# Understanding how patient and general practitioner beliefs and attitudes influence the provision of appropriate care for Australians with osteoarthritis

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# Abstract

***Understanding how patient and general practitioner beliefs and attitudes influence the provision of appropriate care for Australians with osteoarthritis.***

**Background**

Osteoarthritis (OA) is a disabling and costly condition with an escalating prevalence in Australia due to the ageing and increasing obesity of the population. Yet there is growing evidence that Australians with OA are not receiving healthcare that is appropriate. The beliefs and attitudes of healthcare providers and patients are key factors contributing to the gap between the healthcare that patients are receiving and the level and type of care that their medical condition warrants. Despite this, these constructs have largely been ignored as a research topic. The overall aim of this thesis was to contribute to the body of knowledge by investigating how the beliefs and attitudes of patients and general practitioners (GPs) – the main healthcare providers for OA patients, have influenced the provision of appropriate OA care.

Five articles are presented in this thesis, each of which addresses a particular aspect of the research question. The specific objectives of each article are described below: -

Article One aimed to summarise studies that have assessed the appropriateness of OA care using quality indicators (QIs);

Article Two evaluated the satisfaction of Australian OA patients with their healthcare providers and the perceived helpfulness of treatments and information sources;

Article Three investigated complementary and alternative medicine (CAM) use by OA patients and explored reasons for its use;

Article Four examined opinions about the management of OA by Australian GPs following the release of the Royal Australian Guideline for the non-surgical management of hip and knee OA (RACGP OA CPG) and compared the results with an earlier survey undertaken by the National Prescribing Service; and

Article Five investigated GP attitudes to and use of clinical practice guidelines (CPGs) in general, and to a specific CPG for OA – the RACGP OA CPG, with implications for translating OA care into practice.

**Methods**

*Article One*

A systematic review was used to assess the appropriateness of OA care using QIs. Four bibliographic databases were systematically searched, with articles included if they used QIs to assess OA care. Results of these studies were summarised, and using meta-analysis, an overall conclusion about the quality of OA care as measured by QI compliance was determined for four distinct OA treatment categories (pain and functional status assessment, non-drug treatment, drug treatment, and surgical referral).

*Articles Two and Three*

A self-administered survey was conducted with a sample of 560 Australian OA patients using a 19-page, three-part questionnaire. The first section focussed on patient orientated outcome measures and included questions on activities of daily living and an assessment of pain and health status. The second part was used to evaluate patient knowledge about their condition and included multiple-choice questions related to the use of CAM, joint protection, the disease process, drug therapy, and suitable methods for exercise. The final section explored the participants' attitudes towards OA and its management.

Logistic regression models were used to assess potential predictors of patient satisfaction with OA care (Article Two) and CAM use (Article Three), whilst simple thematic analysis was

undertaken in the evaluation of attitudinal factors associated with satisfaction (Article Two) and CAM use (Article Three).

*Articles Four and Five*

GPs were sent an 8-page questionnaire comprising three sections. Part one consisted of a hypothetical, yet typical clinical vignette featuring an elderly woman with moderate to severe OA. Respondents were asked to describe the non-drug therapy they would initiate for her OA, the analgesic regimen they would use, and the information that they would provide their patient. Part two probed attitudes to CPGs in general, and to a specific CPG – the RACGP OA CPG. Part three focussed on practice characteristics, such as staffing, patient follow up, and quality improvement activities.

Descriptive data was presented as counts and percentages for categorical data with 95% confidence intervals (Articles Three and Four). Chi squared tests of significance compared the results between the two surveys (Article Four).

Simple thematic analysis was undertaken to investigate open-text responses (Article Four).

**Results**

*Article One*

Fourteen high quality studies were included in the review. The quality of OA care as assessed by a meta-analysis of QI compliance rates across studies was sub-optimal for all treatment categories (pain and functional status assessment: 49%, 95% CI 33– 65%; non-drug treatment: 36%, 95% CI 28 – 45%; drug treatment: 38%, 95% CI 31– 45%; surgical referral: 79%, 95% CI 57 – 94%).

*Article Two*

435 participants returned questionnaires (response rate 78%).[1] Most respondents were highly satisfied with the care provided by their GPs (84%), but fewer were satisfied with their opportunity to talk freely about the emotional aspects associated with their OA (77%).

1 Also Article Three

Predictors of patient satisfaction with GP care were the amount of time spent with their GP ($p=0.005$), the information GPs provided about what to expect of their condition ($p<0.001$), communication with their GP ($p=0.001$) and drug information provided ($p=0.04$). Patients were highly satisfied with pharmacists (80%), rheumatologists (76%) and orthopaedic surgeons. Joint replacement surgery was rated highly (91%).

*Article Three*

Sixty-nine percent of respondents (95% CI 64 –73%) reported that they had tried CAM, with little difference between age groups and genders. Patients who had a better knowledge of their condition and excellent self-rated health were more likely to use CAM. An aversion to the side effects of conventional medicine, failure to engage in exercise, and a belief in the efficacy of CAM were the principal factors underlying its use.

*Article Four*

Of an initial sample of 228 GPs, 79 returned questionnaires (response rate 35%).[2] GP recommendations for paracetamol, paracetamol/codeine compounds and oral non-steroidal anti-inflammatory drugs (NSAIDs) were consistent with recommendations in the RACGP OA CPG, and varied little from the previous survey. However, there was a marked increase between the initial and subsequent surveys in GP recommendations for tramadol ($p = 0.004$) and more potent opioids ($p<0.001$). For all non-drug treatments, there were only minor changes in the percentage of GP recommendations when compared with the previous survey; they remained underutilised.

*Article Five*

Most GPs considered that CPGs support decision-making in practice (94%) and medical education (92%). Very few respondents regarded CPGs as a threat to clinical autonomy, and most recognised that individual patient circumstances should be taken into account. Shorter CPG formats were preferred over longer and more comprehensive layouts. GPs considered

2 Also Article Five

accessibility to CPGs to be important, with electronic formats being popular. Familiarity with and use of the RACGP OA CPG was particularly poor.

**Conclusions**

By undertaking a systematic review of OA care using quality indicators, my research has reaffirmed the wide divergence between practice and evidence- and consensus-based recommended care. Much of this suboptimal practice can be attributed to the beliefs and attitudes of both the GPs treating patients with OA, and the patients themselves.

With respect to GP behaviour, my research has shown that the mere existence of CPGs for the best practice management of OA does not necessarily lead to appropriate care.
This has been highlighted by the diversity of therapeutic approaches to a typical, but hypothetical case of a patient with OA. For CPGs to remain relevant, they must be easy to access and in a suitable format.

The exploration of patient beliefs and attitudes in my research revealed considerable diversity and much of this arose from how patients perceived the role of ageing in the trajectory of their condition. This, in turn, largely determined the success of their self-management strategies.

My research has emphasised the importance of conveying information about OA and its management that is both reliable and accurate. This is of particularly relevant to CAM, which for many, have limited evidence of efficacy, and little research or data on safety.

Finally, my research has highlighted the underestimation by GPs of the psychological burden of OA. Further effort is needed to address this critical aspect of OA care.

# Declaration

I declare that this thesis presents work carried out by myself and does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and to the best of my knowledge, it does not contain any materials previously published or written by another person except where due reference is made in the text; and all substantive contributions by others to the work presented, including jointly authored publications, is clearly acknowledged.



**Martin Basedow**
**November 2015**

# List of Abbreviations

| | |
|---|---|
| A$ | Australian Dollar |
| ABS | Australian Bureau of Statistics |
| ADL | Activities of Daily Living |
| AIHW | Australian Institute of Health and Welfare |
| BMI | Body Mass Index |
| CAM | Complementary and Alternative Medicine |
| CI | Confidence Interval |
| COX-1 | Cyclooxygenase-1 |
| COX-2 | Cyclooxygenase-2 |
| CPG | Clinical Practice Guideline |
| CTA | CareTrack Australia Study |
| EBM | Evidence Based Medicine |
| EHR | Electronic Health Record |
| GP | General Practitioner |
| HAQ | Health Assessment Questionnaire |
| IPQ-R | Illness Perception Questionnaire – Revised |
| MEDOS | Medical Decision Making in Osteoarthritis Study |
| MeSH | Medical Subject Heading |
| N/A | Not applicable |
| NHMRC | National Health and Medical Research Council |
| NICE | National Institute of Clinical Excellence |
| NPS | National Prescribing Service |
| NSAID | Non-Steroidal Anti-Inflammatory Drug |

| | |
|---|---|
| OA | Osteoarthritis |
| OARSI | Osteoarthritis Research Society International |
| OTC | Over-the-counter |
| PKQ-OA | Patient Knowledge Questionnaire - Osteoarthritis |
| PRISMA | Preferred Reporting Items for Systematic Review and Meta-Analyses |
| QI | Quality Indicator |
| RACGP | Royal Australian College of General Practitioners |
| RCT | Randomized Controlled Trial |
| SCM | Social Cognition Model |
| SD | Standard Deviation |
| STROBE | Strengthening the Reporting of Observational studies in Epidemiology |
| SySADOAs | Symptomatic Slow Acting Drugs for Osteoarthritis |
| UK | United Kingdom |
| US | United States of America |

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I would particularly like to acknowledge the survey participants – general practitioners and osteoarthritis patients, who kindly provided me with the data that was used in this thesis.

Finally, and most importantly, I wish to express my heartfelt thanks to my wife, Fiona, and my children, Imogen and Henry, for their unstinting love, support and tolerance for what has been a long journey.

# Dedication

**To the memory of my mother and father**

| | |
|---|---|
| Marlie Claire Hannaford | 20th March 1927 – 3rd June 2014 |
| Bernhard Frederick Basedow | 28th July 1926 – 13th February 2014 |

# 1. Introduction

> *Failing to provide a patient with appropriate treatment is not good. Providing an unnecessary or inappropriate treatment is also undesirable.*
>
> Runciman, Merry and Walton

## 1.1. Background

Osteoarthritis (OA) is a significant problem for many Australians and its impact is expected to increase considerably over coming decades as the population ages. People with OA largely self-manage their condition in conjunction with their general practitioner (GP) (Brand, Harrison *et al.* 2014). It is a condition where better health outcomes can be achieved if patients and GPs follow the latest evidence-based recommendations for treatment. Yet little is known about the factors that influence both patient and GP adherence to recommended care. In particular, there is limited research into the beliefs and attitudes of patients and GPs with respect to OA and its management (Sanders, Donovan *et al.* 2002; Alami, Boutron *et al.* 2011).

This thesis explores how the beliefs and attitudes of patients and GPs influence the provision of appropriate care for OA.

## 1.2. Osteoarthritis

### *1.2.1. The disease*

OA is a common degenerative disease affecting the whole joint, leading to a gradual decline in health, physical function and wellbeing. All joints may be affected, however, the most common are the hands (particularly the distal interphalangeal joints and the first carpometacarpal joints), cervical spine, lumbar spine, knees and hips (Arden, Blanco *et al.* 2014). This progressive joint failure can cause pain, stiffness and immobility, resulting in disability and compromised quality of life for almost one-third of those reporting the disease (ACI Musculoskeletal Network 2012).

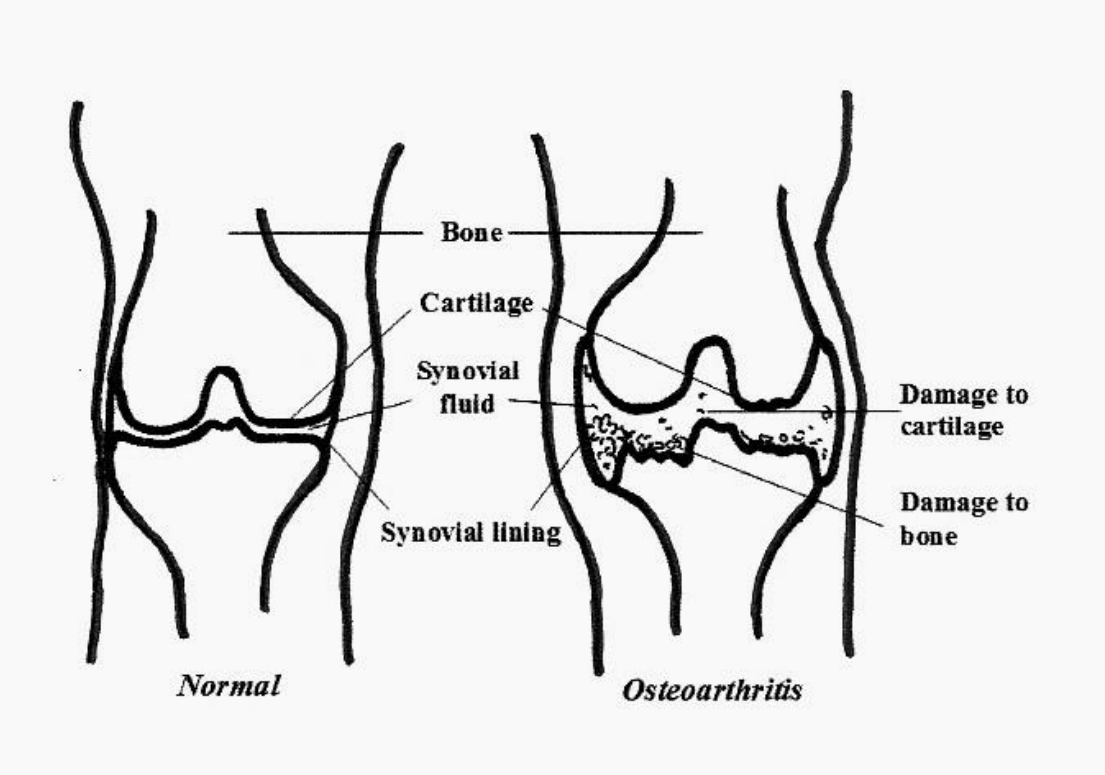


**Figure 1. Comparison of healthy knee joint and one with osteoarthritis**

### *1.2.2. Risk factors*

Analysis of the causes of OA reveals a condition that is multifactorial, with variant forms that likely represent differing disease processes (Garstang and Stitik 2006). Risk factors for OA can be split into two distinct categories: systemic factors, which are associated with the development of OA; and local biomechanical factors which are related to the physical stressors of affected joints (Garstang and Stitik 2006). They are presented in Table 1. A number of these factors, including obesity, joint injury, occupation, sport and physical activity are modifiable and so preventative strategies that limit the onset and progression of OA related disabilities are important.

**Table 1: Risk factors for osteoarthritis***

| Systemic | Local biomechanical |
|---|---|
| Age | Joint injury |
| Ethnicity | Obesity |
| Gender and hormonal status | Occupation |
| Genetics | Sport and physical activity |
| Bone density | Joint biomechanics |
| Nutrition related | Muscle weakness |

* Adapted from Garstang and Stitik, 2006

### *1.2.3. Incidence*

The incidence of OA is difficult to determine and varies depending on whether diagnosis is by radiological scan or through clinical examination. On the basis of radiological survey data, the Australian Institute of Health and Welfare (AIHW) estimated that there were around 46,000 new cases of OA each year, of which 27,500 were female and 18,500 were male (Begg, Vos *et al.* 2007). Considerable uncertainty remains about the true incidence of OA, however, as self-reported population data suggests a higher disease incidence (Begg, Vos *et al.* 2007).

### *1.2.4. Prevalence*

Self-reported estimates from the Australian Bureau of Statistics (ABS) 2011-12 National Health Survey suggest that about 1.9 million Australians (approximately 8.6% of the population) have OA (Australian Bureau of Statistics 2012). Because many people with OA remain undiagnosed, the actual figure may be closer to 3 million people (Knox, Harrison *et al.* 2008).

The prevalence of OA increases with age. Whilst relatively few younger people have this condition, the prevalence rises sharply from around 45 years of age. The prevalence of OA is higher for females than for males, with the gap widening from around the age of 35 years (Australian Institute of Health and Welfare 2007). For those aged over 75 years, the prevalence rate for females is 38.1% compared with 27.2% for males (Arthritis and Osteoporosis Victoria 2013). As a consequence of changes in Australia's demographic profile over the next two decades, it has been projected that the number of people with OA will increase by 58% (Arthritis and Osteoporosis Victoria 2013).

### *1.2.5. Impact*

The personal impact of OA on an individual can be significant. Compared with those without the condition, people with OA are 3.5 times more likely to report very high levels of psychological distress, 2.8 times more likely to report severe or very severe pain, and 2.7 times more likely to report poor health (Australian Institute of Health and Welfare 2015). OA can impact significantly on an individual's ability to cope with normal activities of living (Salaffi, Carotti *et al.* 2005; van Dijk, Veenhof *et al.* 2008). Concomitant fatigue, depression and psychological distress will also affect functioning (Australian Institute of Health and Welfare 2007). Overall, OA ranked eighth as the leading cause of non-fatal burden of disease in Australia in 2003 (Begg, Vos *et al.* 2007).

The economic burden to Australia of this condition is considerable with a 2013 report finding direct annual health costs of A$3.75 billion and the cost from lost wellbeing of A$9.06 billion. It has further been estimated that around 80,000 Australians aged 45 to 64 years are unable to work due to OA, costing the Australian economy an additional A$9.4 billion annually (Schofield, Shrestha *et al.* 2013). Whilst the total economic cost of OA was estimated to be A$22.2 billion in 2012, this is expected to increase exponentially over coming decades due to an ageing and increasingly obese population.

## 1.3. Appropriateness of Care

### *1.3.1. Definition*

There has been increasing concern in Australia and elsewhere about the quality of healthcare and how it can be improved (Berwick 1996; Department of Health Expert Group 2000; Institute of Medicine 2000; Ferlie and Shortell 2001; Wilson and Van Der Weyden 2005). One of the key dimensions used to measure the quality of healthcare is related to 'appropriateness' or in other words, are patients receiving the level and type of care that their medical condition warrants. A healthcare intervention has been defined as being appropriate if '*for individuals with particular clinical and personal characteristics, its expected health benefits (e.g. increased life expectancy, pain relief, decreased anxiety, improved functional capacity) exceed its expected health risks (e.g. mortality, morbidity, anxiety anticipating the intervention, pain caused by the intervention, inaccurate diagnosis) by a wide enough margin to make the intervention or service worth doing'* (Brook, Chassin *et al.* 1986). Implicit in the definition of appropriateness is the notion that healthcare should be in accordance with the latest available scientific evidence, and be available at an acceptable cost to the society in which they live.

### *1.3.2. Appropriateness of osteoarthritis care*

A number of international studies have reported on the widespread deficits in the quality of OA care. Several studies have demonstrated how the treatment of OA has varied with differences in demographics (Wennberg and Gittelsohn 1982; Katz, Freund *et al.* 1996; Hawker, Wright *et al.* 2000; Ibrahim, Siminoff *et al.* 2002; Skinner, Weinstein *et al.* 2003). Other studies have quantified health care quality using quality indicators (QIs), which have been defined as metrics that provide a quantitative basis for measuring the quality of care (Saag, Yazdany *et al.* 2011).

The seminal study by McGlynn and colleagues (2003) showed that for a representative sample of the US population, only 57% received OA care in line with evidence or consensus-based recommendations. In Australia, the CareTrack Australia (CTA) study found 43% of adult Australians with OA received appropriate care (Runciman, Hunt *et al.* 2012).

As OA is an age related health condition, the ageing of the Australian population will have an increasingly significant impact on the community, both in economic and personal terms, including the use of hospital and primary care services, disruptions to daily life and lost productivity. Any improvement in the level of appropriate care would clearly be of considerable benefit.

The drivers of suboptimal care are many and varied. The beliefs and attitudes of both healthcare providers and patients have frequently been presented as key influences on healthcare decision-making (Zikmund-Fisher, Sarr *et al.* 2006; Fraenkel and McGraw 2007; Zikmund-Fisher, Couper *et al.* 2010).

### *1.3.3. Evidence-based best practice for osteoarthritis care*

Clinical practice guidelines (CPGs), which have been defined as '*systematically developed statements to assist the practitioner and patient decisions about appropriate health care for specific clinical circumstances*' (Field and Lohr 1990) are commonly used to guide best practice. They typically summarise the latest available scientific evidence and offer concise instructions on which diagnostic tests to order, what appropriate drug and non-drug regimens are suited to a particular clinical circumstance, and other details of appropriate clinical care. In the many areas in which evidence is not available, consensus statements by experienced experts are used.

