

Impact case study (REF3)

Institution: University of Greenwich		
Unit of Assessment: 3 - Allied Health Professions, Dentistry, Nursing and Pharmacy		
Title of case study: Impact of research on the assessment, management and perception of pain on national and international professional body guidance, government policies and practice in the UK, New Zealand and US to improve long term outcomes for older people and those with mental and neurological disorders.		
Period when the underpinning research was undertaken: January 2012 – May 2017		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Prof Pat Schofield Dr Sandhiran Patchay	Professor of Nursing Associate Professor in Psychology	09/01/2012 – 30/09/2015 01/09/2003 – present
Dr Trevor Thompson	Associate Professor of Clinical Research	18/08/2008 – present
Period when the claimed impact occurred: January 2014 - December 2019		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Research on chronic and acute pain at the University of Greenwich has had significant and wide reaching local, national and international impact on health and wellbeing: contributing to professional clinical guidelines on the assessment and management of pain, the use of technology for pain assessment and monitoring, and the perception of pain in ageing populations and those with mental and neurological disorders. The work has directly impacted on policy and practice guidelines internationally: the New Zealand Government Health and Quality Commission; the US National Council on Ageing; the UK Royal College of Anaesthetists; the UK British Pain Society; the UK British Geriatrics Society; and the UK Chartered Society of Physiotherapy. These bodies provide authoritative guidance and policy that inform clinical practice and decision making across a wide range of healthcare fields.</p>		
2. Underpinning research		
<p>Chronic pain affects 35-50% of the population and prevalence increases with age. Pain can significantly decrease quality of life and increases other health risks. An ageing global population with improved survival rates will lead to increases in prevalence of people living with chronic conditions and pain, placing demands on healthcare professionals needing to treat affected individuals. The Centre for Chronic Illness and Ageing, led by Dibley as part of the Institute for Lifecourse Development (ILD), was created to support and further develop our research in assessment and management of chronic illness and pain which has been a priority area at the University of Greenwich since 2012. Our programme of research covers a range of robust methodological approaches intended to develop better evidence-based approaches to achieve improved patient outcomes. Research in this area was initiated by Schofield (at the University of Greenwich until 2015) who led the Centre for Positive Ageing which is now incorporated in the Centre for Chronic Illness and Ageing. The work has been continued since 2015 at the University by Thompson and Patchay together with more recently appointed staff undertaking ongoing chronic illness and pain research and practice within the centre, including Dibley working on chronic pain in Adolescent Idiopathic Scoliosis.</p> <p>Our research has addressed the link between chronic pain and increased risk of falls in older people and those with musculoskeletal pain (Schofield and Patchay); the value of Pain Neurophysiology Education (PNE: a specific technique for those with chronic pain) (Schofield); chronic pain assessment and novel ways of capturing the daily impact of chronic pain (Schofield); and alterations in the perception of acute pain in people with mental and neurological disorders (Thompson). The work is thus relevant across people of all ages enduring chronic or acute pain with long-term chronic conditions.</p>		

Research on pain and the risk of falls

Annually, 100,000 people (aged 65+) in the UK and over 300,000 in the USA suffer hip fracture due to a fall, often leading to additional physical and mental health problems: as people become afraid to leave home for fear of a further fall, they become increasingly socially isolated. **Schofield** has, via cross-institutional collaborations with colleagues in the Netherlands and Canada, published several papers in this field including an influential systematic review with meta-analysis demonstrating the relationship between chronic musculoskeletal pain and increased risk of falls in older adults [3.1], and a cross-sectional study (n=295) assessing the potential for using a pain inventory to identify those most at risk [3.2]. These studies identified that chronic pain was strongly associated with recurrent falls in older adults [3.1], and that the already-validated Brief Pain Inventory can identify those most at risk of falling [3.2]. **Patchay** continues to extend this work with projects exploring gait initiation to further understand fall risk in older adults.

Research on the assessment and management of pain

In a systematic review with meta-analysis, **Schofield** and collaborators compared different forms of pain education [3.3], evidencing that PNE increases patients' knowledge about pain and reduces catastrophising. In mixed methods empirical research, **Schofield** has also made methodological advances in chronic pain studies via the innovative use of the SenseCam, a piece of wearable technology [3.4], which revealed insights into movement and activity patterns of older adults living with chronic pain at home.

