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Poster Abstract Booklet

The Canadian **Donation and Transplantation** Research Program

Programme de recherche en **don et transplantation** du Canada

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Regenerative Medicine and Living Therapies Education: Building Trusting Relationships & Communication between African, Caribbean, and Black (ACB) Communities, Health Researchers and Clinicians

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Background

Regenerative medicine focuses on repairing and replacing damaged tissues and organs. Though members of ACB communities are disproportionately affected by many of the conditions regenerative medicine approaches aim to treat, little has been done to understand how ACB communities view regenerative medicine. To address increasing health disparities, the perspectives of ACB community members about regenerative medicine must be explored.

Objectives

To begin building trusting relationships and dialogue between ACB communities, researchers and clinicians about regenerative medicine.

Methods

A culturally safe, community-centred engagement approach is utilized. Our approach is informed by a framework that recognizes race as a social construct and acknowledges how racialization operates in a societal system that marginalizes Black individuals. Therefore, sharing information with members of their community would be beneficial. In phase 1, we organized 2 virtual workshops with clinicians, researchers, and trainees to discuss regenerative medicine's current state and relevance to ACB communities. In phase 2, we launched an online hub to connect ACB communities, researchers, and clinicians and provide information about regenerative medicine and anti-Black racism in healthcare. Partnering with ACB community members, we conducted community health sessions.

Results

Phase 1 workshops, in late February and early March 2023, had >60 registrants. Phase 1 revealed that researchers and clinicians were eager to learn more about ACB communities' needs and perspectives and that health promotion strategies are needed to convey information about regenerative medicine. Between April 2023 and March 2024, CARM held approximately 90 meetings with ACB community stakeholders, 10 virtual community health sessions and 2 full-day in-person community health sessions with an overall attendance of >300 ACB community members. Preliminary feedback from ACB participants confirmed the need for health promotion and dialogue.

Conclusion

Culturally safe community-centred engagement is a useful and well-received approach to initiate dialogue and transfer/exchange knowledge about health within ACB communities.

What Is Known About Infant Organ Donation After Death by Circulatory Criteria? Results From A Scoping Review and Meta-analysis

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Background

Infants may be an underutilized source of donor organs. Infants are more commonly eligible for donation after death by circulatory criteria (DDCC) than after death by neurological criteria. Infant organ donors are extremely rare globally and especially in Canada. We described the published literature describing infant donation practices.

Objectives

The objectives of this scoping review were (1) to identify and summarize existing research and policy information about infant organ donation after circulatory determination of death with infants defined as less than one year of age (2) to identify knowledge gaps to guide future research. The research question was: what is known about infant organ donation after DCC?

Methods

This scoping review followed well-defined methodology. We conducted a search of MEDLINE, EMBASE, CINAHL, Scopus, and the Web of Science and a grey literature search for international policy documents. Two reviewers screened titles, abstracts, and full-texts. One reviewer critically appraised research articles. All articles were retained regardless of quality. All articles related to infant organ DDCC were retained. Data were extracted, collated, and charted by one reviewer to synthesize all relevant information about infant organ donation after circulatory determination of death. We conducted a meta-analysis of data related to transplant outcomes.

Results

The search yielded 8176 unique publications, 33 were included in this review. A grey literature search yielded six policy documents. Findings covered four categories: donor audits, transplant outcomes, ethical findings and policy documents, and time to death studies. Outcomes from infant DCC transplants were generally good but studies suggested under-recognition of potential donors.

Conclusion

Infants are often unrecognized as potential donors after circulatory determination of death, despite good transplant outcomes from infant donors. This leaves parents without the opportunity to include donation in end-of-life care and decreases the pool of available organs for transplantation.