Numerous CPGs for the clinical management of OA have been developed by a variety of organisations including government agencies and professional associations. Whilst the quality

of some CPGs has been found to be variable in terms of scope and purpose, stakeholder involvement, clarity and presentation (Misso, Pitt *et al.* 2008), those CPGs considered to be more reliable have undergone a rigorous development process. Usually, this will entail a comprehensive appraisal of the body of evidence upon which recommendations are based, and the canvassing of a wide range of expert opinion.

### *1.3.4. Overview of treatment options for osteoarthritis*

OA has no known cure. The focus, therefore, is on effective strategies for relieving pain and reducing symptoms. To cater for the various modalities of care, the management of OA takes place in a variety of health care settings including medical specialist clinics, general practices, allied health clinics, CAM practitioner clinics and hospitals.

In most cases, GPs are the primary point of contact for people with OA. In addition to providing assessments, pharmaceutical prescriptions and referrals to medical specialists, they help patients with the self-management of their condition. Allied health professionals, particularly physiotherapists (physical therapists) play an important role in managing pain and improving mobility. The use of CAM practitioners in the treatment of OA is widespread despite a lack of evidence about the efficacy of treatment (Ernst 2000). The management of advanced OA and associated complications, through surgical and other procedures, mostly takes place in hospitals.

The treatment and management of osteoarthritis is guided by six basic principles: prevent the disease process, provide symptomatic relief, encourage the movement of joints, prevent deformity, reconstruct or replace joints if necessary, and rehabilitate. In all instances, care should be tailored to the needs of the individual patient, taking into account the stage and severity of their condition.

Central to these strategies is management through the use of medicines (Day and Fransen 2008). Medicines that reduce the symptoms and inflammation include over-the-counter (OTC) analgesics, such as paracetamol (acetaminophen), and some low dose non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, and other NSAIDs that are available on prescription. For severe cases of OA, opioids may be used to control pain, bearing in mind the considerable risks of severe side-effects, tolerance and dependence.

There are two classes of NSAIDS – non-selective older COX-1 and COX-2 inhibitors, and the new selective inhibitors of COX-2, such as celecoxib and meloxicam. Despite their widespread use, numerous studies have highlighted a significant risk of serious adverse events

associated with gastrointestinal (Bhatt, Scheiman *et al.* 2008) and cardiovascular problems (Antman, Bennett *et al.* 2007).

Dietary supplements can also play a role in the management of OA. Glucosamine and chondroitin are widely used, putatively for relieving pain and possibly reducing cartilage breakdown (AIHW 2007). However, there is conflicting evidence with respect to the efficacy of these substances (Wandel, Juni *et al.* 2010; Hochberg, Martel-Pelletier *et al.* 2015).

Other management options include physiotherapy and exercise to reduce joint stiffness and increase muscle strength, especially of the muscles surrounding the joints. Weight loss is also an effective means to minimise load on the joints, and reduce pain. Surgery in the form of joint replacement (arthroplasty) is a common option for those with severe cases of OA and if successful, can help restore joint function, relieve pain, and significantly improve the quality of life (Buckwalter and Lohmander 1994; Solomon, Warwick *et al.* 2005).

Secondary measures that can be taken to prevent or delay the onset of OA and its various complications include the adoption of a healthy lifestyle (good diet and regular exercise), and the avoidance of joint injuries and tasks that increase joint strain.

Appendix F presents a consolidation of recommended OA treatments as listed in five recently developed CPGs.

## 1.4. Beliefs and Attitudes

In psychology, a belief is the state of mind in which the individual thinks something to be the case, whether or not it is based on empirical evidence that supports factual certainty (Gleitman, Gross *et al*. 2011). So a patient with OA may view the taking of a CAM to be beneficial for their condition solely because they believe it to be so, regardless of the scientific validity of this belief. An attitude, on the other hand, involves the evaluation of something as being either good or bad, making an individual think, feel, or behave positively or negatively about a person, place, event or thing (Gleitman, Gross *et al*. 2011). A GP, for example, may have the attitude that CAMs are ‘snake oil’ products with questionable or unverified quality or benefit.

The decision-making of patients with OA can be understood in terms of their beliefs and attitudes about the disease and its treatment. For example, personal beliefs about the value of exercise and confidence in undertaking physical activity can influence a patient’s response to exercise recommendations. In a similar way, the attitude that medication should only be taken when symptoms arise, the fear of dependency or addiction to certain medications, and the

belief that complementary and alternative medicines (CAM) do no harm can impact on how a patient manages their OA.

Understanding patient beliefs and attitudes about their condition and treatment is important as it can facilitate strategies for more effective health interventions. Knowing how to overcome the many barriers to the effectiveness of interventions can ultimately lead to better health outcomes for patients with OA.

The beliefs and attitudes of GPs are intrinsic to the clinical management of OA. The cognitive processes involved in decision-making have been studied extensively, with research highlighting the factors that influence how doctors make clinical decisions (Grol 1997; Bornstein and Emler 2001; Elstein and Schwartz 2002; Klein 2005; Woolever 2008). Medical decisions can have profound effects on patient health, so it is clearly desirable for doctors to be both fully informed and unbiased. A GP who trivializes OA, undervalues the importance of weight loss or exercise, or has a flawed perception about the effectiveness of medications will be unlikely to play a useful role in improving health outcomes for the patient. It is vital, therefore, to understand what underpins the beliefs and attitudes of GPs with respect to the clinical management of OA.

## 1.5. The Research Problem

As previously outlined, the beliefs and attitudes of patients and GPs are central to the successful management of OA. If patients do not adequately comprehend the natural history of the disease, or fully appreciate the benefits of various treatment recommendations, the success of any intervention may be significantly compromised. If GP attitudes towards OA are distorted or not fully informed by the latest evidence, optimal health outcomes for the patient are unlikely to be achieved. The purpose of this research, therefore, was to investigate how patient and GP beliefs and attitudes can influence the provision of appropriate care for Australians with OA.

## 1.6. Outline of the Thesis

This thesis is submitted as a Thesis Containing Published Research in accordance with the University of South Australia Academic Regulations for Higher Degrees Research Clause 16.1.1.b. The contribution of each author is provided in the Statement of Authorship declarations in Appendix K.

The thesis comprises five chapters. Chapter 1 provides an overview and background. Chapter 2 provides a detailed critique of the relevant literature, focusing on patient and healthcare

provider beliefs and attitudes concerning OA and its management. Chapter 3 gives a summary of the methods used for this thesis, including a synopsis of the CareTrack Australia (CTA) study of which this PhD forms a component. A more detailed description of recruitment, data acquisition and analysis is provided in each of the articles reprinted in the appendices. Chapter 4 presents a discussion of the five articles that relate to the research question, four of which have been published in peer reviewed journals, and one that has been accepted for publication by a peer-reviewed journal. The findings from the articles are also summarized and discussed in the context of what is already known from existing literature.

The five articles, which are included in Appendices A to E, are listed below:-

**Article One** – '*Assessing appropriateness of osteoarthritis care using quality indicators: a systematic review*' established the case that OA healthcare is suboptimal. This was achieved by a meta-analysis of Quality Indicator (QI) pass-rates across a range of treatment options for OA. This article was published in the *Journal of Evaluation in Clinical Practice*.

**Article Two** – '*Australians with osteoarthritis; satisfaction with healthcare providers and the perceived helpfulness of treatments and information sources*' explored how patients perceived the management of their condition by GPs and other healthcare providers, and the usefulness of different treatment options. Patient attitudes toward the information sources used to manage their condition were also examined. This article has been accepted for publication by the Journal of Multidisciplinary Healthcare.

**Article Three** – '*Australians with osteoarthritis; the use of and beliefs about complementary and alternative medicines*' examined the use of complementary and alternative medicine (CAM) amongst a cohort of OA patients. It focused particularly on understanding the widespread use of CAM, often as an adjunct to conventional medical care, despite limited evidence of efficacy for most CAM. This article was published in *Complementary Therapies in Clinical Practice*.

**Article Four** – '*Australian GP management of osteoarthritis following the release of the RACGP guideline for the non-surgical management of hip and knee osteoarthritis*' used a typical case vignette to investigate how GPs manage OA, and compared the results with an earlier survey. This article was published in *BMC Research Notes*.

**Article Five** – '*Australian general practitioner attitudes to clinical practice guidelines and some implications for translating osteoarthritis care into practice*' considered the role of CPGs in general practice. The article explored the general attitude of GPs towards CPGs, and

what they perceived to be important characteristics in terms of content and format. This article was published in the *Australian Journal of Primary Health*.

Chapter 5, the final Chapter, provides a summary of the new knowledge contributed to this field of enquiry. It also provides recommendations arising from the five presented articles and concluding remarks.

## 1.7. Summary of Introduction

- Osteoarthritis (OA) is the most common musculoskeletal condition in Australia, affecting nearly 9% of the population and costing the economy approximately A$9.3 billion annually;
- It impacts significantly on those affected, causing pain, disability and loss of function, and results in a compromised quality of life;
- It is a condition where better health outcomes can be achieved if patient and healthcare providers adhere to the latest evidence- and consensus-based recommendations for treatment;
- There is some good evidence to guide the clinical management of OA, much of which is provided in clinical practice guidelines;
- Treatment and management of OA is guided by six basic principles: prevent the disease process, provide symptomatic relief, encourage the movement of joints, prevent deformity, reconstruct/replace joints if necessary, and rehabilitate;
- Many studies have provided evidence of sub-optimal OA care;
- The beliefs and attitudes of patients toward the condition and its treatment has an important influence on adherence to recommended interventions;
- The beliefs and attitudes of GPs can affect the clinical management of OA, thereby impacting on health outcomes.

# 2. Literature Review

## 2.1. Background to the Literature Review

For many years, researchers have attempted to explain the causes of health related behaviours by proposing different theories and models. Perhaps the best known and most influential of these were the Social Cognition Models (SCMs), such as the Health Belief Model (Becker and Rosenstock 1987), the Theory of Reasoned Action (Fishbein and Ajzen 1975), the Protection Motivation Theory (Rogers 1975) and the Theory of Planned Behaviour (Ajzen 1985), which emphasised the role of individuals' cognitions, including beliefs and attitudes, in guiding behaviours. These theories were built on the premise that individuals decide on a particular course of action based on a rational decision-making process. These SCMs share some similarities – for example, each includes an attitude or cost-benefit component as a key determinant of patient behaviour. However, the models vary with respect to the other proposed determinants (Armitage and Conner 2000). Other research has postulated that patient decision-making is not always the product of a rational self-driven process, and that other influences such as the health provider-patient relationships should also be considered (Say, Murtagh *et al.* 2006; Fraenkel and McGraw 2007).

The beliefs and attitudes of both patients and healthcare providers are important for OA as they have a key influence on disease outcome (Carr 2001). Central to this is the concept of adherence – the degree to which the patient follows the treatment recommendations of their healthcare provider. It is of particular relevance to health conditions such as OA where disease progression is closely aligned to patient self-management. Eliciting and understanding patient and healthcare provider beliefs and attitudes about OA and its treatment is fundamental to the effectiveness of therapeutic interventions. Despite the significant impact of OA, it has been largely ignored as a topic of psychosocial research (Turner, Barlow *et al.* 2007).

### *2.1.1. Objective of the review*

This review discusses the literature about the beliefs and attitudes of patients and healthcare providers. The beliefs and attitudes related to both the condition itself, and to the treatments - both non-drug therapies (exercise, weight loss etc.) and to a broad range of drug therapies

(paracetamol, NSAIDs, opioids etc.). The role of patient non-adherence to recommended therapies was extensively covered.

Whilst the focus of this thesis was on patients and GPs, other healthcare providers such as medical specialists (rheumatologists) and physiotherapists were also included in the review as insight into their beliefs and attitudes give a more complete picture of the clinical management of OA patients.

### *2.1.2. Literature review methodology*

A scoping review was carried out to summarise the range of evidence in the field of research under question. Scoping studies have become an increasingly common method of searching the literature on specific topics in health related fields (Daudt, van Mossel *et al.* 2013). Whilst there is no simple agreed definition of what constitutes a scoping review, at its core is the aim of rapidly mapping the key concepts underpinning an area of research and the main sources and types of evidence available (Arksey and O'Malley 2005). Arksey and O'Malley identified four main reasons for conducting a scoping study: (1) to examine the extent, range and nature of research activity; (2) to determine the value of undertaking a full systematic review; (3) to summarise and disseminate research findings; and (4) to identify research gaps in the existing literature. Davis et al. (2009) argued that scoping reviews are a robust method of identifying sources of literature with its success based on both a developmental and intellectual approach. This review follows the six-stage scoping review framework described by Arksey and O'Malley (2005). The sixth stage, which is considered optional, was not included.

### *2.1.3. Stage one: identify the research question*

The research question is an integral component of this thesis – that is, how do the beliefs and attitudes of patients and GPs influence the provision of OA care.

### *2.1.4. Stage two: identify relevant studies*

Key concepts and search terms were developed to capture all literature that related to any aspect of the beliefs and attitudes of patients and healthcare providers. Techniques for searching included the use of search tools such as medical subject headings (MeSH) and Boolean operators to narrow, widen and combine search terms. The linked descriptive key search terms are identified in Table 2 below.

**Table 2. Literature review – search terms**

| Search terms* |
| --- |
| (osteoarthrit* or arthrit* or rheum* or musculoskeletal.)m_titl.<br>AND<br>(belief* or attitude*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] |

* Or similar syntax appropriate to the database

For the research in this thesis, three relevant electronic databases were searched (MEDLINE, EMBASE, and PsycINFO). In addition, a hand search was conducted of the reference lists of identified articles and the use of Google Scholar was utilised to uncover any other primary sources. All literature sources from each of the searched databases were exported into EndNote version X7.

### *2.1.5. Stage three: study selection*

Inclusion and exclusion criteria were developed for the literature search, mindful of the need to be as comprehensive as possible, yet cognisant of time and financial constraints.

**Table 3: Literature review – inclusion and exclusion criteria**

| Criterion | Inclusion | Exclusion |
|---|---|---|
| Time period | January 2000 to December 2013 | Studies outside these dates |
| Language | English | Non-English studies |
| Type of article | Original research, published in a peer reviewed journal | Articles that were not peer reviewed or original research, conference papers, review papers |
| Ethics clearance | Studies with relevant ethics approval/s | Studies without relevant ethics approval/s |
| Study focus | Beliefs and attitudes of patients and healthcare providers with respect to OA and its management | Beliefs and attitudes of orthopaedic surgeons with respect to joint replacement surgery |
| Literature focus | Articles where the primary theme related to the beliefs and attitudes of patients and healthcare providers with respect to OA and its management | Articles that made a cursory or brief reference to beliefs and attitudes of either patients or healthcare providers.<br>Articles that related to poorly conducted studies, insufficient sample size, and little or inadequate analysis of findings.<br>Articles that were editorials or discussion or personal opinion pieces |
| Population and sample | All | N/A |

The article selection process followed the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) statement (Moher, Liberati *et al.* 2009).

Using the above key search descriptors, 2474 articles were identified. The initial review of abstracts identified many articles that were not relevant, particularly those related to the surgical treatment of OA and to other musculoskeletal conditions. Many articles from the search were eliminated due to duplication across databases.

Using the previously described inclusion and exclusion criteria, 32 articles were identified as relevant to the research topic. Full text versions of articles were obtained, and these were then reviewed to confirm relevance or otherwise. The final selection of articles was then discussed with my PhD supervisors.

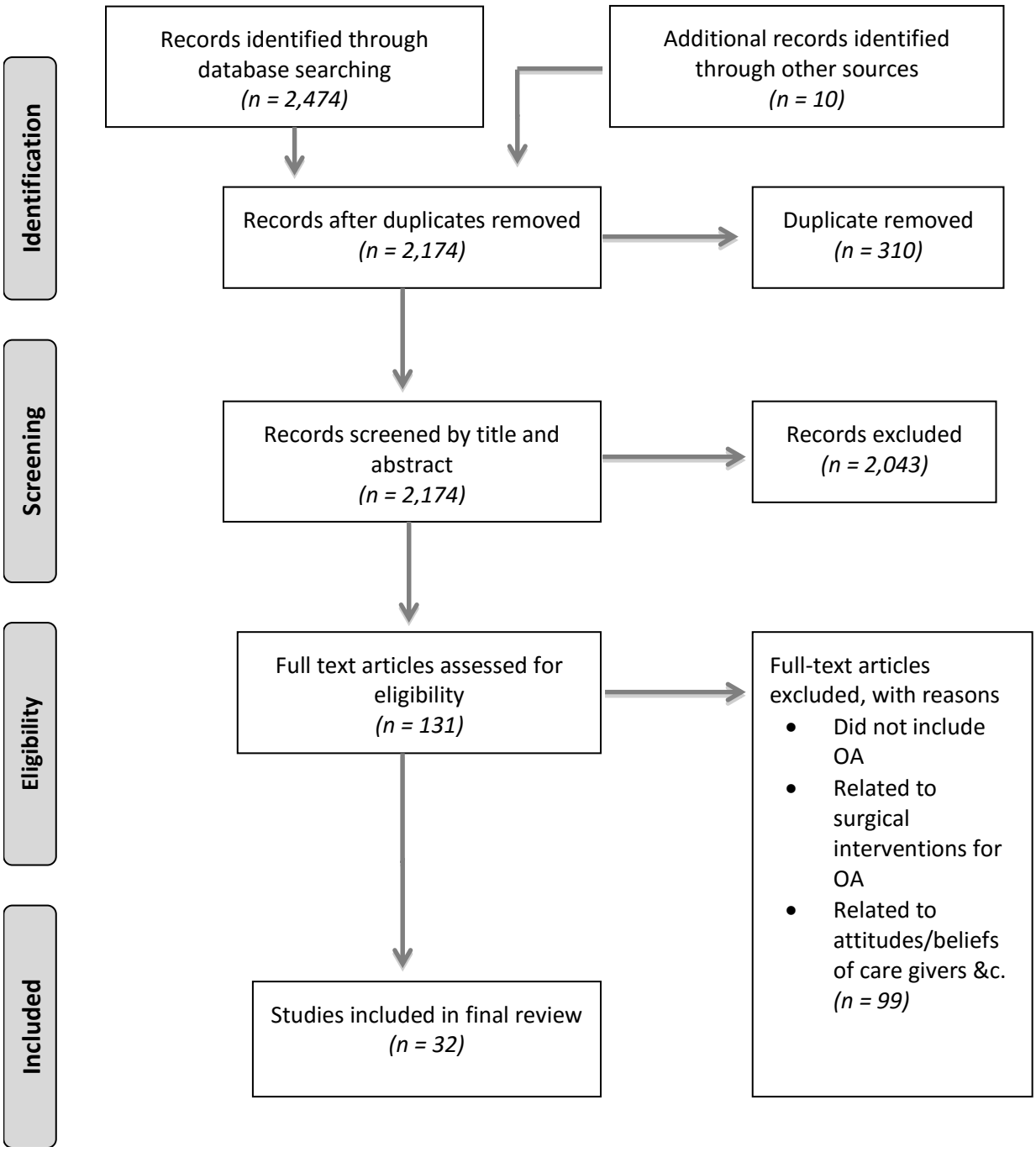


**Figure 2: PRISMA flow diagram for article selection**

### *2.1.6. Stage four: charting the data*

The fourth stage involved developing a framework for charting data (this refers to summarising the articles in tables). A summarising process was undertaken following the methodology outlined by Arksey and O'Malley (2005). The data charting form summarised each primary reviewed article by Author, Year, Title, Objective, Study Design, Methods and Sample, Study Perspective, and an abridged version of Study Findings/ Limitations. A second reviewer (PhD co-supervisor) then validated the data by reviewing each selected article based on the inclusion/exclusion criteria; a consensus was made of the information presented in Table 4.

### *2.1.7. Stage five: collating, summarizing and reporting results*

The fifth and final stage of the scoping review involved collating descriptions of beliefs and attitudes into themes, namely, those that related to the condition itself, those that related to drug treatments, and those that related to non-drug treatments.

## 2.2. Results

### *2.2.1. Characteristics of included studies*

Thirty-two papers were identified assessing the beliefs and attitudes of people with OA. These are summarised in Table 4. In total, 5032 participants were sampled. This included 1672 males and 2929 females; two studies did not provide information on the gender of their cohort (Bower, Frail *et al.* 2006; Mitchell and Hurley 2008). The mean age of the sample cohorts, which was reported in nineteen studies, was 63 years.

