Project Details	
Project Code	MRCNMH26Ba Barry
Title	Multi-method exploration into psychosocial contributors to pain across the lifespan
Research Theme	NMH
Project Type	Dry lab
Summary	Chronic pain is the costliest health problem that exists. Our understanding of the psychological and social processes that explain why some people are particularly impacted by their pain and others aren't, remains poor. This is especially true among people who are underrepresented in research and overrepresented in clinics (e.g., people from minority ethnic backgrounds, people with lower socioeconomic status, etc.). This project will use a big data, machine learning approach to understanding how psychosocial factors contribute to pain impact at the intersection between economics, ethnicity, age and gender, while complementing this with insights from people with lived experience of pain.
Description	Chronic pain affects 34% of the UK population (Public Health England, 2020). This significant public health issue needs multimethod exploration to understand trajectories, risk, and impact specific to intersecting social identities linked with wellbeing and mental health outcomes (Macgregor et al., 2023, BJPain). Current pain research calls for more rigorous integration of intersectional-lifespan models to address these disparities, their consequences and intervention planning (Boerner et al.,2024, Neuro. Bio. Beh. Rev.; Dunn, 2010, BMC Musc. Dis.). In particular, there is a need for research into the gender-related psychosocial processes that are related to pain and the other social identities and lifespan developments that intersect with it. Accumulating evidence shifts the understanding of gender-related processes in pain from a biomedical to a biopsychosocial perspective (Keogh, 2022, Pain). Yet, gender-related factors are still confined to demographic or post-hoc analyses (Keogh, 2025, Curr. Op. Psych.). Social identities and lifespan developments (biologically, socially and/or psychologically driven) can intersect with gender to influence pain and identify those at risk for higher impact. E.g., lower socioeconomic position (SEP) and cumulative financial hardship result in higher menopause symptom burden (Thurston et al., 2025, Nat. Rev. Psych.) and earlier onset (Lawlor et al., 2003, BJOG). This associates with increased chronic pain prevalence and poorer mental health (Lund et al., 2025, Pain). Prospective UK evidence shows less educated women as more likely to report chronic regional pain, while less educated men were more likely to report chronic widespread pain than their more educated counterparts. Financial hardship in early adulthood, and across the life course, is also associated with later-life widespread pain (Jay et al., 2019, BMJ Open). Geospatially, living in areas with high levels of health deprivation is associated with increased risk high impact pain development (Jordan et al., 2008, Pain; Lynch et al., 2023, Eur. J. Pain), while living in rural areas with low SEP show poorer pain outcomes than any other group (Zimmer et al., 2021, Pain). Research with racially minoritised groups across such intersects demonstrate disparities related to prevalence, severity, and management (Newman and Thorn,

	2022, Pain; Letzen et al., 2022. J Pain). And yet, little is known about how gender and these lifespan, socioeconomic, geographical or racial factors intersect with one another to affect pain because researchers in this area have rarely taken advantage of the large datasets needed to explore these complex issues. The current project will fill this gap by taking a multi-method approach to develop intersectional-lifespan models of pain. It will combine "big data" and qualitative investigation to provide depth and validation of findings with actionable insights. It will do this by taking pre-existing large general health datasets to assess intersecting determinants of chronic pain via advanced machine learning and data linkage methods. This will enable group-level analysis of pain across temporal and spatial dimensions. Inclusion of qualitative methods will provide necessary context leading to more informed recommendations. Combined results of such analyses will enable a predictive, clinically relevant model without sacrificing generalisability or granularity. The prospective candidate will steer the project from the outset, determining the variables of interest and analytical approaches to be taken, within the scope of achieving the following objectives: 1) To understand gender-related psychosocial and geospatial contributions to the development and maintenance of pain impact across the lifespan. 2) To identify key intersections and candidate processes for intervention planning.
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