Research on clinical assessment and practice relating to pain and mental and neurological disorders

Depression is one of the leading causes of disability worldwide, with 24% of women, and 13% of men in the UK being diagnosed in their lifetime. Schizophrenia affects 1 in 100 people during their lifetime; 25% recover completely, 50% improve with either few or moderate numbers of relapse episodes; of the remaining 25% who endure a chronic course with little or no improvement, 10% will die – usually by suicide. **Thompson** has extended the breadth of pain research at the University, clarifying the effect of mental (schizophrenia, depression) and neurological (Parkinson's disease) disorders on the sensitivity to and perception of acute pain, and had particular impact via three systematic reviews with meta-analyses [3.5, 3.6, 3.7], co-authored with UK NHS colleagues, and researchers in Belgium, Brazil, Italy, and the USA. These studies determined that: decreased pain sensitivity is evidenced as a likely endophenotype of schizophrenia spectrum disorders [3.5]; while in depression, pain perception appears to be decreased (higher threshold / tolerance) by cutaneous (skin) stimulation, but increased (lower threshold/tolerance) by ischaemic (reduced blood, and therefore oxygen, supply to tissues) stimulation [3.6]. In contrast, patients with Parkinson's disease demonstrate hypersensitivity to pain when under-medicated with dopamine, suggesting a dopamine deficiency as an underlying mechanism for pain perception in the wider population [3.7].

3. References to the research

1. Stubbs B, **Schofield P**, Binnekade T, **Patchay S**, Sepehry AA, Eggermont L. Pain is associated with recurrent falls in community-dwelling older adults: evidence from a systematic review and meta-analysis. *Pain Medicine*, 2014; 15(7): 1115–28. <https://doi.org/10.1111/pme.12462>
2. Stubbs B, Eggermont L, **Patchay S**, & **Schofield P**. Older adults with chronic musculoskeletal pain are at increased risk of recurrent falls and the brief pain inventory could help identify those most at risk. *Geriatrics & Gerontology International*, 2015; 15(7): 881-888. <https://doi.org/10.1111/gqi.12357>
3. Geneen LJ, Martin DJ, Adams N, Clarke C, Dunbar M, Jones D, McNamee P, **Schofield P**, Smith BH. Effects of education to facilitate knowledge about chronic pain for adults: a systematic review with meta-analysis. *Systematic Reviews*, 2015; 4(1): p.132. <https://doi.org/10.1186/s13643-015-0120-5>
4. Wilson G, Jones D, **Schofield P**, Martin D. The use of the Sensecam to explore daily functioning of older adults with chronic pain. *Proceedings of the 4th International SenseCam & Pervasive Imaging Conference*, 2013; 76–77. <https://doi.org/10.1145/2526667.2526679>

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5. Stubbs B, **Thompson T**, Acaster S, Vancampfort D, Gaughran F, Correll CU. Decreased pain sensitivity among people with schizophrenia: a meta-analysis of experimental pain induction studies. *Pain*. 2015; 156(11):2121-31. <https://doi.org/10.1097/j.pain.0000000000000304>
6. **Thompson T**, Correll CU, Gallop K, Vancampfort D, Stubbs B. Is pain perception altered with depression? A systematic review and meta-analysis of experimental pain research. *The Journal of Pain*, 2016;17(12):1257-1272. <https://doi.org/10.1016/j.jpain.2016.08.007>
7. **Thompson T**, Gallop K, Correll CU, Carvalho AF, Veronese N, Wright E, Stubbs B. Pain perception in Parkinson's disease: A systematic review and meta-analysis of experimental studies. *Ageing Research Reviews*, 2017; 35:74-86. <https://doi.org/10.1016/j.arr.2017.01.005>

Indicators of research quality:

- All but one reference has been published in international **peer-reviewed academic journals**, indicating an overall international quality or above.
- **Grant:** Output [3.4] was supported through wider project funding from the MRC, Lifelong Health and Wellbeing Grant, UoG (Schofield): collaborator, ID 91029, UK, Feb 2010- July 2014, GBP1.6m.

4. Details of the impact

The research undertaken at the University on pain assessment and management across different populations has informed national and international policy, and raised professional and public awareness of the relationship between pain and falls in older people, and of pain in those with common mental and neurological disorders. The research has provided best available evidence to support guidelines across a range of leading organisations. These guidelines are widely used by practitioners and correspondingly our work will improve standards of assessment and therapeutic interventions related to pain.