The majority of studies did not specify the site of affected joints in their sample of people with OA (n = 15) (Kee 1998; Neville, Fortin *et al.* 1999; Ratcliffe, Buxton *et al.* 2004; Bower, Frail *et al.* 2006; Ferreira and Sherman 2006; Gignac, Davis *et al.* 2006; Rosemann, Wensing *et al.* 2006; Sale, Gignac *et al.* 2006; Ferreira and Sherman 2007; Turner, Barlow *et al.* 2007; Barozzi and Tett 2009; Bijsterbosch, Scharloo *et al.* 2009; Milder, Lipworth *et al.* 2011; Milder, Williams *et al.* 2011; Cordero-Ampuero, Darder *et al.* 2012). Eight studies sampled cohorts with hip and/or knee OA (Ibrahim, Siminoff *et al.* 2001; Sanders, Donovan *et al.* 2002; Sanders, Donovan *et al.* 2004; Juby, Skeith *et al.* 2005; Luger, Cotter *et al.* 2009; Rosemann, Wensing *et al.* 2009; Mann and Gooberman-Hill 2011; Sherman and Cotter 2013), whilst 8 studies sampled people solely with knee OA (Tallon, Chard *et al.* 2000; Campbell, Evans *et al.* 2001; Fraenkel, Bogardus *et al.* 2004; Hendry, Williams *et al.* 2006;

Mitchell and Hurley 2008; Holden, Nicholls *et al.* 2009; Alami, Boutron *et al.* 2011; Laba, Brien *et al.* 2013), and one study related to hand OA (Hill, Dziedzic *et al.* 2011).

Eleven studies originated from the UK (Tallon, Chard *et al.* 2000; Campbell, Evans *et al.* 2001; Sanders, Donovan *et al.* 2002; Ratcliffe, Buxton *et al.* 2004; Sanders, Donovan *et al.* 2004; Hendry, Williams *et al.* 2006; Turner, Barlow *et al.* 2007; Mitchell and Hurley 2008; Holden, Nicholls *et al.* 2009; Hill, Dziedzic *et al.* 2011; Mann and Gooberman-Hill 2011), seven studies from the USA (Kee 1998; Ibrahim, Siminoff *et al.* 2001; Fraenkel, Bogardus *et al.* 2004; Ferreira and Sherman 2006; Ferreira and Sherman 2007; Luger, Cotter *et al.* 2009; Sherman and Cotter 2013), five from Canada (Neville, Fortin *et al.* 1999; Juby, Skeith *et al.* 2005; Bower, Frail *et al.* 2006; Gignac, Davis *et al.* 2006; Sale, Gignac *et al.* 2006), four from Australia (Barozzi and Tett 2009; Milder, Lipworth *et al.* 2011; Milder, Williams *et al.* 2011; Laba, Brien *et al.* 2013), two from Germany (Rosemann, Wensing *et al.* 2006; Rosemann, Wensing *et al.* 2009), and one each from The Netherlands (Bijsterbosch, Scharloo *et al.* 2009), France (Alami, Boutron *et al.* 2011) and Spain (Cordero-Ampuero, Darder *et al.* 2012).

Thirteen studies collected data using questionnaires (Neville, Fortin *et al.* 1999; Ibrahim, Siminoff *et al.* 2001; Fraenkel, Bogardus *et al.* 2004; Ratcliffe, Buxton *et al.* 2004; Juby, Skeith *et al.* 2005; Ferreira and Sherman 2006; Ferreira and Sherman 2007; Mitchell and Hurley 2008; Bijsterbosch, Scharloo *et al.* 2009; Luger, Cotter *et al.* 2009; Rosemann, Wensing *et al.* 2009; Cordero-Ampuero, Darder *et al.* 2012; Laba, Brien *et al.* 2013; Sherman and Cotter 2013); eleven used individual interviews (Kee 1998; Campbell, Evans *et al.* 2001; Sanders, Donovan *et al.* 2002; Sanders, Donovan *et al.* 2004; Bower, Frail *et al.* 2006; Rosemann, Wensing *et al.* 2006; Sale, Gignac *et al.* 2006; Turner, Barlow *et al.* 2007; Alami, Boutron *et al.* 2011; Milder, Lipworth *et al.* 2011; Milder, Williams *et al.* 2011); two used focus groups and interviews (Hendry, Williams *et al.* 2006; Barozzi and Tett 2009); two used focus groups (Hill, Dziedzic *et al.* 2011; Mann and Gooberman-Hill 2011); two used focus groups with follow up questionnaires (Tallon, Chard *et al.* 2000; Gignac, Davis *et al.* 2006); and two used questionnaires with interviews (Ratcliffe, Buxton *et al.* 2004; Holden, Nicholls *et al.* 2009).

Of the 32 included studies, seven related to the beliefs and attitudes of patients regarding their experiences with OA, and included such areas as personal coping mechanisms (Kee 1998), beliefs about disease progression (Neville, Fortin *et al.* 1999), communication with healthcare providers (Tallon, Chard *et al.* 2000), and the role of social networks in dealing with their

condition (Ferreira and Sherman 2006; Ferreira and Sherman 2007; Luger, Cotter *et al.* 2009; Rosemann, Wensing *et al.* 2009).

Thirteen of the studies reviewed related principally to patient beliefs and attitudes about OA treatments. These studies included patient beliefs about all OA treatment modalities (Ratcliffe, Buxton *et al.* 2004; Sanders, Donovan *et al.* 2004; Juby, Skeith *et al.* 2005; Mitchell and Hurley 2008; Hill, Dziedzic *et al.* 2011), exercise and/or weight loss (Campbell, Evans *et al.* 2001; Hendry, Williams *et al.* 2006), and medications (Fraenkel, Bogardus *et al.* 2004; Bower, Frail *et al.* 2006; Sale, Gignac *et al.* 2006; Milder, Lipworth *et al.* 2011; Milder, Williams *et al.* 2011; Laba, Brien *et al.* 2013). Other non-drug interventions for OA with a lower evidentiary basis for efficacy, such as knee taping/bracing, tai chi and acupuncture were rarely referred to in the reviewed literature.

Five of the studies were from the perspective of both the patient and healthcare provider, and focussed on identifying gaps in the primary and secondary care of patients with OA (Rosemann, Wensing *et al.* 2006; Alami, Boutron *et al.* 2011; Mann and Gooberman-Hill 2011; Cordero-Ampuero, Darder *et al.* 2012) and understanding barriers to paracetamol use (Barozzi and Tett 2009).

The study by Holden and colleagues was the only identified study that solely probed the beliefs and attitudes of healthcare providers with respect to aspects of the clinical management of OA (Holden, Nicholls *et al.* 2009).

Table 4 below presents a summary of studies included in this review.

**Table 4: Summary of review articles – patient and healthcare provider beliefs and attitudes**

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| Kee, 1998 | Living with osteoarthritis: Insiders' views | To explore the day-to-day experiences of older people with symptomatic OA and to discover if people with different socioeconomic status differ in the ways that they manage their OA | Semi-structured interviews with 20 participants aged over 60 years (range 62 to 92 years; female = 17) who had been diagnosed with OA for at least one year. Respondents were purposively selected evenly from two groups that were divided into more advantaged/less advantaged categories. | Patient | Four themes arose from data analysis: refusing t give up, pragmatism towards treatments, staying in charge, and tangible caring. More advantaged respondents differed from less advantaged respondents in terms of problems reported, preferred treatments, and causes of OA.<br>Limitations: Eighty-five per cent of respondents were female |
| Neville, 1998 | The needs of patients with arthritis; the patient's perspective | To identify concerns and learning interests of patients with arthritis | A questionnaire was developed, pilot tested, and then used to evaluate 197 patients with arthritis (including OA: n = 41; female = 34). | Patient | The most frequently reported concern was worsening of the illness. The physician was chosen as the preferred source of information and the preferred format was in writing. Major concerns were psychological, coping, medicatio social and financial.<br>Limitations: None described. |
| Tallon, 2000 | Exploring the priorities of patients with osteoarthritis of the knee | To explore the priorities of patients with osteoarthritis of the knee with respect to symptoms, treatments and potential research areas | Focus group involving 112 people (female = 51 (53%); mean age 61 years) with knee OA, followed up by questionnaire to elicit symptoms, treatment experiences, preferences, and research priorities. | Patient | Lack of patient-centred approach by health professionals. Pre-occupation with pharmaceutical interventions, at the expense of patient preferences.<br>Limitations: Relatively small sample size |
| Ibrahim, 2001 | Variation in perceptions of treatment and self-care practices in elderly with osteoarthritis: a comparison between African American and white patients | To compare perceptions of the efficacy of traditional and complementary treatments and self-care practices of elderly African American and white patients with OA of the knee or hip | Self-administered questionnaire of 593 male patients (44% African American, 56% white) | Patient | African American and white patients differ with respect to their perceptions of traditional and complementary treatments and self-care practices for OA. African Americans were more likely than whites to perceive various traditional and complementary care treatments as efficacious. They were less likely than white patients to perceive joint replacement therapy as efficacious.<br>Limitation: Whilst the two groups were similar |

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| | | | | | with respect to age, disease severity or functional status, and comorbidities, African Americans were less educated and poorer. All respondents were male. So, potential for bias. |
| Campbell, 2001 | Why don't patient do their exercise? Understanding non-compliance with physiotherapy in patients with OA of the knee | To understand reasons for compliance and non-compliance with a home based exercise regimen | A qualitative study, nested within a randomised controlled trial of 20 patients with OA of the knee (female = 14). In depth interviews were conducted with a subset (8) of participants. | Patient | Initial compliance was high because of loyalty to physiotherapist. Continue compliance related to perceived severity of symptoms, attitudes towards comorbidities and previous experiences with OA. Necessary precondition for continued compliance was perception of physiotherapy effectiveness.<br>Limitations: Actual opinions expressed may not reflect reality. For example, participants may not have wished to present themselves as lazy or non-compliant. 7 of 8 interviewed were female, so potential for bias. |
| Sanders, 2002 | The significance and consequences of having painful and disabled joints in older age: co-existing accounts of normal and disrupted biographies | To examine the meaning of symptoms for people with OA | In-depth interviews were conducted with twenty-seven participants (female = 17; median age 76, range 51 to 91 years). | Patient | The elderly generally perceived their OA as a normal part of their life story, and so there was a tendency to "play down" symptoms. Disruptive nature of symptoms was also highlighted. Cause of symptoms often related to life experiences (e.g. work history). Main implication of findings – older people with severe joint problems may experience poorer quality of life and have unmet needs for services.<br>Limitations: Purposive sampling, so may be subject to bias and error. |
| Ratcliffe, 2004 | Patient preferences for characteristics associated with treatments for osteoarthritis | To investigate patient preferences for attributes associated with the efficacy and side-effects of drug treatment for osteoarthritis | A stated preference design questionnaire was administered to a sample of 412 people diagnosed with OA (female = 298; 78% aged 61 or more). | Patient | Level of joint aches, level of physical mobility and risk of experiencing serious side-effects significantly influenced treatment preferences. Importance of joint aches increased according to severity of symptoms. Older respondents more willing than younger respondents to accept an increased risk of experiencing serious side-effects for symptom improvement. |

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| | | | | | Individuals in lower income brackets appeared to attach greater importance to joint aches and the level of mobility experienced than those earning more.<br>Limitations: Some issues concerning statistical inference were raised in the paper (e.g. problems associated with estimating confidence intervals around ratios). Also possible that observed results were a consequence of the limited choices presented. It was not clear from the study what treatment options were available. |
| Fraenkel, 2004 | Treatment options in knee osteoarthritis – the patient's perspective | To examine patient treatment preferences, determine the influence of specific medication characteristics on patients' choices and examine whether patient preferences are consistent with current practice | Interactive computer questionnaire administered during face-to-face interview with 100 patients with knee OA (female = 79; mean age 70). | Patient | Variation in the risk of common adverse effects and gastrointestinal ulcer had the greatest impact on patients' choice. Assuming patients are responsible for the full cost of their medications, over 40% prefer capsaicin. COX-2 inhibitors become patients' preferred choice only if they are described as being 3 times as effective as capsaicin and are covered by insurance.<br>Limitations: Potential difficulty with elderly patients understanding questions presented to them, particularly those related to probabilistic information. Also, study did not assess patient preferences for paracetamol (acetaminophen) which is recommended first line medication therapy for OA. The title was misleading, as non-drug treatments for OA were not covered in the study. |
| Sanders, 2004 | Unmet need for joint replacement: a qualitative investigation of barriers to treatment among | To explore barriers to health care amongst respondents with OA of the hip and knee | Qualitative interviews with 27 participants with moderate to severe pain and disability of the hip and/or knee (female = 17; median age 76 years, range 51 – 91). | Patient | Three main barriers were identified – 1) Perception of need and reluctance to seek treatment; 2) Perceptions and previous experiences with primary care; and 3) Previous experiences of treatment with secondary care. Pessimistic beliefs about the availability of |

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| | individuals with severe pain and disability of the hip and knee | | | | treatment, together with concerns about the effectiveness and risks associated with surgery, made older people reluctant to seek help for joint problems.<br>Limitations: Nearly 2/3 of participants were female, so generalizability potentially an issue. |
| Juby, 2005 | Patients' awareness, utilization, and satisfaction with treatment modalities for the management of their osteoarthritis | To evaluate the knowledge, awareness, utilization, and satisfaction of patients with different treatment modalities. | Self-administered questionnaire completed by 106 patients with hip or knee OA (female = 71, mean age 64 years). | Patient | Majority of respondents were aware of most OA treatment modalities. A wide number of therapies tried, most of which were tolerated. Therapies that were the most widely accessed were not necessarily those that provided the maximum perceived benefit.<br>Limitations: Potential bias due to patient selection. Reported satisfaction with a treatment option does not necessarily represent effectiveness. |
| Hendry, 2006 | Why should we exercise when our knees hurt? A qualitative study of primary care patients wit OA of the knee | To examine the view of patients with OA of the knee towards exercise and to explore factors that determine barriers and motivation to exercise. | Semi-structured interviews with 22 primary care patients with OA of the knee (female = 16; mean age = 65 years), six of whom also participated in a focus group (female = 4; mean age = 65 years). | Patient | Exercise behaviour depended on physical capacity to exercise, exercise beliefs and factors such as enjoyment, social support, priority setting and context.<br>Limitations: GPs were unable to identify patients referred to gym specifically for knee OA. |
| Bower, 2006 | What influences seniors' choice of medications for osteoarthritis? | To explore the factors that influence the choice of NSAID medications for OA | Semi-structured interviews with 16 participants (gender unknown). | Patient | Medication choice was influenced by the role of general practitioners, fear of side-effects, and distribution of free drug samples. Patients claimed not to be influenced by direct advertising, or the cost of drugs.<br>Limitations: Small sample size and purposive sampling, so generalizability may be an issue. Recall bias and participants' tendency to not relate specific drugs to medical condition (if comorbidities). No demographic details were provided on respondents. |

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| Ferreira, 2006 | Understanding associations of control beliefs, social relations, and well-being in older adults with osteoarthritis | Test the association of external control beliefs and 2 social relations variables (support and strain) to well-being measures. | Face-to-face completion of questionnaire completed by 95 elderly participants reporting OA symptoms (68 females; mean age 73 years, range 60 – 85). | Patient | A strong belief in the power of one's environment over personal experiences has negative consequences for psychological well-being for older adults, even when taking into account perceptions of social support. Also, results reaffirm the importance of positive social relations in the well-being of older adults with OA.<br>Limitations: The authors have cited some potential psychometric limitations associated with the scale used. The sample may also have potential bias as the participants were more highly educated than the total population and a high percentage (72%) were female. Self-report nature of results could also cause potential bias. |
| Sale, 2006 | How "bad" does the pain have to be? A qualitative study examining adherence to pain medication in older adults with OA | To explore pain medication adherence in older adults with OA. | Semi-structured face-to-face interviews with 19 participants (10 female; ages 67 – 92 years) | Patient | Participants generally reluctant to take painkillers. When they did, took them at a lower dose or frequency than prescribed. Perceptions and attitudes are central to medication adherence.<br>Limitations: Small sample size, but similar to those recommended for phenomenological studies. Mean age of participants not provided. |
| Gignac, 2006 | "What do you expect? You're getting older": A comparison of perceived osteoarthritis-related and ageing-related health experiences in middle- and older-age adults | To compare the health experiences with experiences of adults with moderate OA with experiences of individuals with no chronic health conditions. | Focus groups conducted with 53 women and 37 men (mean age 57, range 39 – 88 years). Participants also completed questionnaire. | Patient | Differences in the depth, breadth and meaning of symptoms such as pain, stiffness, and fatigue were reported with little overlap between OA and control groups. OA was often seen as part of normal aging process requiring acceptance, not treatment. Younger OA participants reported more distress and frustration managing the disease. OA impacted on work, leisure, social activities and relationships more so than control group.<br>Limitation: Small sample, purposive and may not have captured all the experiences of |

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| | | | | | individuals with OA. OA group participants were older than controls and more likely to report comorbidities. |
| Rosemann, 2006 | Problems and needs for improving primary care of osteoarthritis patients: the views of patients, general practitioners and practice nurses | To identify health care needs of patients with OA and to reveal possible obstacles for improvements in primary care management of osteoarthritis patients | Semi-structured interviews with a stratified sample of 20 patients (female = 12, mean age 56 years), 20 GPs (female = 4, mean age 44 years, and 20 practice nurses (female = 20, mean age 41 years). | Patient, healthcare provider | Patients lacked information on individual consequences of OA, with pain, fear of disability and lifestyle change (eg how to exercise) not being addressed by GPs. Patients and GPs had ambivalent attitude toward NSAIDs and opiates, which was at variance to guideline recommendations.<br>Limitations: Due to study methodology, quantitative conclusions cannot be made. Statements reflect individual opinions, not necessarily actual behaviour, so possibility of bias. Also, all patient respondents were female, and relatively young in terms of overall OA demographic. Typically, patients in Germany are assigned to one GP, so transferability of findings to other jurisdictions may be problematic.<br>The introduction did not clarify the relevance of the practice nurses in the study, and their role was only discussed fleetingly in the discussion. Given the widespread patient use of CAM for OA, it seems surprising that they received no mention. |
| Ferreira, 2007 | The relationship of optimism, pain and social support to well-being in older adults with osteoarthritis | To assess the role of support perceptions, optimism and pain in depressive symptoms and life satisfaction. | Cross-sectional survey of 72 older adults (20 male, 52 female – age from 60 to 84, mean 72 years) | Patient | The effect of pain on perceptions of well-being is influenced by both personality and social relations variable. Optimism appears to mediate the relationship of pain in life satisfaction; social support appears to mediate pain in relation to depressive symptoms.<br>Limitations: Small, non-random sample may limit generalizability. Other health stressors, such as physical limitations, not investigated. |

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| Turner, 2007 | Beliefs about the causes of osteoarthritis among primary care patients | To provide insight into patients' beliefs about the causes of OA in a primary care population | Semi-structured interviews with 31 participants (14 females; median age 68 years, range 56 to 84 years). | Patient | OA and joint pain perceived to be an inevitable aspect of aging, rather than indication of disease. The most commonly given reason for OA was given as 'wear and tear'.<br>Limitations: Small sample size |
| Mitchell, 2008 | Management of chronic knee pain: a survey of patient preferences and treatment received | To explore the treatment experiences and preferences of patients with chronic knee pain and to match these against three clinical practice guidelines for knee OA. | Questionnaire used to survey 415 patients aged ≥50 years recruited through a randomised controlled trial (mean age 67 years; no gender breakdown provided). | Patient | Mismatch between people's treatment preferences, treatment received and evidence-based guidelines recommended treatments.<br>Limitations: Not "in-depth" survey of patient preferences. Potential recruitment bias, as patients were committed to physiotherapy based intervention. Potential response bias as recruits were provided with information on physiotherapy during recruitment process. No gender breakdown given. |
| Luger, 2010 | It's all in how you view it: Pessimism, social relations, and life satisfaction in older adults with osteoarthritis | To examine psychosocial factors, such as dispositional personality and social relationships, in order to investigate their influence on the well being of older adults with OA. | Self-reported completion of computer program questions by 160 (T1) and 135 (T2) with self-reported OA of the knee or hip (mean age 73 years, range 58 – 94 years). Measures were taken 9 – 12 months apart (T1 and T2). | Patient | Pessimism was related to lower social support and higher social strain (cross-sectionally and longitudinally). Pessimism mediated by social support in its relation to life satisfaction.<br>Limitations: Potential for respondent bias due to self-report. Sample consisted of Caucasian, female, older adults with relatively high levels of life satisfaction, high levels of social support, low levels of social strain and lower levels of self-reported OA severity. |
| Barozzi, 2009 | Perceived barriers to paracetamol (acetaminophen) prescribing, especially following rofecoxib withdrawal from the market. | To gain understanding about barriers to paracetamol use in treatment of OA. | Focus groups were conducted with 16 participants (8 patients, age range 23 – 70 years; 8 pharmacists, age range 22 – 55) and 15 semi-structured face-to-face interview participants (7 patients, age range 25 – 85 years; 4 pharmacists, age range 27 – 55 years; 4 general practitioners, age range 34 – 52 years). | Patient, health care provider | Patients appeared to have poor knowledge about the efficacy of paracetamol.<br>Pharmacists and general practitioners did not appear to be good at explaining options for pain relief with patients.<br>Limitation: small sample size may limit generalizability of results. The demographic was younger than general OA population. |