Navigating The Landscape of Uncontrolled Organ Donation After Circulatory Determination of Death in Canada

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Background

In the face of persistent gaps between the supply and demand of life-saving organs for transplantation worldwide, there is a need to implement innovative strategies to alleviate these discrepancies to improve the health outcomes of individuals. Among the strategies that have been successfully implemented internationally to address these critical disparities are programs of uncontrolled organ donation following death by circulatory criteria (uDCC). There have been some attempts to articulate the implementation of such programs within Canada, with studies showing the potential that this form of donation could have on organs available for transplantation, the viability of lung transplantations from these donors, and the acceptance of healthcare providers and the public regarding practices used in these programs. Despite this, programs for this type of practice have yet to be implemented in Canada.

Objectives

The purpose of this study is to explore the perspectives of key stakeholders regarding the lack of uDCC program implementation in Canada and to identify how such programs may fit within Canadian healthcare landscape.

Methods

A qualitative descriptive methodological approach will be utilized for this study. Semi-structured interviews will be conducted with leaders and key stakeholders from Canadian organizations supporting organ donation practices to gather data. An analysis of the perspectives obtained through these data collection methods will be performed to develop themes that can be used to present the findings.

Anticipated Results

Examining the perspectives of Canadian leaders and key stakeholders responsible for supporting the field of organ donation will provide valuable insight into the complexities of uDCC programs that need to be considered. Shedding light on the potential challenges and strategies for implementing a program of UDCC will inform future discussions on program development in Canada, which in turn may increase the availability of organs to save the lives of Canadians.

The Marketing of Stem Cell Supplements on Amazon

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Background

The advancement of stem cell science has led to increased offerings of therapeutics. Research has assessed clinics' offering of unproven direct-to-consumer stem cell therapies, but stem cell related products, namely supplements, have received less critical attention. Supplements form a staple of wellness culture, a market now valued in the trillions. With over 300 million annual users, the online Amazon marketplace provides direct access to health products such as stem cell supplements. Supplements, however, pose a host of health and regulatory issues as they often claim scientifically unsupported benefits, and their contents can be inaccurately labelled.

Objectives

This research analyzed how stem cell supplements were marketed on Amazon.

Methods

A data set was built of all products on Amazon.com listed for the "stem cell" search query, including product URL, description, and corresponding metadata (e.g. cost). Content analysis was performed to determine product claims, ingredients, and core marketing strategies, including the referencing of science and healthcare professionals.

Results

Stem cell supplements commonly claim numerous and multiple health benefits, namely anti-aging, immune-boosting, and cognitive improvements, but also weight-loss, improved energy, mood, and appearance, injury repair, and assistance with menstrual cycles and menopause. In addition to listing product naturalness and purity, science rhetoric is heavily deployed to promote beneficial claims.

Conclusion

There is a shotgun approach to stem cell supplement marketing on Amazon, as each product typically claims multiple and many benefits. The health benefits detail healing as well as optimizing, core tenets of wellness culture. The benefit claims are commonly lacking scientific evidence despite marketing claims to the contrary. Regulating stem cell supplements poses significant challenges as consumer demand is increasing, and direct-to-consume access is readily available.

Trends in etiology of cirrhosis in patients undergoing liver transplantation at Centre hospitalier de l'Université de Montréal

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Background

Liver transplantation (LT) is the only curative treatment for patients with cirrhosis. The leading indications for LT in adults have evolved over the past few years due to the advent of highly effective new antiviral drugs, but also due to the increased incidence of metabolic diseases. Understanding the etiology of cirrhosis is essential for patient management.

Objectives

The aim of this study was to describe cirrhosis etiologies and trends in incidence in adults who underwent LT.

Methods

This is a retrospective analysis including all consecutive patients who underwent LT at the Centre hospitalier de l'Université de Montréal (CHUM) in 2010, 2015 and 2020. Patients included were adults aged >18 years with a diagnosis of cirrhosis. The primary etiology of cirrhosis was determined from clinical charts. Patients with previous LT were excluded.

