender women leads in clinical trials, and insufficient enforcement of inclusion-related Canadian policies. The results reveal that this underrepresentation leads to inadequate understanding of female physiology and variations in treatment response posing significant health risks and limits the efficacious healthcare options for cisgender women.
Conclusion: This narrative review identified that cisgender women are underrepresented in Canadian clinical trials due to numerous factors. These factors must be addressed for equitable, inclusive, and effective treatment approaches to be implemented. Future research should further investigate the mechanism behind underrepresentation of cisgender women in specific contexts and these factors should be carefully considered when designing clinical trials.

Exploring the Implementation of Telepharmacy in Rural Communities: A Narrative Literature Review

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Introduction: Telepharmacy is a platform where pharmacists and patients can interact online. This approach has been proposed to improve access to pharmaceutical care in rural communities. This review aims to better understand the benefits and barriers of implementing telepharmacy services in order to guide future telepharmacy interventions in Canada.
Methods: The literature search was completed using the PubMed and Web of Science databases. The keywords searched included "telepharmacy," "online pharmacy services," "rural," and "rural communities." The exclusion criteria included papers written before 2014 and papers written in languages other than English.
Results: The literature search resulted in 21 relevant research papers. The results were analyzed narratively and the main themes regarding the use of telepharmacy in rural communities included: increased access, increase in satisfaction, improved health outcomes, implementation, and ethical considerations. The advantages of telepharmacy included increasing patient access and support, time efficiency, high levels of satisfaction, cost-effectiveness, patient-centered care, and improved health outcomes. The disadvantages included difficulty using technology, lack of skilled pharmacists available, as well as privacy concerns.
Conclusion: This study highlights that there are numerous benefits associated with telepharmacy but there are also many limitations associated with its implementation that are important to address appropriately. Further research is needed in this area, and a more sustainable model should be explored that benefits patients while remaining effective.

Exploring the Relationship Between Adverse Childhood Experiences and Paranoia: A Narrative Literature Review

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Introduction: Adverse childhood experiences (ACEs) are traumatic events or situations children experience, such as abuse, neglect, and violence in their immediate environment. Paranoia is an unjustified suspicion towards others or events which may lead to delusions and mistrust of others exacerbating difficulty in maintaining close relationships. Few papers have investigated the relationship between ACEs and paranoia. This narrative literature review aims to examine the factors that associate ACEs with the development of paranoia symptoms in adulthood.
Methods: The literature search was completed using the PubMed, PsycNet, and the Web of Science databases. The keywords searched included "ACEs" or "adverse childhood experiences," and "paranoia." The exclusion criteria included papers written before 2009, in languages other than English, and papers that were not relevant.
Results: The literature search resulted in 10 relevant research papers. The results were analyzed narratively to explore different ACEs and their relationship with paranoia. The narrative analysis highlighted three themes that connected ACEs to the development of paranoia: neural pathways, abuse and neglect, and specific ACE factors. Neural pathways involved the development of disorganized attachment in childhood, abuse and neglect included physical, emotional, and sexual experiences, while specific ACE factors include shame and witnessing violence. The results highlighted the effect of certain ACEs on paranoia.

Conclusion: This study highlights that ACEs likely have a profound impact on the development of paranoia symptoms and more research should be performed on the genetic and environmental causes of paranoia as well as protective factors and intervention against paranoia.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

SS: Founder and president of the ASPIRE Research Program, developed the program including content creation and workshop delivery, mentored research students through the program, served as a planning committee for the conference, assisted authors with abstract submission, reviewed abstract submissions to ensure correct formatting standards, drafted the conference abstract booklet, and gave final approval of the version to be published. Both authors contributed equally.
SSE: Founder and president of the ASPIRE Research Program, developed the program including content creation and workshop delivery, mentored research students through the program, served as a planning committee for the conference, assisted authors with abstract submission, reviewed abstract submissions to ensure correct formatting standards, drafted the conference abstract booklet, and gave final approval of the version to be published. Both authors contributed equally.

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