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| Holden, 2009 | UK based physical therapists' attitudes and beliefs regarding exercise and knee osteoarthritis: findings from a mixed-method study | To describe UK physical therapists' (physiotherapist) attitudes and beliefs regarding exercise and knee OA, and understand and explain them | Survey of 538 physical therapists (female = 465), followed up by semi-structured telephone interview (n = 24) that probed response to initial questionnaire (female = 16). | Healthcare provider | Uncertainty regarding the potential benefits of exercise for knee OA, with only a marginal majority (56%) agreeing that knee problems are improved by exercise. Exercise adherence seen as patient's not therapists, responsibility. Interviews reaffirmed underlying biomedical model of knee pain.<br>Limitations: Due to mixed-method approach, any sources of error in the survey may have been compounded in the interviews. Response bias may reduce transferability of findings. Telephone interviews do not capture "body language", so responses may not be fully interpreted. |
| Rosemann, 2009 | Satisfaction of osteoarthritis patients with provided care is not related to the disease-specific quality of life | To assess patient satisfaction and reveal possible disease and quality of life related predictors | 1021 OA of the hip or knee patients (female = 674; mean age 67 years, SD 11.72) across 75 general practices were surveyed by self-administered questionnaire. | Patient | Social factors are more important for patient satisfaction with provide care than disease related aspects.<br>Limitations: Typically, patients in Germany are assigned to one GP, so transferability of findings to other jurisdictions may be problematic. Also, with respect to data analysis, the authors have reported the potential for ceiling effects (i.e. bunching of scores at upper level reported in questionnaire). |
| Bijsterbosch, 2009 | Illness perceptions in patients with osteoarthritis: change over time and association with disability | To investigate changes in illness perceptions in patient with OA and the associations of those changes with disability, and to determine the predictive value of illness perceptions in disability. | Perceptions of illness and disability were measured at baseline and after 6 years in 241 patients with OA at multiple sites (female = 198; mean age 59 years) using the revised Illness Perception Questionnaire (IPQ -R) and Health Assessment Questionnaire (HAQ). | Patient | Illness perception of OA patients changed over time, with changes related to outcome. Illness perceptions were predictive of disability.<br>Limitations: Bias may exist due to differences between those who did and those who did not participate in follow up. Self-reported HAQ may not reflect actual performance of participants. Bias may exist because performance is related to self-efficacy. Also potential for gender bias. |
| Milder, 2010 | Use of NSAIDs | To explore perceptions | Semi-structured interviews conducted | Patient | Three key themes emerged related to "modes |

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| | for osteoarthritis amongst older-aged primary care patients: engagement with information and perceptions of risk. | of risk regarding oral NSAID use to treat OA. | with 15 OA patients aged 65 years or more (female = 8) who were taking, or had recently taken NSAIDs to treat their OA. | | of disengagement" from medication-specific risk information: transference of responsibility, general versus specific risk, and personal immunity.<br>Limitations: Sampling was purposive, so generalizability issues. |
| Milder, 2011 | "It looks after me": How older patients make decisions about analgesics for osteoarthritis | To investigate key motivators behind the selection of NSAIDs, acetaminophen and CAM by patients with OA | In depth semi-structured interviews were conducted with 15 OA patients aged at least 65 years (female = 8) who were currently taking, or had recently taken an NSAID for OA. | Patient | Three key themes emerged: reliance on NSAIDs, ability to establish a routine around the use of NSAIDs and CAM, and resistance to the "pill load" of acetaminophen. Highlights importance of exploring the perceptions and preferences of patients with regard to analgesics for OA.<br>Limitations: Sampling was purposive, so generalizability issues. Findings may be less relevant to OA patients who use NSAIDs on less regular basis, or those who use over-the-counter obtained medications. |
| Hill, 2011 | Patients' perceptions of the treatment and management of hand osteoarthritis: a focus group enquiry | To explore patient's perceptions and experiences of the treatment and management of hand OA | Four focus groups conducted with primary (n = 14; female = 11) and secondary (n = 15; female = 14) care participants aged 50 – 84 years. | Patient | A perceived lack of understanding of the impact of hand OA was identified, with a majority of older adults with hand pain and associated problems choosing not to seek medical help, even when severely impacted. The beliefs about the efficacy of treatment were balanced against perceived and actual side-effects and tolerance. These beliefs appeared to influence the use of alternative therapies.<br>Limitations: As study undertaken in specific region of UK, findings may not be generalizable across different populations or health care systems. 86% of sample were female. |
| Mann, 2011 | Health care provision for | To explore the opinions of patients and health | Focus groups were conducted for 16 patients with hip or knee OA (9 | Patient, healthcare | The views of patients and health professionals generally concurred. At diagnosis, more |

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| | osteoarthritis: concordance between what patients would like and what health professionals think they should have | professionals about the provision of health care for people with OA and possible service improvements | females), and 12 health professionals (gender unknown) from primary and secondary care were interviewed. | provider | information and education about condition, diet, exercise, and aid were needed. Patients wanted more time, better continuity, and proactive GP follow up. Effective self-management strategies were a priority.<br>Limitations: Potential for respondent bias due to recruitment of patients from one general practice. Also, interviewer was known by many of the respondents. Small sample size of health professionals and only included between 1 and 3 representatives from each profession. In addition, GPs were all from same practice. |
| Hush, 2011 | Patient satisfaction with musculoskeletal physical therapy care: a systematic review | To systematically and critically review literature to ascertain satisfaction with musculoskeletal physical therapy and factors associated with satisfaction | Systematic review of clinical trials, observational studies, surveys or qualitative studies. Meta-analysis on 7 studies. | Patient | Patients highly satisfied with musculoskeletal physical therapy across outpatient settings in multiple countries.<br>Limitations: Not solely related to OA. Non-respondent bias from individual studies may affect the accuracy and representativeness of data |
| Alami, 2011 | Patients' and practitioners' views of knee osteoarthritis and its management: a qualitative interview study | To identify the views of patients and care providers regarding the management of knee osteoarthritis and to reveal potential obstacles to improving health care strategies | Qualitative study based on semi-structured interviews of a stratified sample of 81 patients (59 female) and 29 practitioners (11 GPs, 6 rheumatologists, 4 orthopaedic surgeons, and 8 alternative medicine GPs; 8 female) | Patient, healthcare provider | Patients feel their complaints are not taken seriously and practitioners pay more attention to the knee that the individual and not enough time is spent on information and counselling. Negative perceptions of drugs and medical uncertainty about OA, leading to poor adherence and possible switch to CAM. Knee OA inevitable due to ageing, and not much can be done to modify its progression.<br>Different perspectives – patients and healthcare providers<br>Healthcare providers: have difficulty in communicating treatment strategies<br>Limitations: None described. 73% of patients were female; 72% of practitioners were male. |

| First author, year | Title | Objective | Study design, methods and sample | Study perspective | Findings/study limitations |
|---|---|---|---|---|---|
| | | | | | Potential for bias. |
| Cordero-Ampuero, 2012 | Evaluation of patients' and physicians' expectations and attributes of osteoarthritis treatment using Kano methodology | To analyse patient's and physicians' expectations with regard to the treatment for OA. | 967 patients with OA (832 female; mean age of 64 years) completed two questionnaires – first for demographic data and clinical data related to their condition, second measured health status, patient expectations regarding medications and rating of the importance of the attributes of the medication.<br>383 orthopaedic surgeons (male = 330, mean age 47 years) | Patient, healthcare provider | Patients and physicians have differing perspectives regarding OA treatment: patients view relief of symptoms as their main priority; physicians see the avoidance of long-term adverse events as their priority.<br>Limitations: Non-representatives of patient sample gender (75% female). |
| Sherman, 2013 | Well-being among older adults with OA: direct and mediated patterns of control beliefs, optimism and pessimism | To assess the contribution of important psychological resources (optimism, pessimism and control beliefs) to the psychological well-being of older adults with OA. | Cross-sectional survey of 160 community dwelling older adults with OA (female = 128). | Patient | Optimism and pessimism were associated with higher depressive symptoms and lower self-esteem indirectly through constraints beliefs. Analysis of life satisfaction showed optimism and pessimism were each partially mediated through mastery and constraints beliefs.<br>Limitation: Non-random selection of sample. Nevertheless, reflected demographic makeup of the selection area. |
| Laba, 2013 | Patient preference for adherence to treatment for osteoarthritis: the Medication Decisions in Osteoarthritis Study (MEDOS) | To estimate the relative influence of medication related factors and respondent characteristics on decisions to continue medication. | Self-administered survey of 188 people (female = 104; mean age 62 years) with symptomatic OA. | Patient | 4 of 7 medication factors (side-effects, out-of-pocket costs, mode of action, treatment schedule) had a significant effect on the choice to continue medication; patient characteristics did not. A component of decision-making behaviour is intentional and subject to rational choice.<br>Limitations: Conducted within clinical trial population, which may affect generalizability. Also, respondents are evaluating hypothetical medications, which may not agree with actual behaviour. |

## 2.3. Beliefs and Attitudes about OA

The patient belief that joint pain is a normal part of the ageing process has been frequently reported in the literature (Sanders, Donovan *et al.* 2002; Sanders, Donovan *et al.* 2004; Gignac, Davis *et al.* 2006; Alami, Boutron *et al.* 2011) and this often has profound implications on the behaviours adopted by patients. Sanders and colleagues (2002), for example, have reported that this belief commonly causes patients to not seek appropriate medical treatment for their OA. A systematic review by Smith *et al*. (2014) supports this view, concluding that this reluctance to seek professional help often occurs only after a prolonged period of self-management. The suggestion made in another study was that diagnosis was sought only once the symptoms impacted on lifestyle (Turner, Barlow *et al.* 2007). The participants in this study made sense of their diagnosis and the causes of their OA by reflecting on their personal biography (e.g., work life or sporting experiences).

The stoic acceptance by patients of their condition and preparedness to 'learn to live with it' was a commonly expressed theme in much of the literature. One study from France explored this attitude with their analysis showing that younger OA patients are less accepting of the lifestyle impact of OA than more elderly patients (Gignac, Davis *et al.* 2006). This was consistent with the views expressed by younger participants in the study by Turner *et al*. (2007). Cultural and social factors have also been shown to be associated with patient perceptions of OA (Ibrahim, Siminoff *et al.* 2001). Furthermore, these beliefs and attitudes are not static, changing over time as the disability associated with the condition worsens (Bijsterbosch, Scharloo *et al.* 2009).

The psychological burden of dealing with OA was a significant concern for participants in several studies (Neville, Fortin *et al.* 1999; Tallon, Chard *et al.* 2000; Hill, Dziedzic *et al.* 2011). Many patients expressed the belief that their doctors inadequately addressed this aspect. In discussing the effect of hand OA on the patient, Hill *et al*. (2011) found that patients perceived a lack of understanding by heath care professionals of the condition's psychological impact. Alami *et al*. (2011) emphasized the need for health professionals to manage the symbolic, temporal, relational psychological, emotional, material as well as the physical dimensions to the condition – in other words, it was desirable to take a holistic approach. Rosemann and colleagues (2006) reiterated the importance of improved psychological support, commenting that patients often lacked information on where this support could be provided, a view shared by participants in the study by Gignac *et al*. (2006). The importance of positive social relations to the psychological well-being of the elderly with OA was re-affirmed by the results reported by Ferreira and Sherman (2007). Their study

stressed the benefits of individuals having an optimistic outlook on their condition, whilst another study found that people who demonstrate higher levels of pessimism may be particularly at risk for poorer psychological well-being due to social isolation (Luger, Cotter *et al.* 2009).

Some research emphasized that the most important concerns of many patients were pain and fear of disability (Neville, Fortin *et al.* 1999; Rosemann, Wensing *et al.* 2006). Perhaps not surprisingly, it has been reported that symptom relief was the main priority for most patients (Cordero-Ampuero, Darder *et al.* 2012). The participants in the study by Neville and colleagues (1999) expressed concerns about the future consequences of the disease, the loss of manual dexterity and independence, and the fear of becoming a burden to their family.

A recurring theme across the literature was the belief among patients that they receive inadequate information about the treatment options for OA (Gignac, Davis *et al.* 2006; Mitchell and Hurley 2008; Hill, Dziedzic *et al.* 2011; Mann and Gooberman-Hill 2011). It has been frequently found that better information on the nature of disease progression can improve patient self-management and coping strategies (Alami, Boutron *et al.* 2011; Mann and Gooberman-Hill 2011). Focus groups in the study by Mann and Gooberman-Hill (2011) described detailed informational needs that assist patients to manage their OA, including dietary and exercise advice, ways to minimise OA symptoms and progression, and practical information about aids and local support services.

As mentioned previously, far less literature dealt with healthcare provider beliefs and attitudes about OA. It was also apparent from the literature that healthcare providers and patients have different orientations: many medical practitioners, for example, approached OA from the perspective of acceptance, whereas patients believed that they could control disease progression (Kee 1998; Gignac, Davis *et al.* 2006). Review of the literature affirmed that healthcare provider views of the disease were not homogenous. The French study by Alami and colleagues (2011) showed how beliefs wavered between a fatalist view that trivialised the condition and a more pragmatic approach that sought tangible improvements in patient lifestyles. Mann and Gooberman-Hill (2011), on the other hand, found that UK health professionals in their study - which included GPs, medical specialists, nurses and allied health practitioners, lamented the trivialisation of the disease.

Rosemann *et al*. (2006) have discussed some of the challenges faced by GPs in diagnosing OA, particularly the difficulties in assessing to what extent complaints originated from the condition itself, rather than concomitant depressive symptoms. The failure of healthcare

providers – GPs and physiotherapists in particular, in motivating patients to exercise was a source of frustration commonly reported in the literature (Rosemann, Wensing *et al.* 2006; Hill, Dziedzic *et al.* 2011).

As with the beliefs expressed by patients, the literature reported that many healthcare providers acknowledged the problem of insufficient information being made available to OA patients (Alami, Boutron *et al.* 2011; Mann and Gooberman-Hill 2011). Mann and Gooberman-Hill (2011) found that health professionals emphasized the need for early education about OA, citing that patients' expectations and illness perceptions had an important effect on their acceptance of self-management and treatment options.

### *2.3.1. Beliefs and Attitudes about Non-drug Treatment for OA*

The literature presented a diversity of patient beliefs concerning the non-drug treatment of OA. Notwithstanding the fact that exercise was acknowledged as a key component to the successful management of OA (Kee 1998; Tallon, Chard *et al.* 2000; Rosemann, Wensing *et al.* 2006; Alami, Boutron *et al.* 2011), the issue of non-adherence to exercise recommendations dominated the reviewed articles.

A review article by Marks (2012) focussed on exercise for OA of the knee and concluded that whilst there was no direct evidence to implicate non-adherence to poor health outcomes, it clearly should be considered as an explanatory factor, particularly given the abundant evidence in support of the benefits of exercise (National Collaborating Centre for Chronic Conditions - Osteoarthritis 2008; RACGP Osteoarthritis Working Group 2009; Rheumatology Expert Group 2010; Hochberg, Altman *et al.* 2012). Marks cited many studies that have highlighted the profound impact patient beliefs and attitudes have on adherence to recommended exercise regimens for OA. Several belief and attitudinal categories were identified including self-efficacy (*confidence in being able to carry out the recommended exercise*) (McAuley, Jerome *et al.* 2003; Medina-Mirapeix, Escolar-Reina *et al.* 2009), recognition of exercise importance (*knowledgeable about exercise regimen and its potential effectiveness*) (Cameron 1996; Resnick and Spellbring 2000), and self-motivation (*personal trait which may modify how one reacts to exercise-related demands)* (Annesi 2002).

Hill and colleagues (2011) conducted focus groups to elicit patient perceptions and experiences concerning the treatment and management of hand OA. They suggested that the reluctance of participants to exercise their hands and fingers might be related to a belief that their OA was due to 'wear and tear' and 'past use'. They noted that other qualitative studies

have highlighted that this belief may also apply to patients with OA of the knee (Hendry, Williams *et al.* 2006; Hurley, Walsh *et al.* 2010).

In a review paper that explored the physiotherapy management of knee OA, Page and colleagues (2011) reported that adherence to exercise was often good in the immediate period following the commencement of an exercise program, but declined rapidly over time. This behaviour is explained further in the study by Campbell et al. (2001) who contended that a necessary precondition for continued adherence was the perception that exercise is effective in ameliorating symptoms. By way of contrast, the cohort in the study by Rosemann et al. (2006) cited pain, lack of knowledge, limitations in mobility and lack of motivation as the principal reasons for the failure to exercise. A patient's coexistent depression was also found to be an important barrier to exercise (Rosemann, Wensing *et al.* 2006).

Participants in the study by Turner *et al*. (2007) have offered a different perspective to explain non-adherence, suggesting a belief that weight-bearing exercise seems counter-intuitive, as similar activities were a contributing factor in the development of their condition in the first place.

The relationship between the healthcare provider and the patient was highlighted as a key aspect to exercise adherence amongst the cohorts in Campbell *et al*. (2001), Hendry *et al*. (2006), Holden *et al*. (2009), and Alami *et al*. (2011). Physiotherapists played an important role in providing advice about exercise, and motivating patients to maintain adherence to recommended exercise routines (Hendry, Williams *et al.* 2006). A patient's sense of loyalty to their physiotherapist was identified as a driver for continued exercise adherence (Campbell, Evans *et al.* 2001).

The qualitative study by Alami *et al*. (2011) reported on the importance of the doctor-patient relationship to adherence, and in particular, the primacy of the interpersonal and communication skills of the doctor. A patient's confidence with their medical practitioner was improved when they were perceived as accessible, ethical and resolute in disease management; it was compromised when the medical practitioner accentuated the patient's feeling of uncertainty about OA, trivialised the seriousness of the condition, and when they imparted the feeling that therapeutic options were only palliative. Outright rejection of CAM by medical practitioners was also identified as the source of patient dissatisfaction (Alami, Boutron *et al.* 2011).

### *2.3.2. Beliefs and Attitudes about Drug Treatment of OA*

In considering the beliefs and attitudes about drug therapies for OA, a number of papers have referred to priorities, barriers and challenges from the perspective of both healthcare providers and patients. Rosemann *et al*. (2008) reported that for many GPs the focus of most of their OA consultations related to pain relief. In terms of explaining analgesic options, Barozzi et al. (2009) found this to be generally poorly managed. GPs expressed some challenges with drug prescribing, with one German study reporting that patients did not accept paracetamol as a 'real pain reliever' due to its common availability and usage (Rosemann, Wensing *et al.* 2006). GPs in the study by Rosemann et al. also reported barriers to the prescribing of opioids due to a perception by patients that these drugs were too potent. For all GPs in this study, NSAIDs represented the main drug of choice for the treatment of OA, although they expressed concern about potential adverse effects (Rosemann, Wensing *et al.* 2006). The study by Alami et al. provided a more detailed analysis of treatments and prescription strategies gleaned from interviews with a broad cross-section of healthcare providers. A summary of their findings is presented in Table 5.

**Table 5: Summary of findings by Alami *et al.* – drug treatments for OA and healthcare provider beliefs and attitudes**

| Treatment | Beliefs and attitudes |
|---|---|
| Analgesics | Symptomatic treatments with limited effects (medical practitioners) |
| NSAIDs | Symptomatic treatments with frequent and serious side effects and numerous contra-indications (medical practitioners) |
| SySADOAs * | Limited scientific proof of efficacy, but with few and minor side effects (medical practitioners) |
| All drugs | Dangerous due to side effects, masking of symptoms, and inhibiting cartilage regeneration (alternative therapists) |
| Knee replacement surgery | Ultimate and only really efficient treatment (GPs and rheumatologists)<br>One of the treatment options (surgeons) |

* A generic term used for symptomatic slow acting drugs for OA and includes glucosamine sulphate and related compounds, and chondroitin sulphate.

