INTERCALATED MPHIL PROPOSAL FORM

To be completed by proposed MPhil supervisor

PROJECT TITLE:

Eliminating pain in farmers in the poorest corners of the world: a systematic review and meta-analysis of pain disorders in agricultural workers in low to middle income countries.

Key Words

Rheumatic and Musculoskeletal Disorders, Agricultural workers, Farmers, low to middle income countries, systematic review

Which clinical speciality does the project link to? (e.g. primary care, rheumatology, anaesthetics)

Rheumatology, Global health, Rural health, Primary care, Orthopaedics, Rehabilitation

Theme/Group under which the MPhil proposal will be reported

Global health

Importance of this research, fit with current priorities and relevance to the RI's programme of work.

This MPhil project compliments existing work in the RI and the global health research programme which aims to develop our understanding of musculoskeletal conditions in vulnerable or marginalised populations in low to middle income countries. This work is critical for the identification of priority areas for intervention development and delivery as part of future funding applications.

STUDY TEAM:

Name	***Discipline***	***Role within study team***	***MPhil supervisory role***
Dr Tom Shepherd	Global health	Research Associate	Lead supervisor
Dr Toby Helliwell	Global health, Primary care	Clinical Lecturer in General Practice	Second supervisor
Prof Christian Mallen	Global health, Primary care	Professor of General Practice	Third supervisor

LAY SUMMARY

Rheumatic and Musculoskeletal Disorders (RMD) such as low back and neck pain, are the leading causes of disability worldwide. RMDs not only cause significant problems for individuals and their families, but they also have a major economic and societal impact through reduced productivity, time lost from work and lost income. RMDs often effect the poorest in society and those who work in high risk industries, such as agricultural workers, where the preventive and health related safe guards may not be in place. Through the completion of a systematic review and meta-analysis, this project will determine the estimated prevalence and burden of RMDs in farmers from low to middle income countries and will inform priority areas for intervention development and delivery in some of the world most marginalised populations.

RESEARCH QUESTION/BACKGROUND/OBJECTIVE/METHODS

Research question

What is the prevalence and burden of rheumatic and musculoskeletal disorders in agricultural workers in low to middle income countries?

Background

The global burden associated with rheumatic and musculoskeletal disorders (RMD) such as low back pain (LBP) and neck pain (NP) is exceptionally high. The Global Burden of Disease (GBD) study (2010) showed that RMDs represent 1.3% of the total years lived with disability (YLD) in the world and are the fourth greatest burden on the health of the world's population accounting for 6.7% of the total global disability-adjusted life years (DALY). These conditions may particularly affect the poorest in society, and those working in industries that are high risk, such as agricultural workers, where preventative safeguards and health and safety standards may be suboptimal. RMDs not only cause significant problems for individuals and their families but also have a major economic and societal impact through time lost from work, lost income and reduced productivity. With the growth and aging of the world's population the burden associated with RMDs will dramatically increase.

RMDs in agricultural workers may be particularly prevalent in low to middle income countries (LMICs) for two reasons. Firstly, RMDs are typically managed in primary care - services which are often fragmented and under resourced in LMICs, especially in rural localities where agricultural workers reside. Secondly, in many LMICs, the majority of agricultural-related tasks are still carried out manually, without the assistance of machinery as in higher income settings (Dangour, Green, Hasler, Rushton, Shankar & Waage, 2012; World Bank, 2010). Agricultural work represents one of the most common employment sectors in LMICs and contributes significantly to national Gross Domestic Product (GDP). Maintaining a healthy workforce helps to support time spent in work, productivity and consequently, economic growth.

Understanding the prevalence of RMDs and their associated burden in marginalised populations, such as agricultural workers in resource poor countries can highlight priority areas for prevention and early intervention development.

Objectives

1) Complete a comprehensive systematic review of the literature which has explored the prevalence and burden of RMDs in agricultural workers in low to middle income countries.
2) Conduct a meta-analysis of prevalence and burden data to produce synthesised estimates
3) Using results from objective 2, formulate priority areas for future intervention development

Methods

The proposed project will be comprised of 3 stages:

1) Develop systematic review protocol:

The candidate will develop a full systematic review protocol at the start of the MPhil year and work closely with the supervisory and systematic review team during this period. The candidate will develop all components of the review protocol (*Database selection; search protocol development; inclusion/exclusion criteria selection; data extraction tool creation and quality assessment*).

2) Systematic literature review:

The candidate will manage and conduct the systematic review using Covidence (www.covidence.org) software. The candidate will filter out articles on the basis of the inclusion and exclusion criteria. The lead supervisor (Shepherd) will act as the second reviewer during the article

filtering process. Discrepancies about whether articles should be included/excluded will be referred to another member of the supervisory team (Helliwell). The candidate will develop a data extraction tool which will be piloted with a few relevant articles before starting the full extraction. Extracted data will be validated by the supervisory team (Shepherd/Helliwell).

3) Meta-analysis:

The candidate will conduct a meta-analysis of the prevalence data on RMDs and their associated burden in agricultural workers. Heterogeneity will be assessed using the Cochran Q test and quantified using the I^2 statistic. Depending on the outcome of the heterogeneity assessment either random or fixed effect model will be used to pool extracted prevalence and burden estimates. If the data permits, further subgroups analysis will be conducted to stratify the prevalence and burden estimates by factors such as age, gender region, pain location and type of farming.

PROPOSED STUDY TIMETABLE (outline the plan of work and when key events (e.g. first full draft of thesis, viva) will occur within the 12 month period)

1-– Write systematic literature review protocol
2 - 6 – Conduct systematic literature review
7-10 – Conduct meta-analysis of prevalence estimates
10 -11 – Submit draft version of thesis to supervisors for comments (chapter writing will occur continuously throughout the MPhil year).
12 – Submit final version of thesis

Research Training Plan (provide detail on proposals for formal and informal training provision. Outline any additional costs (if any), and how these may be met.)

Attendance at systematic review workshops hosted by the systematic review team with the RI.
Attendance at meta-analysis workshops within the RI.
Attendance at relevant journal clubs (e.g. statistics and epidemiology); global health and mental health research programme meetings; and internal and external seminars.
Informal training will be offered by the supervisory team in the use of Covidence software to manage the review (article filtering and data extraction).
Monthly meetings will be held with the supervisory team, extra meetings for further support can be added/arranged as necessary.
Further appropriate training will be identified by the supervisory team or the candidate through the course of the MPhil.

Feasibility of the proposal as an Intercalated MPhil: (What makes this a good Intercalated MPhil, provide detail on existing data/resources that will be accessed).

This is a feasible study for an intercalated MPhil. Data will be provided by existing publications. No ethics or regulatory approvals are required reducing the chance of delays. The candidate will be exposed to conditions which are the leading cause of disability worldwide, global health research priorities and develop skills and knowledge around systematic reviews and meta-analysis.
As well as obtaining an MPhil qualification through the completion of this work, the candidate will also have the opportunity to publish the work in a peer-reviewed journal and present at an academic conference. The supervisory team have a wide range of research and methodological expertise to support the candidate with the operation and completion of this work.

References