Results

A total of 153 patients underwent LT, including 135 with cirrhosis (41, 49 and 45 in 2010, 2015, 2020, respectively). Of these, 98/135 (72.6%) were men with a median age of 57.0 years (+/-11.3). Hep C represents 12.2% in 2010, tripling in 2015 to become the first cause of cirrhosis with 30.6% and finally decreasing to 11.1% in 2020. The percentage of NASH/MASH increased progressively, doubling every 5 years (from 12% to 20% to 42%). The etiologies ALD/NASH/MASLD represents 57.8% of the causes of cirrhosis. The percentage of autoimmune diseases is decreasing over time (34.1% to 28.6% to 17.8%). Interestingly, they represent one third of the causes of cirrhosis in 2020.

Conclusion

Hep C etiology goes from being the leading cause to the 4th cause of cirrhosis. Autoimmune diseases are the second cause of cirrhosis at the CHUM. NASH/MASH has doubled during the last 10 years to become the leading cause. Metabolic and alcohol etiologies accounted for nearly 60% of the causes of cirrhosis.

Autophagy Inhibition Aggravates Renal Microvascular Injury Secondary to Ischemiareperfusion

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Background

Ischemia-reperfusion injury (IRI) is an integral component of kidney transplantation. Programmed cell death (PCD) of endothelial cells in peritubular capillaries (PTC) post-IRI is a major predictor of long-term loss of renal function. We have shown that caspase-3-deficient mice show reduced PTC apoptosis post-IRI and preserved long-term renal function. Autophagy is known to prevent apoptosis but its precise role on PTC post-IRI remains unclear

Objectives

Characterize the dynamics of PCD activation and the effect of autophagy inhibition on the renal microvasculature post-IRI.

Methods

GFP-LC3 mice were subjected to unilateral renal artery clamping for 30 minutes with contralateral nephrectomy. Mice were injected intraperitoneally with PBS or chloroquine (CHQ) to inhibit autophagy, on surgery day and every day until sacrifice. Mice were euthanized from 1 to 21 days post-surgery. Kidney function was assessed by measuring BUN levels. Apoptosis and necroptosis were measured by immunohistochemistry (IHC) for cleaved caspase-3 and pRIPK3 respectively. Autophagy was evaluated through GFP-LC3 puncta using confocal microscopy. PTC rarefaction, myofibroblast accumulation, and collagen deposition were assessed at 21 days by IHC for MECA-32, α-smooth muscle actin (α-SMA) and Sirius red staining, respectively.

Results

PTC showed sustained apoptosis over a period of 1 to 21 days after renal IRI. Necroptosis exhibited a transient increase at 1-2 days post-injury, returning to baseline levels by day 7. Autophagy was not increased in whole phases of renal IRI (from 1 to 21 days). Yet, blocking autophagy with CHQ increased PTC apoptosis at 21 days, but had no effect on PTC necroptosis. Microvascular rarefaction was increased in the CHQ-injected group. This was associated with increased renal fibrosis, α-SMA, and collagen deposition within the PTC.

Conclusion

These findings highlight the significant role of PTC autophagy in regulating microvascular integrity and emphasize the predominant influence of microvascular injury and rarefaction as drivers of progressive renal damage and fibrosis post-IRI.

Caspase-3 Activation Increases With Age and Aggravates Kidney Injury After Ischemia-Reperfusion

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Background

Rarefaction of peritubular capillaries (PTC) after ischemia-reperfusion injury (IRI) predicts progressive renal failure, especially in older kidneys. We demonstrated the importance of caspase-3-dependent microvascular damage in progressive kidney dysfunction after IRI. We also showed that renal IRI increases ApoExo circulating levels; an immunogenic type of exosome-like vesicles, produced by apoptotic endothelial cells downstream of caspase-3 activation and characterized by an active 20S proteasome and LG3/perlecan autoantigen. Circulating anti-LG3 autoantibodies in patients predict poor long-term renal function and graft survival.

Objectives

Our aim is to test whether age modulates caspase-3 activation after renal IRI leading to increased release of ApoExo, enhanced PTC rarefaction, fibrosis and renal dysfunction.