Impact on the development of UK and international assessment of the risk of falls in the elderly

Research by **Schofield** and **Patchay** [3.1, 3.2] has had wide-ranging impact on assessments of the risk of falls. Their key paper [3.1] was directly cited in the 2017 **New Zealand Health Quality and Safety Commission's** guidance for health care professionals [5.1] which highlights the importance of pain assessment as part of the risk assessment for falls of older people. The New Zealand Health Quality and Safety Commission has wide legal duties to assist providers and thereby improve outcomes for users under the New Zealand Public Health & Disability Amendment Act 2010, aimed at improving quality and safety across the public and private health and disability sectors. The same paper [3.1] was also the sole reference used when advising professionals, older adults, caregivers, and advocates in an Issue Brief from the **United States based National Council on Ageing**, that the risk of falls was higher in people with foot and chronic pain [5.2]. The US National Council on Ageing has a nationwide role in provision of care for seniors enshrined in the Affordable Care Act (2010) and aims to improve the lives of 10 million older adults, receiving \$50M in government funding in the year 2018-2019. The Issue brief from the Council aimed to educate providers in its scope on chronic pain in older adults, the role of evidence-based programs in pain management, and strategies for pain self-management. The paper [3.1] has also been cited on the public-facing website for the journal **Practical Pain Management** [5.3] supporting an article about the link between multi-site pain and risk of hip fractures on older people. The work of **Schofield** and **Patchay** has also had impact in the UK on the **Faculty of Pain Medicine (FPM)** in the **Royal College of Anaesthetists (RCA)**, working with the **British Pain Society (BPS)**. In their joint Outcome Measures guidance document of 2019 [5.4], a project also supported by the NHS national clinical reference group on pain, item [3.2] was cited as the sole evidence to recommend using the Brief Pain Inventory for identifying older people at risk of falls. The RCA is a professional body with national responsibility for the quality of patient care related to anaesthetics, with 23,000 fellows and members; the Faculty of Pain Medicine (FPM) within the RCA provides authoritative guidelines for practice. The BPS has 1200 members and an annual income in 2019 of around £500,000; it is the oldest and largest UK multidisciplinary professional organisation in the field of pain and is the British Chapter of the international global

and European pain organisations (the International Association for the Study of Pain and European Pain Federation). The stated aim of the guidance was to “guide pain services across the country in selection of the most appropriate outcome measures for their needs”. A further impact of the research on pain and falls was via the **European Commission funded “Farseeing” project**, with 10 partners distributed in 5 EU countries aiming to promote better prediction and prevention of falls in older adults. The project developed a falls risk assessment tool, FRAT-UP, referencing the research [3.1] as a reason to include pain in the tool [5.5]. The Farseeing project has also been recognized as having significant international impact beyond academia.

Impact on the development of UK national guidelines on assessment and management of pain

Other research by **Schofield [3.3, 3.4]** has been used to inform the development of two national guidelines on pain management, with [3.3] the sole citation used in the national guidelines for health care professionals on the **Management of Pain in Older Adults [5.6]**. This supports the use of **Pain Neurophysiological Education (PNE)** to improve outcomes for patients with chronic pain, by decreasing their disability and increasing their psychological coping and knowledge about persistent pain. These guidelines have then been endorsed by the **British Pain Society (BPS)**, giving these guidelines wide reach and high level of authority; the guidelines were also welcomed by the Chair of the **Royal College of Nursing Pain and Palliative Care Forum [5.7]**. **Schofield’s** paper [3.4] was also the sole citation used to support the use of innovative technology to augment self-report measures of chronic pain in the **National Guidelines for the Assessment of Pain in Older Adults (2018) [5.8]**, aimed at all health professionals. These guidelines are given by the **British Geriatrics Society**, the national organisation for professionals specialising in the health care of older people in the UK, founded in 1947 and with 4300 members. In line with the reach expected for such guidelines, article metrics show it was viewed online over 25000 times at the journal, downloaded from there over 5000 times, and mentioned in 136 tweets (https://academic.oup.com/ageing/article/47/suppl_1/i1/4944054). These National guidelines, based on best available evidence, will increase the standard of assessment and therapeutic intervention by providing a benchmark against which services can be assessed.

Impact on potential for technological innovation in pain assessment

Schofield’s research on Sensecam [3.4] was also used as evidence for the potential role of technological innovation in pain assessment in the **British Geriatrics Society’s** (please see above) **Assessment of Pain in Older People: National Guidelines 2nd edition [5.8]**. The research also contributed to the general evidence base for this technology, which an article in the Guardian (<https://www.theguardian.com/technology/2014/aug/09/how-wearable-cameras-can-help-those-with-alzheimers>) presented as an example of a positive influence of technology. For instance, SenseCam and subsequent improvements support individuals with dementia or amnesia, and were used in commercialization ventures, such as the Vicon Revue version and investments by Microsoft [5.9a]. The connection of this commercialisation to the research is shown by the citation of their paper [3.4] and involvement of the researchers in a SenseCam symposium in September 2010 sponsored by Microsoft and Vicon Revue [5.9b]. An educational impact is an ongoing PhD project on this technology at the University.

