Centre for Arthritis Research
Annual PPI Conference

Weight Management and Rheumatic Disease

Annual Conference 2023
8th November
10am – 1.30pm

Conference Programme

10:00	Welcome and Introduction
10:05	Professor Carel le Roux (UCD) **"How much weight loss is needed to improve joint pain and functionality?"**
10:30	Dr. Noel McCaffrey (ExWell Medical) **"Community Based Clinical Exercise Delivery: Rationale, Challenges and Impact"**
10:55	Break
11.10	Dr. Colin Dunlevy (St Columcille's Hospital, Loughlinstown) **"Helping Patients Understand... their Obesity, …their Pain, …their Values"**
11:40	Lunch
12.15	Dr. Brendan O' Shea (The Bridge Medical Centre, Newbridge) **"Overweight and Arthritis - Getting the most from your medical consultations"**
12:45	**"ICPO - Lived Experiences"**
13:15	Submitted Abstracts

Conference Speakers

Professor Carel le Roux
Professor of Experimental Pathology
University College Dublin

Professor Carel le Roux graduated from medical school in Pretoria South Africa and completed his specialist training in metabolic medicine at the St Bartholomew's and Hammersmith hospitals. He obtained his PhD from Imperial College London where he later took up a faculty position. He moved to University College Dublin for the Chair in Chemical Pathology and Metabolic Medicine and he is now a Director of the Metabolic Medicine Group. He also holds the position of Professor of Metabolic Medicine at Ulster University and Extra-ordinary Professor of Chemical Pathology at University of Pretoria. He currently coordinates an Innovative Medicine Initiative project on obesity. He previously received a President of Ireland Young Researcher Award, Irish Research Council Laurate Award, Clinician Scientist Award from the National Institute Health Research in the UK, and a Wellcome Trust Clinical Research Fellowship for his work on how the gut talks to the brain.

Dr. Noel McCaffrey
Owner and CEO of ExWell Medical

Dr Noel McCaffrey is founder and CEO of ExWell Medical, a social enterprise that offers structured, medically-led exercise programmes in community settings to people with diverse chronic illnesses, on referral from health care professionals. He developed a Masters Programme in Sports and Exercise Medicine in University College Dublin in the early 1990's before spending 12 years in Dublin City University where he led the growth of ExWell's predecessor programme. In 2019 he left DCU to drive the national rollout of ExWell.

He is a consultant in Sports Medicine in Cappagh National Orthopaedic Hospital where he runs a musculoskeletal injury clinic and is also a Foundation Fellow of the Faculty of Sports and Exercise Medicine. In 2022 he was named as a United Nations 2022 Healthy Ageing Top 50 World Leader

His main passion is ExWell and he is committed to the mission of making the service available through partnerships to everyone in Ireland and beyond who would benefit from it.

Dr. Colin Dunlevy
Clinical Specialist Physiotherapist in Obesity Care
St Columcille's Hospital, Loughlinstown

Dr. Colin Dunlevy is a Clinical Specialist Physiotherapist in Obesity Care at St Columcille's Hospital, Loughlinstown. He has worked in this field since 2008. Areas of interest are physical function, pain management and sleep disordered breathing. He was one of the lead authors for Clinical Practice Guideline for the management of obesity in Ireland (2022).

Dr Brendan O' Shea
GP and Occupational Medicine Physician
The Bridge Medical Centre, Newbridge

Dr Brendan O'Shea, MD FRCGP, is a GP and Occupational Medicine Physician at The Bridge Medical Centre, Newbridge, and Assistant Adjunct Professor at Trinity College Dublin. Academic interests include improving care for people with multimorbidity, end of life planning, health system innovation, obesity, and global health; areas he has taught on and researched. Graduating from Trinity College, he completed his GP Specialty Training on the TCD GP Training Scheme and completed an MD Thesis on Childhood Overweight at Trinity. He has previously been on Board of Directors at The Irish Hospice Foundation and on Beyond Stigma and Chair of the Clinical Advisory Group (2019-2023) for the HSE Obesity Program. Over 3 decades in practice in Kildare, he has been involved in the training and education of doctors, including undergraduates, specialty training in general practice, and Continuing Medical Education for Doctors. He is a member at IDsMAiD (Irish Doctors Supporting Medical Assistance in Dying), is currently on Council at the ICGP (Irish College of General Practitioners), Medical Director at K Doc, and was previously Medical Director at the ICGP.

Submitted Abstracts

Design of a Solid Lipid Nanoparticle Coated with Hyaluronic Acid and Containing a Steroid Prodrug for Intra-Articular Treatment of Knee Osteoarthritis