Methods

Unilateral pedicle clamping and contralateral nephrectomy were performed in young and old mice. ApoExo were purified from serum-free medium conditioned by apoptotic murine endothelial cells and injected via tail-vein. Endpoints were assessed 21days post-IRI. ApoExo circulating levels were measured by proteasome activity and anti-LG3 titers by ELISA. Complement deposition, caspase-3 activation, PTC rarefaction and fibrosis were assessed by immunohistochemistry. Renal function was monitored by BUN level.

Results

At baseline, old mice showed higher levels of caspase-3 activation within PTC, lower PTC density and higher anti-LG3 titers. Renal IRI led to increase in PTC caspase-3 activation, ApoExo and anti-LG3 levels with age. PTC C4d deposition, interstitial fibrosis and renal function were worsened by age. To test the role of ApoExo in fueling maladaptive responses to IRI, young mice were injected with ApoExo to reach circulating levels observed in old mice. ApoExo injection increased anti-LG3 formation, C4d deposition, caspase-3 activation, PTC rarefaction and fibrosis.

Conclusion

Our results suggest that caspase-3 activation within PTC increases with age leading to more ApoExo production post-IRI. The latter enhances microvascular damage and fibrosis, favoring progressive kidney dysfunction. Understanding immune mechanisms driven by ApoExo will help better prevent kidney function loss and graft rejection.

Ex-Vivo Organ Perfusion Provides a Platform To Model Mouse Kidney Disease

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Background

Chronic kidney disease (CKD) affects 11-13% of the population worldwide. A hallmark of CKD is fibrosis which exacerbates kidney dysfunction and is linked to increased mortality. Limited studies have been conducted utilizing ex-vivo cultures in kidney fibrosis research. Animal models of fibrosis involve invasive procedures that can affect the animal's health and experiment results. Also, disease stages are missed since the organs of interest cannot be analyzed without invasive techniques. Ex-vivo whole-organ perfusion (EVOP) provides a solution by enabling real-time, longitudinal analysis at the whole-organ level. Also, controlled culture conditions lead to reduced alterations between experiments.

Objectives

We aim to maintain a mouse kidney using EVOP for 10 days and to reproduce renal fibrosis in an EVOP system using ureteric obstruction (UO) and cisplatin-induced nephrotoxicity.

Methods

Following kidney isolation and renal artery canulation, kidneys were cultured under EVOP for 4, 7, and 10 days. Kidneys were also subjected to UO or cisplatin treatment to induce fibrosis and were then cultured ex-vivo for 4 and 7 days.

Results

Tissue viability and renal marker expression were sustained for up to 10 days in the EVOP kidneys. We determined that our system meets the oxygen demand of a mouse kidney. Urinalysis demonstrated proper urine production. Preliminary results revealed higher amounts of collagen deposits present in UO and cisplatin-treated kidneys at days 4 and 7 compared to controls. Similarly, fibrosis-treated kidneys secreted pro-fibrotic cytokines into their perfusate, indicating fibrosis development

Conclusion

The EVOP system can maintain mouse morphology and function for 10 days. Fibrosis appears to be developing by day 4 and increases further by day 7 post-treatment. Future steps include optimizing the culture medium to extend EVOP times to 14 days. We will also analyze the expression of fibrotic markers at the gene and protein level to further characterize the fibrosis model.

The Role of Complement System In Microvascular Damage Associated With Renal Ischemia-Reperfusion

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Background

Renal ischemia-reperfusion injury (IRI) during kidney transplantation leads to acute kidney injury (AKI) and contributes to long-term renal dysfunction. Peritubular capillary (PTC) rarefaction is crucial in the progression from AKI to chronic kidney disease (CKD). Endothelial cell apoptosis, whether during IRI or after transplantation, triggers the release of immunogenic apoptotic exosome-like vesicles (ApoExo), promoting the production of anti-LG3 autoantibodies targeting the C-terminal motif of perlecan and activating the complement system. The dynamics of complement activation in PTCs during the transition from AKI to CKD remain to be fully characterized.

Objectives

Our objective is to elucidate the interactions between ApoExos, anti-LG3 antibodies, and complement activation within the kidney following IRI.