Non-adherence to pain medication for OA was also the focus of several studies, highlighting suboptimal outcomes in terms of symptom relief. This is a particularly important area of research, as the treatment of OA is directed principally at pain management. Sale and colleagues (2006) reported on research that found approximately 50% of individuals with chronic disease were adherent to medication recommendations from health professionals, regardless of disease, treatment or age. Given these poor results, their qualitative study sought to explore the experience of adherence to different pain medication in older community dwelling adults with OA (Sale, Gignac *et al.* 2006). Their analysis was organised into two separate themes: Theme 1 focussed on how adherence to pain medication differed from other prescribed medications; Theme 2 investigated how perceptions and attitudes toward pain play an integral role in adherence to pain medication. Notably their study was silent on the issue of patient perceptions of risk associated with NSAID use. A summary of their findings is presented in Table 6.

**Table 6: Summary of findings by Sale *et al*.**

| Theme 1 | Theme 2 |
|---|---|
| • Most participants treated their pain medications differently from other medications<br>• Focussed on 'take as needed' or 'as required'<br>• Generally adherent to their other medications, however, they purposefully did not take their OA pain medication as prescribed<br>• Took at lower dose or frequency than prescribed<br>• Often rationed pain medication<br>• Fear of addiction for many | • Perception of pain played role in adherence<br>• Low pain medication intake due to high pain tolerance<br>• Fighting the pain, allowed increase in pain tolerance<br>• Many took medication only when pain became very bad |

Bower and colleagues (2006) also undertook a qualitative study that investigated the factors that influence medication choice amongst a cohort of elderly OA patients. Whilst their analysis was somewhat scant on detail, the findings showed only limited commonality with the results reported in other literature. For example, patient concern about risk associated with NSAID use contrasted with the findings reported by both Fraenkel *et al*. (2004) and Milder *et al*. (2011) where risk was not found to be a key consideration by patients in using medication for their OA. Medical practitioners, not pharmacists, were also the most important source of drug information for patients in other studies (Neville, Fortin *et al*. 1998; Mann and Gooberman-Hill 2011).

Table 7 presents a summary of the four themes that emerged from the Bower and colleagues' analysis.

**Table 7: Summary of findings by Bower *et al*.**

| Theme 1 | Theme 2 | Theme 3 | Theme 4 |
|---|---|---|---|
| • Physician influence - ranged from strong to weak | • 'Pharmaceutical inertia' – fear of changing medication | • Side effects and lack of effectiveness of some NSAIDs*<br>• Cost generally not a barrier to medication | • Pharmacists most important source of information<br>• Family and friends – variable |

* Focuses on COX-2 selective inhibitors, a form of NSAIDs that directly targets cyclooxygenase-2, an enzyme responsible for inflammation and pain.

Several studies focused on patient beliefs and attitudes with respect to specific OA medications. Barozzi and Tett (2009), for example, investigated the perceived barriers to paracetamol (acetaminophen) use – an area of important research due to this drug's role as a first- line drug therapy for most patients with OA (RACGP Osteoarthritis Working Group 2009; Rheumatology Expert Group 2010). Significantly, they suggested that paracetamol was largely underutilised due to patients' poor knowledge concerning the drug's effectiveness, and a failure to recognise its benefit in the long-term treatment of OA.

A qualitative study by Milder and colleagues (2011) explored the understandings of risk that older-aged primary care patients have in the context of the use of oral NSAIDs to treat OA. They identified three possible processes by which patients detached themselves from information about the risks associated with NSAID use and/or modulated their beliefs about risk (see Table 8).

**Table 8: Summary of findings by Milder *et al*. – processes and beliefs about risk**

| Process | Description |
|---|---|
| Transference of responsibility | Transfer to GP the responsibility to consider any risks associated with NSAID use. |
| General versus specific risk | General distrust of medicines in general. Modulated their sense of danger by limiting the frequency or dosage of their NSAID. |
| Personal immunity | Had experienced no adverse events in the past, so perceived NSAIDs to be of limited risk for them. |

Milder and colleagues (2011) published a further paper that explored the key motivators behind the selection of NSAIDs, paracetamol and complementary medicines (CM) by patients with OA, using the same sample as before. Three key themes emerged from this analysis (see Table 9).

**Table 9. Summary of findings by Milder et al. – themes**

| Theme | Details |
|---|---|
| Reliance | Paracetamol (non-reliant) –scepticism about effectiveness |
| | NSAIDs (reliant) – satisfied needs |
| | CM (not-reliant) – no risk |
| Routine | NSAIDs / CM – routine |
| | Paracetamol – not routine |
| Pill load | Paracetamol – resistance to pill load |

Their analysis concluded that NSAIDs were preferred over paracetamol in the treatment of OA at the recommended therapeutic dose. This finding is consistent with the study by Barozzi and Tett that found an underutilisation of paracetamol and other studies that have reported on the inappropriately high usage of NSAIDs (Jordan, Sawyer *et al.* 2004; Linsell, Dawson *et al.* 2005).

A self-administered survey was used by Laba and colleagues (2013) to estimate the relative influence of medication-related factors and respondent characteristics on decisions to continue medications among people with symptomatic OA. The foci of their study were the medications paracetamol, NSAIDs and glucosamine (sulphate). Notably, they ignored other medication classes, such as opioids, in their analysis. Side effects, out-of-pocket expenses, mode of action (e.g. slow or quick release), and treatment schedule were all found to have a significant effect on the choice to continue taking medication.

Participants in the studies by Hill *et al*. (2011) and Gignac *et al*. (2006) also expressed some reticence about taking their medications as prescribed, in particular citing a concern about actual or perceived side-effects, as well as a fear of tolerance to medication. Treating pain with medication was believed to mask rather than cure symptoms, and so was perceived as potentially harmful (Gignac, Davis *et al.* 2006). It was also reported that these beliefs appeared to influence the use of CAM (Hill, Dziedzic *et al.* 2011).

Whilst several studies mentioned patient beliefs and attitudes about CAM (Kee 1998; Ibrahim, Siminoff *et al.* 2001; Fraenkel, Bogardus *et al.* 2004; Juby, Skeith *et al.* 2005; Gignac, Davis *et al.* 2006; Sale, Gignac *et al.* 2006; Mitchell and Hurley 2008; Hill, Dziedzic *et al.* 2011; Laba, Brien *et al.* 2013), most only provided a cursory assessment of possible

motivations for patient use of these substances. It is noteworthy that two studies that investigated beliefs about treatment options from the perspective of both patient and healthcare provider made no mention of CAM (Rosemann, Wensing *et al.* 2006; Mann and Gooberman-Hill 2011).

## 2.4. Summary of Literature Review

***Beliefs and attitudes about OA***

1. Patients and healthcare providers have different orientations towards OA;
2. Patient acceptance of OA as a normal process of ageing is often a barrier to seeking medical help;
3. The psychological burden of OA is often underestimated by doctors;
4. Many patients fear the future consequences of the disease;
5. Patient access to useful information about OA needs to be addressed; and
6. GPs experienced the constraint of having deficient information on therapeutic options for OA.

***Beliefs and attitudes about non-drug treatment***

1. The range of different beliefs and attitudes explain non-adherence;
2. Non-adherence by patients to exercise recommendations identified as a key issue; and
3. Relationship of healthcare provider and patient is a key aspect to exercise adherence.

***Beliefs and attitudes about drug treatment***

1. Various patient attitudes about drugs are fundamental to non-adherence;
2. Paracetamol – undervalued by patients as a pain reliever;
3. NSAIDs – many patients have concern about the risk of adverse effects;
4. Opioids – considered by many patients as too potent. Fear of addiction; and
5. CAM – patients see them as ‘harmless’ but worth trying.

## 2.5. Conclusion

The literature review has revealed that the beliefs and attitudes of patients and healthcare providers significantly influence the delivery and outcomes of OA care. Several major issues have emerged from the review that suggests the need for further research.

Firstly, it was apparent that a better understanding of patient perceptions about OA and its management would provide insight into aspects of care that could be targeted for intervention with the aim of improving care. In particular, the issue of patient non-adherence to treatment recommendations was poorly understood.

Secondly, CAM use is a significant component of self-management strategies for many OA patients, despite limited evidence of its efficacy. Further research into the beliefs that are influential in CAM use are clearly warranted.

Thirdly, it is important to understand how GPs – the primary healthcare providers for most OA patients – are managing the condition. An examination of current GP approaches to the treatment of a typical case is justified.

Finally, although there is abundant evidence to guide best practice in the management of OA, it is important to understand how the uptake of evidence into practice is influenced by the attitudes and behaviours of GPs.

# 3. Overview of Methods

## 3.1. Introduction

This chapter provides an outline of the CareTrack Australia (CTA) study, the methods used in recruiting patients and GPs, and a description of the two questionnaires used for data collection for this thesis. A more detailed exposition of methods is given in each of the five articles discussed in Chapter 4 and reprinted in the appendices.

## 3.2. The CareTrack Australia Study

The CTA study was part of a National Health and Medical Research Council (NHMRC) research program that sought to determine the extent to which the practice of healthcare in Australia was consistent with evidence- or consensus-based medicine (Hunt, Ramanathan *et al.* 2012; Runciman, Coiera *et al.* 2012; Runciman, Hunt *et al.* 2012). This PhD formed a component of the CTA study.

The initial phase of the CTA project involved the selection and ratification of a suite of clinical indicators for 22 acute and chronic conditions that represented the leading causes of morbidity, mortality and utilisation of health care in Australia as well as preventive care related to these causes. As part of the CTA project, this PhD focused on one of the most prevalent conditions, namely OA. The CTA program provided the mechanism for patient and GP participant recruitment that was used in this PhD.

## 3.3. CTA Recruitment of Participants and General Practitioners

A sample designed to be representative of the Australian adult population was randomly selected from the telephone directory (Telstra white pages) from defined regions within the States of New South Wales and South Australia. One adult was randomly selected from each household and recruited over the phone. Those who agreed were subsequently mailed a package containing information about the study and a consent form to allow access to their medical records. Participants who provided consent were called back and asked if they had one or more of the 22 CTA conditions, and which healthcare providers they had seen for these in 2009 and 2010. Healthcare providers including GPs, chiropractors, physiotherapists (physical therapists) and medical specialists were contacted and asked for consent for trained CTA surveyors to access the medical records of consenting participants. Only patients who

had documented care for OA during 2009 and 2010 were included; some had stated that they had OA but there was no documentation of OA care during these years. Human Research Ethics Committee approval was obtained from all relevant bodies and sites.

## 3.4. Survey Instruments

The two questionnaires that were used for this thesis were not originally part of the CTA study, and were designed and validated by the researcher. Data pertaining to patients with OA were obtained using a 19-page, three part self-administered questionnaire (see Appendix I). This survey instrument has been fully described in the methods section of the two articles reprinted in Appendices B and C that relate to patients, viz. '*Australians with osteoarthritis; the use of and beliefs about complementary and alternative medicines*' and '*Australians with osteoarthritis; satisfaction with healthcare providers and the perceived helpfulness of treatments and information sources*". Table 10 presents a summary of the OA patient questionnaire.

**Table 10: CareTrack Australia – survey of care for people with osteoarthritis: Summary**

| DETAILS | QUESTIONS (number) | RESPONSE/ SCALE |
|---|---|---|
| **SECTION 1 - HEALTH ASSESSMENT** | | |
| Ability to carry out specific activities of daily living (ADL) | 20 | 5-point Likert |
| Mobility | 4 | Yes/No |
| Overall ADL ability | 1 | 5-point Likert |
| Pain – in past week | 1 | 1 to 10 |
| Health – self assessed status | 1 | 1 to 10 |
| **SECTION 2 – PATIENT KNOWLEDGE** | | |
| Knowledge of OA with respect to causation, symptoms, diagnosis, drug treatment (including adverse effects), exercise, complementary therapy, and natural history of condition | 16 | Multiple choice – 2/6 options |
| **SECTION 3 – ABOUT YOUR CARE** | | |
| **About GP** | | |

| DETAILS | QUESTIONS (number) | RESPONSE/ SCALE |
|---|---|---|
| Satisfaction with aspects of GP care (including communication, time spent, thoroughness of consultation, information about medications etc.) | 10 | 5-point Likert |
| Satisfaction with other aspects of GP care | 1 | Free text |
| Adherence to GP recommendations | 1 | 5-point Likert |
| Reasons for non-adherence | 1 | Free text |
| GP discussion about surgery | 1 | Yes/No |
| Overall satisfaction with GP care for OA | 1 | 5-point Likert |
| Reasons for satisfaction rating | 1 | Free text |
| **About other health professionals** | | |
| OA care provided by other health professionals | 1 | Yes/No |
| Other health professionals seen | 1 | Multiple choice – 8 options |
| Rating of other 8 other categories of health professionals (rheumatologists, physiotherapists etc.) | 1 | 6-point Likert |
| **About treatment** | | |
| Rating of 13 categories of treatment options (weight loss, exercise, physiotherapy, NSAIDs, analgesics, complementary and alterative medicines etc.) | 1 | 6-point Likert |
| Frequency of exercise (daily, weekly etc.) | 1 | 5 options |
| Barriers to exercise | 1 | Yes/No |
| Barriers to exercise – description | 1 | Free text |
| Other medications for OA | 1 | Yes/No |
| Other medications for OA – description | 1 | Free text |
| **About complementary and alternative medicines (CAM)** | | |

| DETAILS | QUESTIONS (number) | RESPONSE/ SCALE |
|---|---|---|
| CAM – experience with | 1 | Yes/No |
| Beliefs about CAM – 6 statements | 1 | 5-point Likert |
| Description of CAM used | 1 | Free text |
| GP awareness of CAM use | 1 | Yes/No |
| **Information about OA** | | |
| Rating of understanding about OA – 10 areas (including treatments, services available, pain management, CAM) | 1 | 1 to 10 |
| Rating of information sources – 10 areas (including GP, physiotherapist, family and friends, OA support groups, Internet) | 1 | 6-point Likert |
| Attitude about OA information | 1 | Free text |
| Overall satisfaction with OA information | 1 | 5-point Likert |
| Other comments about OA information needs | 1 | Free text |
| Any other comments about OA – treatment and contact with health professionals | 1 | Free text |

The second questionnaire was used to survey GPs (8 pages, self-administered – see Appendix J). This survey instrument formed the basis for two articles reprinted in Appendices D and E, namely '*Australian GP management of osteoarthritis following the release of the RACGP guideline for the non-surgical management of hip and knee osteoarthritis*' and '*Australian general practitioner attitudes to clinical practice guidelines and some implications for translating osteoarthritis care into practice*'. Table 11 presents a summary of the OA GP questionnaire.

**Table 11: CareTrack Australia – survey of GP management of patients with osteoarthritis, use of guidelines and practice characteristics: Summary**

| DETAILS | QUESTIONS (number) | RESPONSE / SCALE |
|---|---|---|
| **Clinical vignette (typical presentation of patient with OA)** | | |
| Treatment choices – 6 suggested drug therapies, including glucosamine and/or chondroitin, NSAIDs, and Tramadol | 12 | Yes/No and Free text |
| Analgesic regimen – categories of 'Drug', 'Dose', 'Frequency', 'Regular or as needed' and 'Duration' | 5 | Free text |
| Changes to medication | 1 | Free text |
| Non-drug therapy | 1 | Free text |
| Information about analgesics | 1 | Free text |
| GP attitudes toward CAM | 1 | Free text |
| Number of patients per week | 1 | Free text |
| Number of hours worked in practice per week | 1 | Free text |
| **Clinical practice guidelines (CPGs)** | | |
| General attitude toward CPGs | 14 | 5-point Likert (13) and free text (1) |
| Attitude toward CPGs characteristics | 8 | 5-point Likert (7) and free text (1) |
| Attitude toward CPG format | 1 | Multiple choice (4) and free text |
| Attitude toward Royal Australian College of General Practice (RACGP) OA CPG | 2 | Multiple choice (5), 6-point Likert and free text |

| DETAILS | QUESTIONS (number) | RESPONSE / SCALE |
|---|---|---|
| Other OA CPGs | 2 | Yes/No, 5-point Likert and free text |
| **Practice characteristics** | | |
| Staffing, screening practices, patient follow up, quality improvement activities, clinical protocols etc. | 11 | Yes/No, 5-point Likert, multiple choice and free text |

### 3.5. Analysis

A full description of the data analyses is provided in each of the 5 articles presented in the appendices.

# 4. Discussion of Articles

## 4.1. Introduction

This chapter seeks to demonstrate how the five articles coalesce in addressing the thesis topic, '*Understanding how patient and general practitioner beliefs and attitudes influence the provision of appropriate care for Australians with osteoarthritis*'.

The concept of evidence-based medicine (EBM), which has been defined as the practice of medicine that '*integrates best external evidence with individual clinical expertise and patients' choice*' (Sackett, Rosenberg *et al.* 1996), is central to this thesis. The best external evidence is commonly represented in the form of CPGs, which as we saw in the introduction to this thesis, can assist medical practitioners and patients make decisions about appropriate healthcare. To be effective, however, CPGs must be in formats that promote their use (Grol and Buchan 2006).

The second tenet of EBM – clinical expertise and decision-making, is complex; it usually involves a trade-off between art and science, intuition and analysis, gut instinct and evidence, experience and knowledge (Woolever 2008). In other words, the 'hard edge' of rational scientific reasoning is mediated by the beliefs and attitudes of clinicians. Often these beliefs and attitudes introduce bias, which can lead to poor decision-making and inappropriate care.

Finally, we have the third principle of EBM that embraces the view that patient preferences should be considered in medical decision-making (Coulter, Entwistle *et al.* 1999). In most circumstances, appropriate care will not be received if a patient's role in decision-making about their medical treatment is denied.

Each of the five articles presented deal directly with an element of EBM and, in doing so, address the questions implicit in this thesis.

Table 12 below summarizes the five articles, the particular focus of each and the component of EBM that is addressed.

**Table 12. The five presented articles, with the focus and element(s) of EBM covered**

| Article | Focus | Element(s) of EBM |
|---|---|---|
| 1. Assessing appropriateness of OA care using quality indicators: a systematic review | Appropriateness of OA care | Best external evidence |
| 2. Australians with OA; satisfaction with healthcare providers and the perceived helpfulness of treatments and information sources | Patient beliefs and attitudes, appropriateness of OA care | Patient preferences |
| 3. Australians with OA – the use of and beliefs about complementary and alternative medicines | Patient beliefs and attitudes, appropriateness of OA care | Patient preferences |
| 4. Australian GP management of osteoarthritis following the release of the RACGP Guideline for the non-surgical management of hip and knee OA | GP beliefs and attitudes, appropriateness of OA care | Clinical expertise, best external evidence |
| 5. Australian GP attitudes to clinical practice guidelines and some implications for translating OA care into practice | GP beliefs and attitudes, appropriateness of OA care | Clinical expertise, best external evidence |

In this chapter, the contribution that each of the five articles makes to the thesis research question is explored. The findings are summarised and discussed in the context of what is already known from published literature. This includes literature that has been described in the scoping review in Chapter 2, literature that has been cited in the articles, and relevant literature from the reference lists in these citations. Commonalities and differences emanating from the examination of the articles and the literature are explored in this discussion.

## 4.2. Discussion of Article One

**Assessing appropriateness of osteoarthritis care using quality indicators: a systematic review**

This article was pivotal to this thesis as it established the case that there are widespread deficits in the provision of appropriate OA care. Article One used a systematic review to summarize the findings from numerous studies that have reported on the quality of OA care. Fourteen studies from five countries across multiple care settings and a variety of patient populations were included in a meta-analysis that assessed OA care by evaluating compliance with process related QIs for four distinct OA treatment domains. Structure related QIs (concerning characteristics of the healthcare system) and outcome related QIs (concerning patient related results of healthcare) were not included in the meta-analysis.

The overall pass rates for three of the QI categories, '*pain and functional status assessment*', '*non-drug treatment*' and '*drug-treatment*' were all under 50%; the fourth category, 'surgical referral', reported an overall rate of less than 80%. The overall pass rate for compliance with all OA QIs from the single Australian study (Runciman *et al*. 2012) was 43% (95% CI 41 – 45); individual domain pass rates were 92% (*referral for joint replacement*; 95% CI 87 – 95), 71% (*pain and functional status assessment*; 95% CI 67 – 74), 40% (*drug treatment*; 95% CI 38 – 42) and 20% (*non-drug treatment*; 95% CI 18 – 23). Whilst all were marginally better than those reported in overseas studies, it was still evident that OA care at the population level fell significantly short of what could be considered appropriate.