Jinxin Zhang, Ahmad Bahlool, Rumi Khandelia, David J. Brayden

University College Dublin, School of Veterinary Medicine

The pathogenesis of osteoarthritis (OA) affects multiple locations in the knee joint. Unfortunately, current therapeutics treatments for OA are limited and not disease-modifying. For example, paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs) are used to relieve the symptoms of OA through oral administration. However, long-term use of these drugs leads to systemic side effects. Intra-articular (IA)-administered substances including glucocorticoids and hyaluronic acid have short duration with sub-optimal efficacy, and repeat injections also increase the risk of infection. Our hypothesis is that Dexamethasone Palmitate (DXP, a steroid prodrug)-entrapped solid lipid nanoparticle coated with hyaluronic acid (DXP-HA-SLNs) may help solve these problems by combining two useful agents with prolonging release in the joint following IA administration, thus requiring fewer injections than current options. The overall aim of this study is to design a fabrication process for DXP-HA-SLNs. Dex-HA-SLNs and DXP-HA-SLNs were synthesized manually by hot homogenization. The subsequent coating of HA onto SLNs was achieved by electrostatic interaction by adding it to the drug-loaded SLNs suspension. Conventional syntheses of SLNs have limitations, which can lead to inconsistent high polydispersity index (PDI) and nanoparticle sizes. Hence, a microfluidic device (Ignite®, Precision Nanosystems Inc.) was used to rapidly synthesise these nanoparticles in a more throughput consistent fashion compared to manual synthesis. DXP-SLNs were synthesised with a mean size of 515 nm and a high PDI of 0.54 using the manual method. Using microfluidic synthesis however, the size of DXP-SLNs decreased to 154 nm with a tighter PDI of 0.2. HA-coated with Dex-SLNs and DXP-SLNs was also achieved, as indicated by negative zeta potentials. We have therefore created a promising prototype nanoparticle containing a DXP and HA that may be eventually be suitable for IA injection in animal models of knee OA.

Do obesity pharmacotherapeutics have a role in psoriatic disease management? A scoping review

Eva McCabe[1], Carl Orr[1], Donal O'Shea[2], Ursula Fearon[1], Doug Veale[1]

1. *Centre for Rheumatic Diseases Group*
2. *Obesity Immunology Group, UCD*

Background
1 in 3 patients with psoriatic arthritis (PsA) also have obesity. In PsA, obesity correlates with higher disease activity, disability and inflammatory markers. Adipose tissue drives inflammation by increasing pro-inflammatory modulators such as TNF alpha, IL-17, IL-12 and IL-23, all therapeutic targets in psoriatic disease. Increased mechanical loading and microtrauma as a consequence of obesity may also influence PsA disease activity. Medications licensed for obesity include GLP-1 agonists liraglutide, semaglutide, exenatide and tirzapatide; orlistat, naltrexone, bupropion, phentermine, topiramate and metformin. GLP-1 agonists in particular have been linked to improvements in psoriasis, however, their influence on PsA activity is not yet known.

Objective
To investigate the role of obesity medications in the management of psoriatic disease

Methods
Systematic searches of PubMed, Medline, Embase, Cochrane and Scopus were conducted using PRISMA guidelines. Studies which included subjects with PsA or psoriasis who were exposed to obesity medications were included. Particular interest was given to studies which reported outcomes of psoriatic disease activity and treatment response.

Results
Of the 130 papers identified, 23 studies met the inclusion criteria. Results were heterogenous and limited including small randomized controlled trials, cohort studies, case reports and basic science research. Of note, only one limited study included PsA patients (n = 4) which examined disease activity in response to liraglutide. Several small studies showed improvements in psoriasis severity and quality of life measures in response to GLP-1 agonists and metformin. Bupropion has been associated with severe erythrodermic psoriasis reactions and should be used with caution in this group.

Conclusions
Data examining the role of obesity medications in psoriatic disease is very limited. Some preliminary work has addressed GLP-1 agonists in PsO showing positive signals but PsA was not addressed. Larger longitudinal studies are needed to further investigate the role of these medications in psoriatic disease.

Multidimensional Pain Profiling In People Living With Obesity: An Interim Analysis Of Baseline Data For A Longitudinal Cohort Study

Natasha S. Hinwood[1,2], Colin G. Dunlevy[3], Catherine Doody[1], Catherine Blake[1,2], Brona Fullen[1,2], Jean O'Connell[3], Carel W. Le Roux[4], Clare Gilsenan[5], Francis M. Finucane[6,7], Gráinne O'Donoghue[1], Keith M. Smart[1,2,8]

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2. *UCD Centre for Translational Pain Research, University College Dublin, Dublin, Ireland*
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5. *Physiotherapy Department, Beaumont Hospital, Dublin, Ireland*
6. *School of Medicine, College of Nursing and Health Sciences, University of Galway*
7. *Bariatric Medicine Service, Centre for Diabetes, Endocrinology and Metabolism, Galway University Hospitals*
8. *Physiotherapy Department, St. Vincent's University Hospital, Dublin, Ireland*

Introduction:
People living with obesity (PwO) experience pain and pain related-disability yet tend to respond less well to pain treatments or management compared to people without obesity.

Aim of the investigation:
Through this study, we aim to gain deeper insights into the complex relationship between obesity and pain.

Methods:
This is an ongoing longitudinal observational cohort study recruiting PwO attending a multidisciplinary weight management service (WMS) in Ireland. Participants complete questionnaires assessing their multidimensional biopsychosocial pain experience at baseline and at 3, 6, 12 and 18-months post-recruitment. An interim analysis was performed on baseline results of participants recruited between February 2022 and January 2023.

Results:
Descriptive statistics were performed on baseline data from participants (n=248) recruited from three WMS. Results indicated 79% of participants (n=237) reported experiencing pain, with 53% (n=127) with scores indicating the presence of central sensitisation and 32% (n=77) reporting severe-to-extreme central sensitisation symptoms. Further analysis revealed up to 19% (n=47) reporting scores indicating clinically relevant level of pain catastrophizing and up to 5% (n=12) of participants reporting scores indicating the presence of kinesiophobia.

Discussion:
At baseline, the results from this interim analysis suggest a high prevalence and complexity of pain. Further analysis needed to characterise the multidimensional biopsychosocial pain profiles of PwO, as well as the baseline prevalence of neuropathic pain and baseline prevalence of nociplastic pain.

Ethics:
The study has been approved by the Ethics and Medical Research Committee of St Vincent's Healthcare Group, Dublin, Ireland (Reference No.: RS21-059) and by the Galway Clinical Research Ethics Committee on Wednesday 14th September 2022 (reference no: C.A. 2865).