Methods

Unilateral renal artery clamping with contralateral nephrectomy was performed in wild-type (C57Bl/6J) and complement C3-/- (C3KO) female mice. PBS or ApoExo purified were injected every other day, with endpoints assessed 21 days post-IRI. Kidney function was evaluated using BUN levels. Microvascular congestion and rarefaction were assessed through hematoxylin-eosin sections and CD34 immunohistochemistry, respectively. Anti-LG3 titers were measured by ELISA. Splenic follicular helper T and germinal center B cells were measured by FACS.

Results

All groups exhibited reduced renal function following IRI. ApoExos-induced microvascular congestion and rarefaction were reduced in C3KO mice compared with wild-type mice. Anti-LG3 titers were higher in wild-type mice injected with ApoExos compared to those without. The injection of ApoExos into C3KO mice led to a smaller increase in anti-LG3 titers than in the wild-type group, whether injected or not with ApoExos. This was associated with a decrease in splenic inflammation.

Conclusion

Collectively, these results suggest the direct implication of complement in the response to ApoExo and in the production of anti-LG3 and loss of PTC after IRI.

OPAL: Online Prehabilitation For Patients Awaiting Liver Transplantation - A Multicenter Randomized Controlled Trial to Reduce Physical Frailty and Improve Health Outcomes

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Background

Liver transplantation (LT) remains the only curative option for many individuals with cirrhosis[1]. LT candidates have high rates of frailty that impact clinical outcomes both pre- and post-transplantation[2]. Multidimensional prehabilitation has gained attention to combat frailty prior to surgery[3]. Virtual prehabilitation delivery requires evaluation as a promising modality to promote access at scale.

Objectives

To determine the benefits of a 12-week virtually supervised app-based prehabilitation program in patients awaiting LT across six major transplant programs in Canada compared to usual care on functional capacity as measured by the sit to stand test (time to do 5 sit-to-stands).

Methods

LT candidates with cirrhosis who are pre-frail or frail on the liver frailty index (LFI) are randomly allocated to the intervention arm (prehabilitation, online 12-week nutrition, exercise, behavioral program with a weekly virtual exercise class) or the control arm (usual care, online prehabilitation educational material) in a 2:1 ratio. Outcomes: Primary: Physical function via sit to stand test. Secondary: Frailty, covert hepatic encephalopathy, quality of life, sarcopenia, malnutrition, and acceptability evaluated using mixed methods. Quantitative data will be collected at baseline and end of trial at week 12, with extended and post-transplant follow-up. Qualitative data will be collected from qualitative interviews at end of trial. Intention to treat analysis. Primary and secondary outcomes will be analyzed by linear models. Qualitative data will be analyzed with a theoretical thematic approach.

Results

Recruitment began in July 2023. 60 participants have been randomized with 57% men, mean age of 57 (SD 9.2), mean MELD of 16.4 (SD 5.1) and mean LFI of 4.1 (SD 0.63). Qualitative interviews have been completed in 12 participants.

Conclusion

This multi-centre virtual prehabilitation center in six liver transplant programs across Canada holds promise to increase our understanding of the effectiveness and acceptability of virtual prehabilitation in this population.

The Relationship Between Physical Function and Social Participation Among Kidney Transplant Recipients (KTRs)

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Background

Kidney transplantation often improves physical function (PF) for patients with kidney failure, enhancing their quality of life (QoL). However, some kidney transplant recipients (KTRs) still experience impaired PF compared to the general population. Social participation (SP) is a particularly important aspect of QoL for KTRs that often remains limited post-transplant.

Objectives

The relationship between PF and SP has yet to be explored in KTRs. Our objective was to explore the association between PF and SP among KTRs.

Methods

A secondary analysis of a cross-sectional convenience sample of adult KTRs. PF and SP were assessed using the Patient-Reported Outcome Measurement System (PROMIS) item banks. We defined moderate/severe PF impairment as a T-score < 40 and low SP as a T-score < 45. We used Pearson's correlation analysis to explore the relationship between PF and SP and employed multivariable linear and logistic regression to examine the association after adjusting for covariables (sex, age, marital, ethnicity, comorbidity, education status, serum albumin, hemoglobin, eGFR, depression, fatigue, pain interference).