Other studies, whilst not included in the systematic review because they did not meet the study's inclusion criteria of using QIs to assess the quality of care, have corroborated the findings of suboptimal management of OA. Brand and colleagues (2014) described the management of hip and knee OA by GPs in Australia by analyzing 489,900 GP encounters related to OA, concluding that medication prescription rates were substantially higher than rates of lifestyle management (advice about weight management, exercise etc.). Furthermore, their results confirmed that other non-pharmacological interventions for OA, such as referral to physiotherapists, were not given the attention that is warranted. They did, however, highlight that the lack of longitudinal data limited their ability to provide a definitive assessment of the quality of care.

In a study of the management of musculoskeletal conditions by a cohort of 446 GPs in the UK, only 62% expressed confidence in managing OA (Roberts, Adebajo *et al.* 2002). Further,

it was reported that a reduction of inappropriate prescribing of NSAIDs would be helped by better patient education materials on treatment (90%) and more resources for the primary care physiotherapy service (85%).

A population survey of nearly 400 community dwelling adults in Canada aged ≥ 55 years with hip and knee OA found that only one-half of participants received a recommendation for comprehensive therapy, defined here as including a combination of non-pharmacological interventions (patient education, exercise, physical therapy etc.) and pharmacological treatments (analgesics, NSAIDs steroid injections, topical therapy etc.) (Glazier, Badley *et al.* 2003).

McHugh and colleagues (2007) used semi-structured qualitative interviews to explore the experiences of 21 individuals in the UK with end-stage lower limb OA. Their study concluded that patients received limited management from health professionals while on the waiting list for joint replacement, and, in particular, were not afforded adequate pain relief. A longitudinal study conducted by the same lead author and others investigated the quality of OA care received by 268 patients in one UK hospital over a 12-month period (McHugh, Campbell *et al.* 2012). Whilst most participants (82%) felt that they were involved in decisions about their care, 21% reported that they had not received a diagnosis of OA. Information was not provided on OA, exercise and pain management to 58%, 57% and 65% of participants, respectively.

Several studies dealt with the issue of suboptimal care from the perspective of treatment variation due to differences in demographic variables (Katz, Freund *et al.* 1996; Hawker, Wright *et al.* 2000; Ibrahim, Siminoff *et al.* 2002; Skinner, Weinstein *et al.* 2003). As most of this research pertained to variation in the rate of joint replacement surgery, it was outside the scope of this thesis.

As mentioned previously, process related QIs were the sole metric used in Article One. Only one study was identified that included outcome related QIs in their analysis (Jansen *et al.* 2010), however, their failure in assessing the scientific validity of the indicators they included has been criticized (Strömbeck *et al.* 2012). The literature has generally assessed process related QIs as being superior to outcome indicators. Mant (2001), for example, has argued that process measures are easier to interpret than outcome measures, and that they are more sensitive to differences in the quality of care. MacLean and colleagues (2004) have cited the technical difficulties with assessing health outcomes, particularly for chronic diseases such as OA that may take many years to develop. In contrast, QIs that measure process can be

measured relatively easily and continuously, allowing for comparatively rapid identification of healthcare deficiencies. Other studies have highlighted the need for risk adjustment when developing and using outcome related QIs, taking into account the differences in patient demographics, psychosocial characteristics, lifestyle factors, co-morbidity and disease severity (Mainz 2003).

The fact that outcome measures have some identified deficiencies and challenges in construction is not a reason to ignore them. Mant (2001), for example, recognized that outcomes related QIs have a useful role in the monitoring of healthcare quality in their own right. Knowing if there has been a reduction in OA related pain following treatment, for example, is valuable information. Palmer (1998) has suggested that outcomes data are most useful for tracking care given by high-volume providers over long periods of time, and for detecting problems in implementation of care processes.

The paucity of literature associated with the use of outcome related OA QIs in quality improvement activities suggests that this is an area where future research should be directed. Defining a standard set of outcome measures for monitoring patients with OA for use across different care settings and for different treatment regimens should be further investigated.

## 4.3. Discussion of Article Two

### Australians with osteoarthritis; satisfaction with healthcare providers and the perceived helpfulness of treatments and information sources

Patient-centred care has been emphasised in healthcare delivery over recent times, necessitating sensitivity to the patients' perspectives (Institute of Medicine 2001). As previously mentioned, it is a central tenet of EBM and fundamental to the provision of appropriate care. Article Two was important to this thesis as it investigated the provision of OA care from the patients' point-of-view. It focussed on how patients perceived OA and the care that they received from their healthcare providers, particularly their GPs. It also explored the value patients placed on different treatment options and their attitudes towards the information sources used to manage their OA.

Most of the study's findings were consistent with the results reported in existing literature. However, there were some notable differences that warrant further exploration. The study found that OA patients were typically very satisfied with the care that they received from their GP, rheumatologist, orthopaedic surgeon and pharmacist, but less so with other healthcare providers (physiotherapists, occupational therapists and dieticians). Few of the studies

included in the scoping review discussed patient satisfaction with their healthcare provider, *per se*. Some, however, did provide analysis of the healthcare provider-patient relationship. Tallon *et al*. (2000), for instance, found that a patient-centred approach was lacking, with doctors often pre-occupied with drug interventions at the expense of patient preferences. Alami and colleagues (2011) described patients feeling that their complaints were not taken seriously, with doctors paying more attention to the affected joint than to the individual. In another study, it was observed that GPs in Australia frequently do not take sufficient account of patient preferences when considering options for pain relief for OA (Milder, Lipworth *et al.* 2011). Although Article Two did not explicitly explore patient perceptions about shared-decision making in their OA management, patients expressed generally favourable responses to questions concerning communication with their GPs.

Article Two reported a diversity of patient responses to the role of ageing in the trajectory of their illness and this has also been reflected in the literature. For many patients, acceptance of the deterioration in joint function as an inevitable product of ageing helped patients rationalise their situation. For others, however, the normalisation of the disease by their GPs was the source of some frustration. The different perspectives were mirrored in the behavioural response of patients – some passively accepting the worsening of their condition, whilst others adopted a proactive approach to self-management. In the former case, the literature reported that many patients do not actively seek appropriate medical treatment, as they perceive it to be futile (Sanders, Donovan *et al.* 2002; Smith, Purdy *et al.* 2014). Whilst there was no direct evidence in our study to confirm that study participants acted in this way, some responses to open text questions implied that patients do not always seek appropriate medical input for their condition.

Article Two reinforced the underestimation by GPs of the psychological burden of OA reported in the literature (Weathers and Creedon 2011), with many patient respondents highlighting the inability of their GPs to deal with the emotional problems associated with their condition. It was also apparent that many GPs ignored this aspect of care, focussing instead on treating the mechanical manifestations of the condition. Article Two identified psychological support as an area of unmet need with respondents commonly expressing uncertainty about where to access appropriate services. Similar findings were reported in other international studies (Gignac, Davis *et al.* 2006; Rosemann, Wensing *et al.* 2006).

The literature emphasised that for many OA patients, their main anxiety related to pain and worsening disability (Neville, Fortin *et al.* 1999; Rosemann, Wensing *et al.* 2006), and that symptomatic relief was their foremost priority (Cordero-Ampuero, Darder *et al.* 2012).

Patients in our study were not asked directly to comment on their main concerns about their condition, however, it was apparent from open-text responses that appropriate pain relief was often their primary objective. Not surprisingly, the condition's impact on lifestyle was frequently mentioned in our article, as it was in much of the reviewed literature.

A patient's perception that they received inadequate information about their OA was a common theme in the literature (Gignac, Davis *et al.* 2006; Mitchell and Hurley 2008; Hill, Dziedzic *et al.* 2011; Mann and Gooberman-Hill 2011) and this was also reported in our study. It was thought that better information empowered patients to more effectively manage their condition, particularly with respect to preventative health strategies such as exercise and weight loss. Article Two described a lack of awareness amongst patients of support services for people with OA, an issue raised in a qualitative study from the UK (Mann and Gooberman-Hill 2011). It is not known if other studies in Australia have investigated patient knowledge and use of OA support groups.

Article Two reported on patient satisfaction with different treatment options for OA. Joint replacement surgery was rated highly, a finding uniformly consistent with many other studies (Jones, Voaklander *et al.* 2000; Bachmeier, March *et al.* 2001; Mancuso and Salvati 2003; Stewart, Stewart *et al.* 2006). Attitudes towards drug therapies were somewhat paradoxical in our study, with drugs being considered both therapeutic and harmful. Drug treatments were commonly and correctly viewed as beneficial for symptomatic relief, yet ineffective for disease evolution. In Article Two, respondents frequently expressed a fear of the impact of drug interactions and adverse effects, a view often mentioned in the literature (Fraenkel, Bogardus *et al.* 2004; Bower, Frail *et al.* 2006; Sale, Gignac *et al.* 2006; Alami, Boutron *et al.* 2011; Hill, Dziedzic *et al.* 2011; Laba, Brien *et al.* 2013).

Notwithstanding the fact that exercise and weight loss are effective first line strategies in the self-management of OA, less than half the respondents to the survey conducted for Article Two considered these treatment options to be helpful. It is plausible that survey participants that had this belief did not follow the advice given to them by their healthcare providers. There is abundant literature that has reported on non-adherent behaviour by OA patients, particularly as it relates to exercise (Campbell, Evans *et al*. 2001; Hendry, Williams *et al*. 2006; Marks 2012; Bennell, Dobson *et al*. 2014).

The poor rating reported for physiotherapy in Article 2 contrasted with the literature, which generally emphasised the positive role that physiotherapists played in providing advice about exercise and encouraging patients to exercise (Hendry, Williams *et al.* 2006; Casserley-

Feeney, Phelan *et al.* 2008; Hush, Cameron *et al.* 2011). The source of patient dissatisfaction with physiotherapy has not been fully explored and further research is warranted.

## 4.4. Discussion of Article Three

**Australians with osteoarthritis; the use of and beliefs about complementary and alternative medicines**

The objective of Article Three was to investigate CAM use amongst a cohort of OA patients and to explore reasons for use. Australians continue to be high users of CAM in the treatment of their OA, despite an absence of substantive evidence in support of their efficacy. Indeed, a recent CPG for the use of OA treatments issued by the American College of Rheumatology specifically advised against the use of both glucosamine and chondroitin sulphate (Hochberg, Altman *et al.* 2012) – the most commonly used CAMs by Australians with OA (AIHW 2010). A systematic review of evidence for the efficacy of CAM in the management of OA found consistent evidence for only two CAM products – capsaicin gel and S-adenosyl methionine (De Silva, El-Methwally *et al*. 2011).

Understanding why Australians with OA use CAM is important as it provides insight into patient beliefs and helps explain behaviours that, in all probability, are no better than placebo with respect to enhancing health outcomes. At the same time, this knowledge may assist policy makers and healthcare providers in developing strategies that may increase the uptake of interventions with known benefits.

Exploration of the beliefs and attitudes of OA patients with respect to the use of CAM is a relatively new and important area of enquiry (Ernst and Hung 2011; Milder, Lipworth *et al.* 2011; Morgan, Williamson *et al.* 2012). As a consequence, there is limited literature that deals specifically with the beliefs and attitudes about CAMs as they apply to OA; most articles reviewed related to general views about CAM from the patient's perspective.

Of the several studies included in the scoping review of literature in Chapter 2, none of them provided a thorough analysis of the reasons for CAM use by OA patients. Although much of the commentary with respect to CAM was brief, there were, nonetheless, some important observations that shared commonalities with the findings reported in Article Three.

Whilst it was acknowledged that the reasons for CAM use were complex and not well understood (Wilkinson, Jelinek *et al*. 2009), users generally had different attitudes to these products than they had towards conventional medicines (Williamson, Tudball *et al.* 2008). Astin (1998) found that CAM users were attracted to these products, not so because of

dissatisfaction with conventional medicines, but mainly because they believed that these alternatives were more congruent with their own values, beliefs and attitudes towards health and life. The conclusions of an Australian study of CAM use in a rural setting reported similar findings, although it was suggested that their beliefs were not strongly held (Wilkinson, Jelinek *et al*. 2009). Contrasting findings were reported in the US study by Blendon, DesRoches and others (2001) who claimed that some users felt so strongly about the health benefits of some CAMs that they would continue to take them even if they were shown to be ineffective in scientifically conducted clinical trials.

Respondents to Article Three were not explicitly asked to explain their reason for CAM use. However, themes emerged in the analysis of the free-text responses to the survey. Our article reported perceived efficacy to possibly be the most influential factor explaining CAM use. In contrast, an Australian study that focused on patient beliefs about pain relief for OA suggested that the willingness of patients to take CAMs, despite being sceptical about their effectiveness might imply that patients have very different expectations of CAM compared with conventional medicines, with much of this relating to a perception that so-called 'natural' products may offer some therapeutic benefit and are safe (Milder, Lipworth *et al.* 2011).

Article Three recognised that patients often had an aversion to the actual or potential side effects of conventional medicine, leading them to try CAMs. Other studies also mentioned patient concerns about the potential and actual risk of conventional medicines as being influential in their decision to use CAMs (Palinkas, Kabongo *et al*. 2000, Huber, Koch *et al*. 2004, Sale, Gignac *et al.* 2006, Marsh, Hager *et al*. 2009).

Some research has explained CAM use in terms of them offering the patient a feeling of taking control over their disease, especially when confronted with fatalistic attitudes and trivialisation of OA by their medical providers (Alami, Boutron *et al.* 2011). A qualitative study by Kee (1998) also identified 'staying in control' as a theme for medication use, and although this mainly related to the use of conventional medicines, it is reasonable to see this as an influential factor explaining CAM use.

Article Three concluded that lifestyle factors, such as behavioural barriers that interfered with the patient's capacity to exercise or lose weight, explained CAM use by some patients. Interestingly, none of the papers identified in a review of published evidence regarding CAM user expectations identified behavioural barriers as being significant (Ernst and Hung 2011),

although it is possible that study participants interpreted their actions more positively as being in control over their health.

A study by Morgan and colleagues (2012) that used a cross-sectional survey of Australians aged over 50 years reported that much CAM use is self-directed, without professional advice. Given that this demographic captures many people with OA, the findings of this study are of particular relevance. The failure of many patients to discuss their use of CAM was identified in much of the literature (McLennan, Myers *et al*. 2006, Xue, Zhang *et al*. 2007, Zhang, Xue *et al*. 2007, Wilkinson, Jelinek *et al*. 2009, Braun, Tiralongo *et al*. 2010, Armstrong, Thiébaut *et al*. 2011, Sibbritt, Adams *et al*. 2012). In Article Three, the majority of respondents (90%) reported telling their medical practitioners about their CAM use, however, as with all self-reported surveys, there is a risk of social desirability bias, and so it is plausible that the actual percentage may be lower.

The absence of communication between patients and medical practitioners about CAM use is an issue that has important ramifications for the appropriateness of care. Of particular concern is the possibility of adverse interactions involving CAM and conventional medicines, and the fact that many patients may be unaware of this. McLennan (2006) also cited literature highlighting potential problems associated with contaminations, variable dosage, dubious quality control and inappropriate labelling of CAMs, although many of these reports emanated predominantly from overseas. In Article Three, two-thirds of patients expressed their belief that CAM products were safe, a view frequently reported in the literature. Whilst this appears to be the case (Williamson, Tudball *et al*. 2008), this highlights the importance of facilitating consumer access to accurate information and lack of evidence on the effectiveness and safety of CAM. There is also a clear need for further research into CAM, particularly for those products for which there is some promising evidence (De Silva, El-Metwally *et al*. 2011).

## 4.5. Discussion of Article Four

**Australian GP management of osteoarthritis following the release of the RACGP guideline for the non-surgical management of hip and knee osteoarthritis**

The primary objective of this article was to examine the treatment approaches by a sample of Australian GPs towards a typical, but hypothetical case featuring an elderly woman with mild to severe OA. GPs were asked to respond with their recommendations about how they would manage her situation. Specifically, they were asked to describe the non-pharmacological therapy they would recommend, the analgesic regimen they would use, and what information they would provide the patient about pain relief options. The survey took place 12 months after the release of the Royal Australian College of General Practitioners Guideline for the non-surgical management of hip and knee osteoarthritis. A secondary objective of the research was to examine if any changes had occurred in OA management since an earlier survey administered by the National Prescribing Service that used the same clinical vignette (National Prescribing Service Limited 2006).

The management of OA by GPs, as described in Article Four, is heavily influenced by GP attitudes and beliefs. This is readily apparent when we consider two points; firstly, studies have demonstrated remarkable consistency in the recommended management of OA as described in CPGs (Hunter, Neogi *et al*. 2011; Nelson, Allen *et al*. 2014). Secondly, because GPs are responding to a hypothetical patient in the clinical vignette, it is self-evident that there could be no doctor-patient interactions to elicit treatment preferences. What we are then left with are the attitudes and beliefs of GPs to guide clinical decision-making.

The scoping review highlighted the limited research into GP attitudes and beliefs in treating OA (Lee, Tsang *et al*. 2008; Milder, Lipworth *et al*. 2011). Even so, it was apparent that GP approaches towards the condition and its treatment were not homogenous. Some GPs adopted a fatalistic attitude with a tendency to trivialise the disease; others made a more concerted effort with their patients to address the symptoms. Article Four presented a similar diversity of GP attitudes and beliefs.

Non-pharmacological interventions, such as recommendations to lose weight and exercise, are recognised as effective first-line strategies in managing OA (National Collaborating Centre for Chronic Conditions (UK) 2008; RACGP Osteoarthritis Working Group 2009). The issue of patient non-adherence to this advice, however, was a significant problem and this has been documented in much of the literature revealed in the scoping review (Campbell, Evans *et al*.

2001; Hendry, Williams *et al*. 2006; Holden, Nicholls *et al*. 2009; Hill, Dziedzic *et al*. 2011). Article Four found that GPs tended to undervalue the role of non-pharmacological treatments in the management of OA. The reasons for this are unknown, and Article Four does not attempt to address this question. However, it is an area that warrants further research.

The scoping review revealed that for many GPs the focus of OA management was on providing adequate pain relief. Concerns about the potential adverse effects of analgesics were frequently mentioned by GPs in the reviewed literature. Article Four also reported that GPs saw the benefit of providing advice to their patients about the risks of NSAID and opioid use.

A noteworthy finding from Article Four was the tendency for GPs to recommend stronger analgesics, such as tramadol and more potent opioids (oxycodone, morphine and buprenorphine). The reasons for this trend are unknown. However, it has been speculated in the literature that clinicians may become reliant on an individual or specific class of medicine, and therefore prescribe by routine (Milder, Lipworth *et al*. 2011). Furthermore, it is well known that positive patient experiences with a specific medicine can reinforce prescribing practices (Schumock, Walton *et al.* 2004). The efficacy of tramadol, for example, is well established (Schug 2007) and its acceptance by patients as an effective therapy for OA may explain its popularity amongst GPs.

The increase in recommendations for more potent opioids reported in Article Four contrasted with a German study that found GPs were reluctant to prescribe these drugs due to a perception by patients that they were too ‘heavy’ and they themselves regarded their use as an overtreatment (Rosemann, Wensing *et al*. 2006). It should be noted that this study was undertaken over a decade ago, and it is plausible that the risks and benefits of opioid use are now better understood (Giummarra, Gibson *et al*. 2015). Nevertheless, other authors have raised concern about the increased use of opioids for OA management on Australia, concluding that further longitudinal exploration of this trend is needed (Harrison, Charles *et al.* 2012; Brand, Harrison *et al.* 2014).

Patient non-adherence to pain medications was acknowledged in the literature as a significant issue in OA management (Juby, Skeith *et al*. 2004; Bower, Frail *et al*. 2006; Sale, Gignac *et al*. 2006; Alami, Boutron *et al*. 2011), and although this area was not explicitly addressed in Article Four, GPs were found to be diligent in the medication dosage advice that they gave their patients. This, of course, does not in and of itself ensure patient adherence and, accordingly, the literature has identified the need for improvements in communication and

shared decision making between GPs and patients as a means to promote better self-management of OA (Alami, Boutron *et al*. 2011).

## 4.6. Discussion of Article Five

**Australian general practitioner attitudes to clinical practice guidelines and some implications for translating osteoarthritis care into practice**

Over the last 20 years or so, evidence-based CPGs have become a major feature of the Australian healthcare landscape. Whilst they have the potential to improve patient care by promoting interventions of proven benefit and to discourage ineffective interventions, too often they are seen as impractical, commonly because of bad design. As a consequence, their uptake by healthcare providers is generally poor (Grol and Buchan 2006). Given the considerable expenditure that is directed at developing and disseminating CPGs, it can be considered a wasteful use of resources if they are simply "lost in translation" (Lenfant 2003). Grol and Buchan have argued that too many programs for CPG development seem to be 'science driven', rather than scientifically based but 'customer driven' (Grol and Buchan 2006).