Impact on national clinical assessment and practice guidance relating to acute pain and mental and neurological disorders

Papers by **Thompson** on pain sensitivity and perception in schizophrenia and depression [3.5, 3.6] are exclusively used to evidence altered pain perception in patients with mental disorders, in the document ‘A guide for physiotherapists not specialising in mental health’ endorsed by the UK **Chartered Society of Physiotherapy [5.10]**, the professional, educational and trade union body for the United Kingdom’s 57,000 chartered physiotherapists, physiotherapy students and support workers. The document provides physiotherapists with guidance and tips for preparing for and providing physiotherapy interventions to people with mental disorders who may also be experiencing chronic pain. **Thompson’s** work on pain in Parkinson’s Disease [3.7] has been included by the **National Institute for Health and Care Excellence (NICE)** in its evidence database [5.11]. Finally, **Thompson’s** work [3.5] has further been used in a clinical practice article

in the Nursing Times, aimed at mental health nurses, as evidence of altered pain perception in people with schizophrenia who need dental care [5.12].

5. Sources to corroborate the impact

1. Health Quality and Safety Commission New Zealand (2017) - Falls Risk Assessment: A Multifactorial Approach - https://www.hqsc.govt.nz/assets/Falls/10-Topics/2017_Topic_3_-_Falls_risk_assessment_-_a_multifactorial_approach.pdf Item [1]: sole citation to evidence the association between pain and falling regularly (p.6)
2. National Council on Aging (2018) - Implementing Evidence-Based Programs to Address Chronic Pain; see p. 3 (reference 16). <https://www.ncoa.org/article/implementing-evidence-based-programs-to-address-chronic-pain>
3. Practical Pain Management article. <https://www.practicalpainmanagement.com/resources/news-and-research/multi-site-pain-may-be-associated-fractures-elderly>
4. Outcome Measures guidance document. https://www.britishpainsociety.org/static/uploads/resources/files/Outcome_Measures_January_2019.pdf p.17. See p18 for confirmation of the use of the Inventory to detect risk of falls
5. Reference 35 in the related paper, Cattelani et al. (2015), FRAT-up, a Web-based Fall-Risk Assessment Tool for Elderly People Living in the Community. Journal of Medical Internet Research. <https://www.jmir.org/2015/2/e41/#References>. See also <http://farseeingresearch.eu/2018/05/18/farseeing-selected-as-one-of-top-3-most-influentialhigh-impact-projects>
6. (a) Dunham, Schofield and Knaggs (2020). Evidence-based clinical practice guidelines on the management of pain in older people – a summary report. British Journal of Pain 1 –8, <https://journals.sagepub.com/doi/pdf/10.1177/2049463720976155>. (b) National Guidelines for the Management of Pain in Older Adults (2019), https://www.britishpainsociety.org/static/uploads/resources/files/National_Guidelines_for_the_Management_of_Pain_in_Older_Adults_Consultation_Doc.pdf; p.37. Supporting statement from Chair RCN Pain and Palliative Care Forum on Page 4 of this document.
7. Statement by the Chair of the Royal College of Nursing Pain and Palliative Care Forum. <https://doi.org/10.1093/ageing/afx192>, p.i11; also available via the British Pain Society website: <https://www.britishpainsociety.org/mediacentre/news/new-guidelines-for-recognising-and-assessing-pain-in-older-adults/>
8. The Assessment of Pain in Older People: National Guidelines 2nd edition. <https://www.bgs.org.uk/sites/default/files/content/attachment/2018-05-24/The%20Assessment%20of%20Pain%20in%20Older%20People%20UK%20National%20Guidelines.pdf>
9. (a) “Using SenseCam to Alleviate Memory Loss”. <https://www.microsoft.com/en-us/research/project/sensecam/#!alleviating-memory-loss>. (b) “Exploring everyday functioning in older adults with chronic pain: new insights with new technology” in Proceedings of the Second Annual SenseCam Symposium (SenseCam 2010) . https://www.microsoft.com/en-us/research/wp-content/uploads/2016/11/SenseCam2010_Proceedings_Final.pdf
10. Guide for physiotherapists, page 4 and 5: https://www.csp.org.uk/system/files/publication_files/Guide%20to%20treating%20patients%20with%20a%20mental%20health%20condition.pdf
11. Included in the NICE evidence search database: [Pain perception in Parkinson’s disease: A systematic review and meta-analysis of experimental studies | Document summary | Evidence search | NICE](#) via: <https://www.evidence.nhs.uk>.
12. Nursing Times, p. 22: <https://cdn.ps.emap.com/wp-content/uploads/sites/3/2019/11/191120-Raising-awareness-of-oral-health-care-in-patients-with-schizophrenia.pdf>