Results

The mean (SD) age of the sample (n=359) was 51 (16) with 59% male. The mean (SD) PF score was 49 (9) and the mean (SD) SP score was 53 (9). A strong positive correlation existed between PF and SP ($r = 0.66$, $P<0.001$) in KTRs. This association remained significant in multivariable linear regression analysis after adjusting for covariables. KTRs with low PF were more likely to report low SP compared to those with normal PF in multivariable logistic regression analysis, after adjusting for covariables (OR = 5.41, $p<0.001$, 95% CI: 2.41 – 12.15).

Conclusion

KTRs with impaired PF were more limited in their SP than those with normal PF, which is consistent with previous literature in other clinical settings. Future studies should assess the impact of addressing PF on SP following transplantation.

Understanding the Role Of Gut Dysbiosis and Akkermansia muciniphila In Transplant Vascular Injury

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Background

The gut microbiota plays an important role in human health by regulating immune responses. Disruption of the gut microbiota, termed dysbiosis, disrupts this immunoregulation, which enhances transplant vascular injury. Akkermansia muciniphila is a gut microbe with several pro-health benefits. Using a mouse model of artery transplantation, we are examining the ability of A. muciniphila to reduce transplant vascular injury caused by dysbiosis of the gut microbiota.

Objectives

To study the effects of probiotic treatment with A. muciniphila on neutrophil-mediated transplant vascular injury caused by dysbiosis of the gut microbiota.

Methods

Dysbiosis is induced in C57Bl/6 female mice through administration of broad-spectrum antibiotics in the drinking water early in life until 3 weeks of age followed by regular water thereafter. Composition of the gut microbiota was analyzed by metagenomic sequencing and PCR. After removal from antibiotics, A. muciniphila will be orally administered to re-populate it in the intestinal tract. At 8-12 weeks of age, aorta sections from Balb/c donors will be transplanted into the infra-renal aorta of C57Bl/6 mice treated with or without A. muciniphila, and transplant vascular injury examined.

Results

Dysbiosis of the gut microbiota caused by disrupting it early in life exacerbates neutrophil accumulation and associated medial injury in arterial transplants. Through whole-genome sequencing and targeted PCR analysis, A. muciniphila was identified as the most significantly reduced bacterial species in dysbiotic mice. Subsequently, a voluntary feeding protocol was developed to deliver A. muciniphila into graft recipients as a probiotic.

Conclusion

Early-life disruption of the female gut microbiota exacerbates neutrophil-mediated transplant vascular injury later in life, which is associated with reduced A. muciniphila. Future studies are examining whether probiotic administration of A. muciniphila can reduce transplant vascular injury.

Transplant Afters: Complexities and Frictions of Emotional Experiences Post-Transplantation

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Background

While significant efforts are expended preparing patients for transplantation and maintaining physical health post-transplant, psychosocial and emotional challenges receive less attention and can be highly complex. Qualitative research is well suited to understanding these complexities in the aftermath of transplantation as these approaches allow for exploration of the tensions and ambivalences within lived experience over a longitudinal course.

Methods

The *Frictions of Futurity* project is a multi-year ethnographic study of exploring embodiment and psychosocial complexities across the temporal span of the transplantation process. This paper draws on open-ended, narrative interviews with individuals and small groups in a large multi-organ transplant program.
The interviews integrated artistic practices to elicit sensory qualities of the experiences explored. All interviews were audio recorded and transcribed, analyzed iteratively using NVIVO within an interpretivist-constructivist framework.

Results

Participants described tumultuous emotional journeys post-transplant. Multiple affective qualities characterizing their experiences were conflicting, overlapping, and simultaneous. Gratitude, hopefulness, and relief existed alongside a host of challenging and distressing emotions including uncertainty, guilt and anger. Unlike common assumptions about emotional distress as “minded,” many participants described somatic and physical qualities of their emotional experiences. The emotional complexity of life post-transplant was notably relational: while families and carers were important sources of support, this was complicated by past experiences as well as by expectations for the future, shaped through social norms and cultural scripts surrounding transplant.