The main aim of Article Five was to investigate the attitudes of Australian GPs towards CPGs, an area of importance given that the majority of patients with OA are managed in primary care. Attitudes to CPGs in general, and to the RACGP OA CPG, specifically, were examined in this article. These perceptions about guidelines have clear implications for the appropriateness of care. Understanding the use of CPGs by GPs, and how they perceive them provides insight into useful strategies that may be used to maximise the uptake of evidence into clinical practice.

Article Five found that GP had positive attitudes toward CPGs, with support of medical education and decision-making seen as key functions. Very few GPs considered that CPGs restricted clinical autonomy. These results were broadly consistent with a systematic review of clinician attitudes to CPGs that pooled results from 30 studies originating from nine countries (Farquhar, Kofa *et al*. 2002). The capacity of CPGs to encourage quality improvement was an area highlighted in this review, as it was in our study. In contrast, research from Germany that examined medical specialist attitudes towards a specific neurology guideline found that despite doctors believing that CPGs were designed to improve healthcare, in practice, they rarely met this objective (Larisch, Oertel *et al*. 2009).

The literature demonstrated considerable variability in the uptake of CPGs by clinicians. Several variables have been proposed as reasons for the failure to adopt CPGs in practice, including the quality of the guideline (e.g. content and format) (Rogers 1995), healthcare provider characteristics (Gupta, Ward *et al*. 1997; Carrick, Bonevski *et al*. 1998; Larisch, Oertel *et al*. 2009; Higashi, Nakayama *et al*. 2010), characteristics of the practice setting (Conroy and Shannon 1995), incentives (Grol and van Weel 2009), regulation (Jacobson 2008) and patient factors (Wensing, van der Weijden *et al*. 1998; Grol and Grimshaw 2003). Article Five focussed upon CPG quality, specifically with respect to the RACGP OA CPG. For most GPs in our study, shorter CPG layouts were preferred over lengthier and more comprehensive formats. These results were virtually identical to the findings from two other studies of attitudes to CPGs; one, that surveyed a cohort of clinicians working in Queensland public hospitals (Scott, Buckmaster *et al*. 2003) and the other which investigated a cohort of family physicians in the United States (Wolfe, Sharp *et al*. 2004). Grilli and Lomas (1994) suggested that the complexity of recommendations could partly predict adherence to a CPG. Grol and colleagues (1998) extended the range of attributes that might influence the use of CPGs in practice, showing that controversial recommendations, vague and non-specific recommendations, and recommendations that demanded an alteration to existing practice routines and habits were less likely to be followed.

The last point was closely related to the issue of accessibility. Freely available CPGs required minimal change to workflow and could, theoretically at least, be seamlessly integrated with existing medical practice. Article Five highlighted that GPs considered accessibility to CPGs to be a critical attribute, a view commonly expressed in the literature (Hayward, Guyatt *et al*. 1997; Cabana, Rand *et al*. 1999; Scott, Buckmaster *et al*. 2003; Wolfe, Sharp *et al*. 2004; Cochrane, Olson *et al*. 2007; Francke, Smit *et al*. 2008). With an increasing trend towards computerisation in general practice, many GPs in our study stressed the desirability of integrating CPGs with decision support systems, obviating the need for paper-based guidelines. These findings were concordant with results from a systematic review of the impact of information technologies on healthcare quality (Jamal, McKenzie *et al*. 2009). A recent literature review similarly reported that implementing formalised guidelines in a decision support system with an interface to electronic patient records improves their applicability at point of patient care (Latoszek-Berendsen, Tange *et al*. 2010).

There was a considerable amount of literature that concentrated on the failure of CPG implementation. The critical issue highlighted by many authors is that GPs will not use guidelines unless they are perceived as an aid to clinical practice. Once again, this highlights

findings from Article Five that CPGs must 'value add' to clinical practice and not be seen as a simply more 'paper work'.

Grol and Buchan have asserted that current expectations about the impact of guidelines may be unrealistic. The perception that developing and disseminating systematic reviews and CPGs will miraculously improve patient care ignores the complexity of healthcare. This is not limited to clinical decision-making, but also extends to the influence of organisational factors, including social interaction with colleagues, team functioning, and workplace culture. Harrison and colleagues (2010) have stressed that although CPGs provide evidence in a potentially more useable format than a "plethora of primary studies", they must be adapted to the local context of use. In a general practice context, this re-emphasises the role of information technologies, particularly in a workplace characterised by patients presenting with a multitude of different health conditions. Many of the participants surveyed for Article Five stressed this point.

Gabbay and May (2004) provided a stark counterpoint to many of the prevailing views about CPGs. Using an ethnographic approach, they demonstrated that medical decision-making was heavily reliant on "mindlines" – collectively reinforced, internalised, and tacit guidelines mainly informed by interaction with work colleagues opinion leaders, patients and others. In their opinion, clinicians work with "knowledge in practice", not with explicit knowledge as codified in CPGs. A similar view resonated with many of the GP participants in our study, and this could partly explain their reticence to using CPGs.

There was very little literature that dealt specifically with CPGs for OA. A Canadian study by Lineker and colleagues (2009) focussed on the design, implementation and process evaluation of an educational program using CPGs for OA and rheumatoid arthritis. Consistent with the findings of an earlier study (Davis and Taylor-Vaisey 1997), they found that multifaceted interventions were among the strongest methods for changing healthcare provider behaviour. The intervention in their study consisted of healthcare provider and patient educational materials, inter-professional provider workshops on the evidence-based management of OA (and rheumatoid arthritis) and six months of reinforcement activities to support the delivery of arthritis care in the community. This accords with social cognition models that emphasise the importance of knowledge reinforcement (Becker and Rosenstock 1987).

Brand (2007) reviewed the role of CPGs within the contemporary discourse and practice of knowledge translation. This study used an OA quality improvement case study to demonstrate how evidence for effective implementation strategies can be used in conjunction with a

practical implementation model to devise quality improvement projects. The rationale of the project was that by improving the model of service delivery, clinicians would be supported in their implementation of recommended OA care strategies, patients would be supported in the self-management of their condition, and acute and community care services would be better integrated.

Whilst Article Five did not attempt to explain the implementation process for the RACGP OA CPG, the very low use and awareness of the guideline amongst GPs tended to suggest a passive distribution process. This diffusion of information to individuals takes place through social networks, where the assumption is that target individuals are aware, motivated, and capable of implementing necessary change (Brand 2007). Gagliardi and colleagues (2011) considered this to be a common problem with CPG implementation, concluding that many strategies for dissemination have limited effectiveness and are not routinely applied outside of experimental research due to their cost and complexity. They further observed that few developers implemented their own guidelines, had dedicated implementation staff, or evaluated use of their guidelines.

As a final comment, it is instructive to note that the RACGP OA CPG (July 2009) was based on the best scientific evidence available up to July 2007. It was approved and endorsed by the NHMRC for a 5-year period, with review and revision expected at least once every 5 years. This did not occur. Ironically, the Chair of the working group responsible for the development of the RACGP OA CPG observed that updating guidelines remains problematic where initial funding for CPG development usually does not include ongoing support for review (Brand 2007). Clearly, the value and usage of CPGs are diminished if the scientific evidence on which they are based is out of date (Zhang, Nuki *et al*. 2010).

# 5. Contributions to new knowledge, implications for further research, limitations and concluding remarks

This chapter summarises how the research presented in this thesis has contributed to the body of knowledge about how the provision of appropriate care for OA is influenced by the beliefs and attitudes of patients and GPs. It also provides recommendations for further research arising from the five articles presented and some concluding remarks.

## 5.1. Contributions to New Knowledge

This thesis has extended previous knowledge in its field by producing the following original work:-

- An extensive scoping review that examined the beliefs and attitudes of patients and healthcare providers with respect to OA and its clinical management. This review was significant as it identified the research gaps in existing literature. Specifically, it was apparent that patient and GP attitudes and beliefs about OA and its management could be better understood;
- A systematic review of the appropriateness of OA care using a novel approach of applying meta-analysis to studies that have used quality indicators to measure appropriateness. This work, which has re-affirmed the findings of previous research, has demonstrated that the quality of OA care is sub-optimal across all treatment categories;
- An investigation of patient satisfaction with the management of their OA. Whilst patients were generally satisfied with the care that they received, the general failure of GPs to deal with the psychological burden of the condition was a noteworthy finding that warrants further exploration;
- An examination of the use of and beliefs about CAMs by Australians with OA was important research as for many sufferers, CAM use is a key component of their self-management strategies. The findings of this thesis have emphasised the importance for users of CAM to be more fully informed about evidence of efficacy;

- A study that explored the current management of OA by a cohort of Australian GPs demonstrated that non-pharmacological interventions were not given the importance that is recommended by CPGs; and
- An investigation of the attitudes of GPs towards CPGs and the implications for the provision of appropriate care demonstrated that CPGs must be easily accessible and in a format that encourages use.

## 5.2. Implications for Further Research

Several recommendations have emerged from the articles, each of which has a particular relevance to the provision of appropriate OA care. They are discussed below.

### *5.2.1. Using quality indicators for quality improvement*

The systematic review of QIs for OA reported in Article One has confirmed the wide divergence between evidence and consensus-based recommended care. The factors explaining this gap are many and varied, however, a number of them relate directly to health system issues. For example, the better design and more effective use of electronic information systems represent a major opportunity for improving the appropriateness of health care. Well-defined, valid and reliable QIs provide the tool that can assist with audits and quality improvement processes. This includes both process QIs that are at a mature stage of development, and outcome QIs that are still in their infancy. The challenge remains for how best to seamlessly integrate these quality measures into routine clinical practice.

**Recommendation 1**: Further research should be directed at defining a standard set of outcome measures for use across different healthcare settings covering the full range of OA treatment regimens.

**Recommendation 2**: Further research needs to be done on the development of data extraction tools that can be routinely used with information systems to facilitate regular audits of compliance with clinical standards.

### *5.2.2. Information and support group needs for patients with osteoarthritis*

Although patients generally have positive perceptions about the care that they received for their OA, Article Two identified issues that impact on the provision of appropriate care and, therefore, should be addressed.

Firstly, the provision of reliable and credible information about OA and treatment options should be freely and easily accessible to patients. Information must be presented in a format that encourages uptake. This is particularly important for chronic conditions such as OA where health outcomes are closely associated with how successfully a patient self-manages their illness.

Secondly, Article Two reported that many patients had a limited awareness of the support services available for people with OA. Support for self-care is increasingly viewed as a core component of the management of long-term conditions, such as OA (Bodenheimer, Wagner *et al.* 2002). Support organizations can play an active role in allowing individuals with OA to successfully self-manage their condition.

**Recommendation 3:** Further research into the most effective methods for providing high quality information to OA patients is warranted.

**Recommendation 4**: Further research is needed to examine patient knowledge and use of OA support groups in Australia.

### *5.2.3. Accurate, reliable and unbiased information about complementary and alternative medicines*

CAMs continue to play a significant role in the self-management strategies of many Australians with OA. This is despite no evidence for the effectiveness of many of these products, and systematic research or data on safety. Article Three reported on the diversity of explanations for CAM use: some users reported an aversion to the side effects of conventional medications; others revealed a failure to engage in activities such as exercise and weight loss, with the use of CAMs seen as an alternative but easy option. For many, the use of CAM was predicated on the belief that they are effective, perhaps reinforced by the mistaken view that CAM are subject to independent testing of efficacy, as occurs with conventional medications.

Consumers, therefore, need to have accurate, reliable and unbiased information about CAMs, presented in a manner that enables them to make informed decision about their use.

> **Recommendation 5:** Further research is needed to investigate effective methods for communicating accurate, reliable and unbiased information to consumers about complementary and alternative medicines.

### *5.2.4. Best practice management of osteoarthritis*

Despite a plethora of documented guidance for the best practice management of OA, Article Four highlighted a diversity of therapeutic approaches by GPs to a hypothetical, yet typical case involving an elderly woman with moderate to severe OA. The article reported that recommendations for the use of tramadol and more potent opioids had increased, whilst non-pharmacological interventions for OA remained underutilized.

> **Recommendation 6**: Further research is needed to gain an understanding as to why the use of tramadol and more potent opioids in the treatment of mild and severe OA appears to be increasing amongst GPs.

> **Recommendation 7**: Further research is needed to investigate how to improve the uptake of efficacious non-pharmacological interventions for OA.

### *5.2.5. 'User friendly' clinical practice guidelines and evidence-based practice*

Clinical practice guidelines (CPGs) are widely promoted as effective tools that can assist with the practice of evidence-based medicine. Despite this, Article Five has demonstrated that although GPs generally have positive attitudes towards CPGs, their uptake is often patchy and sporadic. GP respondents to our survey, for example, rarely if ever used the RACGP OA Guideline. If CPGs are to assist with the translation of evidence into practice, they must be easily accessible and in a format that encourages use.

**Recommendation 8:** Further research into ways of integrating evidence-based medicine into general practice is warranted.

## 5.3 Limitations

As with all research, there have been certain limitations that have impacted on the work undertaken. These have been comprehensively described separately in the five articles presented. Additionally, there are some overarching limitations that relate to the full dissertation. For example, this research has focused on the appropriateness of the non-surgical treatment for OA. It follows, therefore, that the appropriateness of diagnosis and surgical interventions are beyond the scope of this study. It is also evident that the focus of appropriateness was at the population level. There may be entirely acceptable and medically justifiable reasons why an individual did not receive a particular treatment that *prima facie* was in accordance with evidence or consensus-based guidelines.

The research presented in this thesis generally underplayed the potential interaction of OA with other conditions. OA is particularly prevalent amongst older people, and so other diseases common amongst the elderly, such as depression, diabetes, cardiovascular disease and respiratory disorders may have had an impact on a person's attitude and beliefs about their overall healthcare management. Similarly, GPs approach to the clinical management of OA may have been influenced by their beliefs about the management of co-existing conditions in their patients.

It should be noted that there were a number of limitations identified in the CTA study (Runciman, Hunt *et al*. 2012). The use of a population-based design resulted in a relatively high attrition in the recruitment phase. Furthermore, participant recruitment using a landline-based telephone survey was a source of potential bias as it excluded those people who only used mobile phones. In addition, the possible omission of people with poor English skills may have limited the generalizability of results. Finally, the recruitment of healthcare providers was an additional source of potential bias. For example, patient recall of the names and addresses of their healthcare providers and the denial of access to consenting patient records by a high proportion of healthcare providers were limitations.

## 5.4. Concluding Remarks

My research has shown that despite efforts at improving the care for patients with OA, the wide gap between evidence and consensus-based recommended care and practice remains. Patients with OA do not always follow the advice given to them by their GP or other healthcare provider and GPs do not necessarily follow CPG recommendations when they make decisions regarding the treatment of a patient with OA. Typically, these behaviours are driven by individual beliefs and attitudes.

For patients with OA to successfully self-manage their condition, they need to be made aware of the treatments that work, and those that don't. This information must be up-to-date, understandable and readily accessible. Furthermore, patients need to be motivated to actively deal with their condition. GPs can play an important role in this by acknowledging the considerable psychological impact that OA has on many of their patients. They must move beyond the focus on the physical effects of the condition and address the impact on the mental health and social wellbeing of their patients. GPs must also be prepared to refocus their management of OA by encouraging patients to use non-pharmacological approaches that are known to be effective.

Beliefs and attitudes are complex psychological constructs that are influenced by a multitude of factors, most of which are not readily discernable and only become apparent upon closer examination. Addressing them requires innovative strategies, many of which target the healthcare system through the use of advanced technologies. Following the recommendations provided in this chapter is important if we hope to improve the quality of life for the many Australians with OA.

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# APPENDIX A

## Article One: Assessing appropriateness of osteoarthritis care using quality indicators: A systematic review

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# APPENDIX B

## Article Two: Australians with osteoarthritis; satisfaction with healthcare providers and the perceived helpfulness of treatments and information sources

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# APPENDIX C

## Article Three: Australians with osteoarthritis; the use of and beliefs about complementary and alternative medicines

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# APPENDIX D

## Article Four: Australian GP management of osteoarthritis following the release of the RACGP Guideline for the non-surgical management of hip and knee osteoarthritis

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# APPENDIX E

## Article Five: Australian General Practitioner attitudes to clinical practice guidelines and some implications for translating osteoarthritis care into practice.

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# APPENDIX F: Recommended drug and non-drug therapies for osteoarthritis

**Table F1: Recommended drug therapies for osteoarthritis^**

| Drug* | Recommendation details |
|---|---|
| Paracetamol (acetaminophen) (including slow release option) | Efficacious as first line therapy. Not as effective as NSAIDs, but favoured long-term analgesic due to lower risk profile (National Collaborating Centre for Chronic Conditions - Osteoarthritis 2008; Zhang, Moskowitz *et al.* 2008; RACGP Osteoarthritis Working Group 2009; Rheumatology Expert Group 2010; Hochberg, Altman *et al.* 2012). |
| NSAID (conventional or COX-2 selective) | Effective for short-term pain relief where paracetamol and non-drug measures are ineffective. Use with or without concurrent paracetamol. Benefits vs. risks should be carefully considered. Use the minimal effective dose for the shortest time possible. It is recommended that topical rather than oral NSAIDs are used by those aged ≥ 75 years. Recommend use of proton-pump inhibitor to reduce upper GI related adverse events (Hochberg, Altman *et al.* 2012). |
| Tramadol | Recommended for those aged ≥75 years (Hochberg, Altman *et al.* 2012). |
| Opioids | Suitable where other analgesics or NSAIDs are not effective or tolerated, and where joint replacement surgery is contraindicated or delayed. Modest benefits should be assessed against high risk of adverse events (Rheumatology Expert Group 2010). |
| Intra-articular injections | Corticosteroids – can provide rapid symptomatic relief for up to 4 weeks. Anecdotally, repeat injections are less successful (Rheumatology Expert Group 2010).<br>Hyaluronic acid – equivocal evidence to recommend use. Considerable ongoing controversy with regard to its efficacy, cost- |

| Drug* | Recommendation details |
|---|---|
| | effectiveness and benefit to risk ratio (Zhang, Moskowitz *et al.* 2008). Not recommended for use by 2/5 guidelines (National Collaborating Centre for Chronic Conditions - Osteoarthritis 2008; Hochberg, Altman *et al.* 2012). |
| Glucosamine and/or chondroitin | No evidence to support efficacy (Hochberg, Altman *et al.* 2012). |
| Fish oil | Although not specifically tested for treatment of OA, anti-inflammatory properties may confer benefit. Mentioned in one guideline (Rheumatology Expert Group 2010). |

**Table F2: Recommended non-drug therapies for osteoarthritis^**

| Treatment | Details |
|---|---|
| Multi-modal physical therapy | Physiotherapy, incorporating both strengthening and flexibility exercises, can relieve pain and stiffness and improve joint mobility and overall function. Therapies include motion exercise, soft tissue mobilisation, muscle strengthening and stretching (RACGP Osteoarthritis Working Group 2009). |
| Land-based exercise | Aerobic exercise, muscle strengthening and motion exercises can lead to improved physical functioning and pain reduction. Should be individualised and based on patient preferences and ability to perform exercises (Hochberg, Altman *et al.* 2012). Key to success is long-term adherence (Rheumatology Expert Group 2010). |
| Hydrotherapy | May be better tolerated than land based exercise for some patients (e.g. overweight patients with excess joint stress) but provides the same general benefits. Once aerobic capacity is improved, progression to land-based exercise program may be possible |

| Treatment | Details |
|---|---|
| | (Hochberg, Altman *et al.* 2012). |
| Heat and cold therapies | Heat and cold treatments may be effective in reducing pain and swelling. Although widely used, there is little supporting evidence (Zhang, Moskowitz *et al.* 2008). |
| Referral for joint replacement | Recommended where patients have inadequate pain relief and functional improvement from a combination of drug and non-drug treatments. Universally recognised as end point intervention (National Collaborating Centre for Chronic Conditions - Osteoarthritis 2008; Zhang, Moskowitz *et al.* 2008; RACGP Osteoarthritis Working Group 2009; Rheumatology Expert Group 2010; Hochberg, Altman *et al.* 2012). |
| Knee taping / bracing and insoles | Medially directed patella taping is recommended as a means of reducing pain. Equivocal evidence concerning knee bracing. Patellar taping is generally used as a short-term, intermittent treatment. There are discordant opinions about the benefit of knee bracing, with 2/5 guidelines not supportive (RACGP Osteoarthritis Working Group 2009; Hochberg, Altman *et al.* 2012). One guideline, however, asserts that bracing can reduce pain, improve stability and diminish risk of falling, particularly for patients with malaligned knees (Zhang, Moskowitz *et al.* 2008).<br>Walking aids and insoles are recommended as they may relieve pain. Recommended as an adjunctive measure (National Collaborating Centre for Chronic Conditions - Osteoarthritis 2008). |
| Weight loss | Weight loss and strategies to avoid weight gain are primary preventive strategies. Body Mass Index (BMI) of 25 – 30 considered overweight; BMI > 30 is |

| Treatment | Details |
|---|---|
| | considered obese (Rheumatology Expert Group 2010). |
| Tai chi | Can improve cardiac and respiratory fitness, flexibility, balance and muscle strength. Not mentioned by 2/5 guidelines (National Collaborating Centre for Chronic Conditions - Osteoarthritis 2008; Zhang, Moskowitz *et al.* 2008). |
| Acupuncture | Equivocal evidence to recommend use. Recommended only for moderate to severe pain and where patient is unwilling to have joint replaced or is medically unfit to have procedure (Hochberg, Altman *et al.* 2012). |

**Key**

^ Clinical practice guidelines (CPGs) were identified through a systematic search of relevant databases (MEDLINE and The Cochrane Library), and the Internet (Medical Journal of Australia Guidelines, National Guideline Clearinghouse, National Health and Medical Research Council Guidelines and Publications) from January 2008 to February 2013. Search terms included: osteoarthritis knee; osteoarthritis hip; practice guidelines/s; guideline/s; and combinations of these terms. Only CPGs published in Australia, the US and the UK that dealt with the management of OA were included.