Conclusion

The qualities and characterizations of the emotionality within post-transplant life emphasizes the limits of clinical constructs such as PTSD or depression for framing these experiences. The emotional journeys discussed in this project displayed temporal complexity, as nonlinear, and intersubjective complexity, as relational. The interweaving of psychosocial and somatic experiences illustrates the importance for clinicians to consider how a bifurcated model of body/mind, self/other, may limit the understanding of important dimensions of post-transplant well-being.

Exploring the experiences that enable access to care of post-traumatic stress in pediatric solid organ transplant recipients

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Background

Many children and adolescents who undergo solid organ transplants (SOT) develop post-traumatic stress (PTS) symptoms. Despite its prevalence and strong association with long-term impairments in quality of life, PTS is often overlooked as a major co-morbidity in many transplant programs.

Objectives

To address this unmet need, the purpose of this study was to explore the factors that impede or facilitate awareness of PTS, access to resources, and readiness to engage with mental health services.

Methods

Separate semi-structured interviews (N=17) were conducted with pediatric SOT recipients between the ages of 12 and 18, and a parent. The interviews explored: 1) awareness and management of PTS symptoms; 2) timelines surrounding PTS symptom awareness and resource-seeking; 3) facilitators to PTS symptom awareness; 4) barriers to PTS symptom awareness; 5) information seeking; and 6) areas for improvement in the current content and availability of resources.

Results

Emotional and physical impacts of SOT were identified for pediatric SOT recipients and their parents. Pediatric SOT recipients experienced lifestyle and social changes around school, friendships, and extracurricular activities. Majority of parent and child/adolescent participants preferred to learn about the risk of PTS and resources to support PTS before the transplant and emphasized that the age of the SOT recipient played an important role related to the timing and content of information shared. The ideal format and source of PTS information were also discussed. Participants recommended several improvements and additional resources to support PTS around access to mental health support, the health care process, counselling and therapy needs, patient-centered support, format, and advocacy.

Conclusions

By exploring the personal experiences and perspectives of pediatric SOT recipients and their parents, this work can be used to improve the accessibility and quality of PTS supports.

Advancing Inclusion in Research Planning and Practice: Strategies implemented within the Canadian Donation and Transplantation Research Program

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Background

The Canadian Donation and Transplantation Research Program (CDTRP) values diversity, equity, and inclusion from both an organizational and a research lens. A 2024 analysis reveals that the CDTRP membership is highly diverse based on gender, race, and ability, with representation of protected groups meeting or surpassing the Canadian general population. 28% of our Patient, Family, and Donor (PFD) partners identify as belonging to a racialized community. Despite this, a persistent challenge faced by researchers is the recruitment of diverse PFDs, particularly among Black, Indigenous, and people of colour (BIPOC) and sexual and gender minorities (SGM).

Objectives

The need for effective patient engagement became increasingly evident during the COVID-19 pandemic as PFDs felt disempowered due to inadequate information and support from the transplant ecosystem. The project, Addressing Critical Issues and Therapeutics Emerging in Transplantation in COVID-19 for Transplant Recipients (TREAT-COVID), investigates the impacts of COVID-19 on transplant recipients and families, including clinical, mental health, and economic outcomes. To ensure that the outcomes of the project reflect Canada's diverse transplant community, we are implementing an integrated PFD engagement and knowledge mobilization strategy.

Methods

We identified 12 BIPOC and SGM health organizations for potential partnerships, engaged PFD Partners, and hosted National Workshops.

Results

We co-developed a patient engagement strategy to increase access and inclusion in TREAT-COVID, focusing on: (1) Community partnerships to co-develop research priorities, recruitment, and communications; (2) Culturally competent social media content; (3) PFD Advisory Committee; (4) Integrated communications strategy and toolkit with tailored messaging

Conclusion

Leveraging CDTRP’s value-based approach to patient engagement, TREAT-COVID has prioritized community and PFD partners as key knowledge drivers and users. Our partnerships have resulted in a communications and recruitment strategy that emphasizes the involvement of diverse transplant recipients and families.

Physical Function Recovery Following Liver Transplantation

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Background

The trajectory of physical function (PF) recovery immediately following liver transplantation remains poorly documented.

Objectives

We assess changes in patient-reported PF over time among recent liver transplant (LT) recipients using the Patient Reported Outcome Measurement System (PROMIS) PF computer adaptive test (PF-CAT).

Methods

Longitudinal convenience sample of incident (<30 days post-transplant) adult liver transplant recipients, recruited between 2021-2024. Participants completed the PROMIS PF-CAT at baseline, biweekly for 3 months, and then every four weeks up to 6 months on an electronic data capture platform. The PROMIS PF-CAT is scored on a T-score metric (10-90), where higher scores indicate better physical function. The score is standardized to the U.S. general population yielding a mean of 50 and standard deviation (SD) of 10. We describe average T-scores at baseline, 12-weeks and 24-weeks, and if applicable, the percentage of patients that improved 5 points (half SD) and 10 points (1 SD) or more from their baseline.

Results

Of the 70 participants 42(60%) were male, 48(69%) were white, 32(31%) had diabetes, mean(SD) age was 51(14) years and median(Interquartile Range) time since transplantation at enrollment was 7(5; 11) days.

At baseline (n=70), mean(SD) PROMIS PF was 33(10). At 12 weeks (n=23), the mean(SD) PROMIS PF increased to 43(8); 74% of participants improved ≥5 points from baseline, and 57% improved ≥10 points. At 24 weeks (n=21), mean(SD) PROMIS PF increased to 47(10); 86% of participants improved ≥5 points from baseline, and 62% improved ≥10 points.

Conclusion

By 24 weeks post-transplantation, average PROMIS PF scores among LT recipients approach that of the U.S. general population. More than half of participants improved at least 10 points by 12 weeks. These findings add to our understanding of the recovery of physical function following LT, and can also be used to inform patients about the post-transplant recovery.

Virtual Reality and Gameplay as a Model for Exercise Rehabilitation in Pediatric Solid Organ Transplant Patients. A Patient and Family Led Initiative

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Background

There are many health benefits for pediatric Solid Organ Transplant (SOT) patients who engage in regular physical activity; however, a major barrier to ongoing participation is a lack of interest. Recently, a patient family within the Multi-Organ Transplant Program at British Columbia Children's Hospital described their use of virtual reality (VR) gameplay for physical activity.

Objectives

To assess VR gameplay as a form of physical activity for our SOT patients.

Methods

All eligible 13-18-year-old SOT patients within our Program were approached for consent. Participants engaged in an 8-week VR exercise program followed by 8-weeks of non-gameplay. The self-directed VR exercise program consisted of three games and a weekly requirement of exercising 3x/week for 30 minutes/session (24 sessions). Heart rate (HR) during VR exercise was recorded using a smart watch. An exercise treadmill test to volitional fatigue was administered prior to the start of the VR exercise program, post-VR program and following the non-gameplay period. Parameters measured during the exercise test included HR, $\dot{V}O_2$peak and other respiratory exchange variables.

Results

The recruitment rate was 12/59 (20%); 5/12 participated in VR exercise. The median age of participants was 16.1 years (14.3-16.8). Four of five participants met criteria for a maximal exercise test. Peak exercise test HRs ranged from 150 to 203 bpm. Participant Z-scores for absolute $\dot{V}O_2$peak ranged from -2.85 to -1.38 and did not improve with VR exercise. The median number of gameplay sessions completed was 10 (8-22). The duration of gameplay sessions was 31 minutes (26-35). The percentage of time spent at ≥50% of peak HR during gameplay ranged from 85%-100%.

Conclusion

VR gameplay can elicit an effective exercise stimulus; however, regular weekly exercise in our study was low and this may have contributed to the lack of improvement in $\dot{V}O_2$peak with VR exercise.

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