^^ The CPGs identified were as follows:-

1. OA: national clinical guideline for care and management in adults. National Institute of Clinical Excellence (NICE) (2008) (National Collaborating Centre for Chronic Conditions - Osteoarthritis 2008)
2. OA Research Society International (OARSI) recommendations for the management of hip and knee OA, Part II: OARSI evidence-based, expert consensus guidelines. OARSI (2008) (Zhang, Nuki *et al.* 2010)
3. Guideline for the non-surgical management of hip an knee OA, The Royal Australian College of General Practitioners (RACGP) (2009)(RACGP Osteoarthritis Working Group 2009)
4. Therapeutic Guidelines: Rheumatology (Version 2), Therapeutic Guidelines Limited (2010) (Rheumatology Expert Group 2010)
5. Recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip, and knee. American College of Rheumatology (2012) (Hochberg, Altman *et al.* 2012)

* Oral medication unless otherwise specified

# APPENDIX G: Ethics Approval

-----Original Message-----
From: no_reply@unisa.edu.au
[mailto:no_reply@unisa.edu.au] Sent:
Monday, 7 November 2011 8:19 AM
To: Bill Runciman
Subject: Human Ethics: Application approved

Dear Applicant

**Re: Ethics protocol "Understanding how patient and healthcare provider factors influence the provision of appropriate care for Australians with osteoarthritis (part of NH&MRC funded CareTrack Australia study)"**

Thank you for submitting your ethics protocol for consideration. Your protocol has been considered by the E1 Committee Review Group.

I am pleased to advise that your protocol has been granted ethics approval and meets the requirements of the National Statement on Ethical Conduct in Human Research. Please note that the E1 Committee Review Group's decision will be reported to the next meeting of the Human Research Ethics Committee for endorsement.

Please regard this email as formal notification of approval.

Ethics approval is always made on the basis of a number of conditions detailed at http://www.unisa.edu.au/res/forms/docs/humanresearchethics_conditions.doc; it is important that you are familiar with, and abide by, these conditions. It is also essential that you conduct all research according to UniSA guidelines, which can be found at http://www.unisa.edu.au/res/ethics/default.asp

Please note, if your project is a clinical trial you are required to register it in a publicly accessible trials registry prior to enrolment of the first participant (e.g. Australian New Zealand Clinical Trials Registry http://www.anzctr.org.au/Survey/UserQuestion.aspx) as a condition of ethics approval.

Best wishes for your research.
Executive Officer

UniSA's Human Research Ethics Committee CRICOS provider number 00121B

# APPENDIX H: Ethics approval – variation in methodology

**From:** Rebecca Law [Rebecca.Law@unisa.edu.au]
**Sent:** Thursday, 22 November 2012 2:39 PM
**To:** Basedow, Martin - basmy008
**Subject:** Variation to protocol 26614 approved

Dear Martin,

**Re: Ethics Protocol 0000026614, "Understanding how patient and healthcare provider factors influence the provision of appropriate care for Australians with osteoarthritis (part of NH&MRC funded CareTrack Australia study)",**

Thank you for submitting the variations to your original protocol for approval. The Chairperson of the University's Human Research Ethics Committee has assessed this request and approved the change in methodology from semi-structured interviews to surveys of General Practitioners (as detailed in your email dated 21/11/12).

Please regard this email as formal notification of approval.

Ethics approval is always made on the basis of a number of conditions detailed in the attachment; it is important that you are familiar with, and abide by, these conditions. It is also essential that you conduct all research according to UniSA guidelines, which can be found at http://www.unisa.edu.au/res/ethics/default.asp

Best wishes for your research.

Kind regards

**Rebecca Law**

**Ethics and Compliance**
Research and Innovation Services, University of South Australia
GP2-03, Mawson Lakes Campus **T**: +61 8 8302 3501 **F**: +61 8 8302 3921
**E: Rebecca.law@unisa.edu.au** Think before you print. Please consider the environment before printing this e-mail.

# APPENDIX I: CareTrack Australia – survey of care for people with osteoarthritis

University of South Australia

# CareTrack Australia

## Survey of care for people with osteoarthritis

CareTrack Australia

Dear *(first name)*,

Some time ago you agreed to participate in the CareTrack Australia study, a study aimed at improving the quality and safety of healthcare in Australia.

As a very important part of the study, we would be grateful if you could complete the attached survey, the purpose of which is to learn more about the needs of patients with osteoarthritis.

Most questions simply ask you to tick whichever box applies to you. There are also some parts of the questionnaire which allow you to make comments. We do encourage you to put your thoughts down in these comments sections. Often the information we get from these is of more value than the ticked questions.

**All information on these questionnaires will be kept strictly confidential. Neither your doctor nor any of the health professionals who look after you will see your individual responses to this questionnaire**.

The results of this survey will help us to improve the treatment given to people like yourself with osteoarthritis.

When you have finished, please make sure you have completed all relevant sections, added your contact details on this page, and posted the completed questionnaire in the postage paid envelope provided back to us.

We sincerely thank you for taking your time to complete this survey.

To keep the survey anonymous, this page will be removed from the rest of the questionnaire.

*Block letters please*

FAMILY NAME _____

FIRST NAME _____

ADDRESS _____

_____

POST CODE

TELEPHONE (HOME) _____

MOBILE _____

EMAIL _____

Please indicate if you would like to receive the results by placing an ✓ in the following box.

☐ Yes, I would like to have a copy of the final results of this survey.

Please be aware, it will take time to complete this survey, tabulate the results and send them to you.

**Below are some definitions of the medical terms you will find in this survey:-**

## Glossary of terms

| | |
|---|---|
| Complementary medicines | Any medicine used to treat a medical condition (such as osteoarthritis) that is not usually prescribed by your doctor. This may include things such as glucosamine, chondroitin, fish oil, vitamins and mineral supplements. |
| Dietitian | A healthcare practitioner who can recommend what foods you should and shouldn't eat. |
| Non-steroidal anti-inflammatory medications (NSAIDs) | Medications that are commonly used to relieve the pain and inflammation associated with osteoarthritis. Some NSAIDs can be obtained over-the counter at your chemist (such as *ibuprofen [Nurofen]*); others require a prescription (such as *naproxen [Anaprox], diclofenac [Voltaren], meloxicam [Mobic] and celecoxib [Celebrex]).* |
| Occupational therapist | A healthcare practitioner who looks at your activities at home or work, then suggests changes or devices to make everyday life easier on your joints. |
| Orthopaedic surgeon | A doctor who has expertise in surgery involving the bones, joints, ligaments and cartilage. Hip and knee replacement surgery are common procedures carried out by an orthopaedic surgeon. |
| Pain killer medications | Any type of drug that can be used to relieve pain, and includes paracetamol (Panadol), NSAIDs (see above) and opioids drugs (such as *codeine [Panadeine, Nurofen Plus], tramadol [Tramal, Zydol], dextropropoxyphene [Doloxene, Di-Gesic], buprenorphine [Temgesic], oxycodone [OxyContin]).* |
| Physiotherapist | A healthcare practitioner who can provide massage and stretching to keep your joints mobile, and can suggest exercises and devices for you to use at home. |
| Podiatrist | A healthcare practitioner who can suggest changes to the way you walk or provide special shoe inserts, to take the strain off your joints and reduce pain. |
| Rheumatologist | A doctor who is a specialist in diagnosing and treating diseases of the joints, muscles and bones (such as osteoarthritis). |

## SECTION ONE : HEALTH ASSESSMENT

Please tell us your ability to carry out your daily activities by placing a tick ✓ in the box which best describes your abilities.

**Question 1**

*Please tick ✓one box only for each question*

| **ARE YOU ABLE TO:-** | | **WITHOUT ANY DIFFICULTY** | **WITH A LITTLE DIFFICULTY** | **WITH SOME DIFFICULTY** | **WITH MUCH DIFFICULTY** | **UNABLE TO DO** |
|---|---|---|---|---|---|---|
| (a) | Dress yourself, including shoelaces and buttons? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (b) | Shampoo your hair? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (c) | Stand up from an armless straight chair? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (d) | Get in and out of bed? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (e) | Cut your food using eating utensils? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (f) | Lift a full cup of glass to your mouth? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (g) | Open a new milk carton? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (h) | Walk a block on flat ground? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (i) | Climb up five steps? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (j) | Wash and dry your body? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (k) | Take a bath? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (l) | Get on and off the toilet? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (m) | Reach and get down a 2.3 kg (5 lb) object from above your head? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (n) | Bend down to pick up clothing from the floor? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (o) | Open car doors? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (p) | Open previously opened jars? | ☐ | ☐ | ☐ | ☐ | ☐ |

*(cont'd over the page)*

***(Question 1 cont'd)***

| ARE YOU ABLE TO:- | | *Please tick ✓one box only for each question* | | | | |
|---|---|---|---|---|---|---|
| | | **WITHOUT ANY DIFFICULTY** | **WITH A LITTLE DIFFICULTY** | **WITH SOME DIFFICULTY** | **WITH MUCH DIFFICULTY** | **UNABLE TO DO** |
| (q) | Turn taps on and off? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (r) | Run errands and shop? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (s) | Get in and out of a car? | ☐ | ☐ | ☐ | ☐ | ☐ |
| (t) | Do chores such as vacuuming or gardening? | ☐ | ☐ | ☐ | ☐ | ☐ |

**Question 2**

For each of the following questions, please answer by placing a tick ✓ in the appropriate box.

| | | *Please tick ✓one box only for each question* | |
|---|---|---|---|
| | | **YES** | **NO** |
| (a) | To get around, do you usually need a cane, crutches, walker, wheelchair, or help from another person? | ☐ | ☐ |
| (b) | To stand up from a sitting position, do you usually need a special chair, a raised toilet, or help from another person? | ☐ | ☐ |
| (c) | To get dressed, do you usually need a buttonhook, zipper pull or other gadget, or help from another person? | ☐ | ☐ |
| (d) | To reach something, do you usually use long-handled appliances or help from another person? | ☐ | ☐ |

**Question 3**

**Your ACTIVITIES**: To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?

| **COMPLETELY** | **MOSTLY** | **MODERATELY** | **A LITTLE** | **NOT AT ALL** |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

**Question 4**

**Your PAIN:** How much pain have you had IN THE PAST WEEK?

On a scale of 0 to 10 (*where zero represents "no pain" and 10 represents "severe pain"),* please record the number below.

| | |
|---|---|
| | |

**Question 5**

**Your HEALTH:** Please rate how well you are doing on a scale of 0 to 10 (*where zero represents "very well" and 10 represents "very poor" health),* please record the number below.

☐☐

## SECTION TWO : PATIENT KNOWLEDGE

This section will help us to find out what you know about your osteoarthritis and how you manage your condition.

All your answers will be treated in strict confidence.

Could you please show your answer by placing a tick ✓ in the appropriate box.

Please answer every question, and don't worry about ticking 'don't know' – none of us knows everything!

**Question 1:** Can you choose ***two*** true statements from the following list? In other words, please tick only 2 of the 6 boxes.

**Osteoarthritis:-**

(a) May be triggered by a bacteria or virus ☐

(b) Is caused by cold damp weather ☐

(c) Can be caused by an allergy to some foods ☐

(d) Affects older people ☐

(e) Affects joints that are already damaged in some way ☐

(f) Don't know ☐

**Question 2:** Can you choose ***two*** true statements from the following list?

**Osteoarthritis:-**

(a) Only affects the bones of the body ☐

(b) Can cause mild swelling of the synovium (joint lining) ☐

(c) Is curable ☐

(d) Is a chronic disease ☐

(e) Is caused by too much acid in the joints ☐

(f) Don't know ☐

**Question 3:** Can you choose ***three*** symptoms of osteoarthritis?

(a) Loss of movement in a joint ☐
(b) Joint stiffness ☐
(c) High blood pressure ☐
(d) Increase in appetite ☐
(e) Breathlessness ☐
(f) Aches and pains ☐
(g) Don't know ☐

**Question 4:** Can you choose ***two*** methods used to diagnose your osteoarthritis?

(a) Blood tests ☐
(b) X-rays ☐
(c) Measuring your joint ☐
(d) Examining your joints ☐
(e) Taking your blood pressure ☐
(f) Don't know ☐

**Question 5:** Can you choose ***two*** true statements about non-steroidal anti-inflammatory drugs?

(a) They stop osteoarthritis from getting worse ☐
(b) They take about five or six weeks before you get the best effect ☐
(c) They reduce pain, swelling and stiffness ☐
(d) They should only be taken when the pain is severe ☐
(e) They should always be taken with food ☐
(f) Don't know ☐

**Question 6:** Can you choose the ***one*** main side-effect of non-steroidal anti-inflammatory drugs?

(a) Put on weight ☐
(b) Stomach upsets ☐
(c) Bruising ☐
(d) Dry mouth ☐
(e) Cause inflammation ☐
(f) Don't know ☐

**Question 7:** Painkillers and non-steroidal anti-inflammatory drugs lessen your pain, can you choose ***two*** other types of drug that can also do this?

(a) Capsaicin ☐

(b) Selenium ☐

(c) Cod liver oil ☐

(d) Steroids injected into the joint ☐

(e) Vitamin C ☐

(f) Don't know ☐

**Question 8:** Can you choose ***two*** true statements about painkillers?

(a) They are not addictive ☐

(b) They should only be taken when pain is severe ☐

(c) They can be taken before carrying out an activity which you know causes you pain ☐

(d) They should be taken when the pain starts to build up ☐

(e) They should always be taken with food ☐

(f) Don't know ☐

**Question 9:** Can you choose ***two*** correct answers about exercise and osteoarthritis

(a) It is not necessary to exercise if you are normally active ☐

(b) Exercise will cure osteoarthritis ☐

(c) Exercise weakens damaged joints ☐

(d) Exercise strengthens muscles and ligaments ☐

(e) Exercise should be taken regularly each day ☐

(f) Don't know ☐

**Question 10:** Can you choose the ***two*** forms of exercise suitable for someone with osteoarthritis?

(a) Muscle tightening or strengthening exercises ☐

(b) Jogging ☐

(c) Swimming ☐

(d) Weight lifting ☐

(e) Housework ☐

(f) Don't know ☐

**Question 11:** Can you choose ***one*** method of reducing the chances of your osteoarthritis getting worse?

(a) Exercise vigorously ☐
(b) Take your drug therapy regularly ☐
(c) Keep your weight down to the ideal for your height and age ☐
(d) Rest for most of the time ☐
(e) Don't know ☐

**Question 12:** Can you choose ***two*** methods that help you to get a good night's sleep?

(a) Do not go to bed until you are really sleepy ☐
(b) Take sleeping tablets each night ☐
(c) Have an alcoholic drink before you go to bed ☐
(d) Make yourself tired by exercising vigorously before you go to bed ☐
(e) Get into regular sleep pattern by going to bed and getting up at the same time each day. ☐
(f) Don't know ☐

**Question 13:** Can you choose ***two*** ways that will help to protect your joints from harm?

(a) Use them quickly ☐
(b) Use a walking aid to reduce stress on your hips or knees ☐
(c) Wear shoes like trainers with thick soft soles ☐
(d) Sit down for long periods during the day ☐
(e) Do not alter your life-style, act as though you do not have arthritis ☐
(f) Don't know ☐

**Question 14:** Can you choose the ***one*** form of complementary therapy that has been proven to help osteoarthritis?

(a) Copper bracelet ☐
(b) Selenium tables ☐
(c) Green lipped mussel capsules ☐
(d) Acupuncture ☐
(e) Acid free diets ☐
(f) Don't know ☐

**Question 15:** Can you choose ***two*** suitable methods of conserving your energy?

(a) Sit rather than stand to do tasks such as ironing or preparing food ☐

(b) Alternate heavy and light work tasks through the day ☐

(c) Wear splints ☐

(d) Use the largest joint possible for any given task ☐

(e) Use both hands to carry heavy objects such as full pans ☐

(f) Don't know ☐

**Question 16:** Can you choose ***two*** true statements from the following list?

(a) Osteoarthritis always gets worse the longer you have it ☐

(b) Applying heat or ice to a joint helps to protect it ☐

(c) Hip or knee replacements are very good at relieving pain if the osteoarthritis is severe. ☐

(d) If your osteoarthritis is bad, take a short rest and then do all the things that you have planned to do. ☐

(e) Aids such as a raised toilet seat, a tap turner and an easy reacher help you to remain independent. ☐

(f) Don't know ☐

# SECTION THREE : ABOUT YOUR CARE

## ABOUT YOUR G.P. (FAMILY DOCTOR)

We would like to find out how satisfied you are with the care you are receiving from your G.P. in managing your osteoarthritis. You may see more than one G.P. so we ask that you rate the doctor that you see most often.

Rate your **satisfaction** with your G.P. in managing your osteoarthritis:

*Please tick ✓one box only for each question*

| **Question 1** | | **VERY SATISFIED** | **SATISFIED** | **NEUTRAL** | **DIS-SATISFIED** | **VERY DISSATISFIED** |
|---|---|---|---|---|---|---|
| (a) | The **communication** between you and your G.P. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (b) | The amount of **time** your G.P. spends with you. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (c) | Your ability to talk freely to your G.P. about **medica**l problems you are experiencing. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (d) | Your ability to talk freely to your G.P. about **emotional** problems you are experiencing. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (e) | Your G.P.'s response when you **explain your symptoms** and concerns. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (f) | Your G.P.'s willingness to **answer questions** about your illness. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (g) | Your G.P's willingness to address **new problems** that may arise between appointments. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (h) | The information your G.P. provides to you **about** your illness. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (i) | The information your G.P. provides to you about what you should **expect** of your illness. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (j) | The information your G.P. provides about the **medications** you are taking. | ☐ | ☐ | ☐ | ☐ | ☐ |

Please give any other comments about your satisfaction or dissatisfaction with other aspects of your G.P.'s care for your osteoarthritis.

**Question 2**

(a) Rate the extent to which you stick to the advice given by your G.P. (taking all medications as prescribed by your doctor, exercising regularly, etc)

| NEVER | RARELY | SOMETIMES | USUALLY | ALWAYS |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

(b) If you never or rarely follow your G.P.'s advice, why is this?

**Question 3**

Has your G.P. ever discussed the possibility of having surgery for your osteoarthritis?

☐ **YES** ☐ **NO**

**Question 4**

(a) Please rate your overall satisfaction with how your G.P. deals with your condition:

| VERY SATISFIED | SATISFIED | NEUTRAL | DISSATISFIED | VERY DISSATISFIED |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

(b) Please tell us about why you gave this rating.

## ABOUT OTHER HEALTH PROFESSIONALS

**Question 5:**

You may have seen health professionals other than your G.P. to help you with your osteoarthritis. Please indicate what other health professionals you have seen about your osteoarthritis during the last 2 years.

In the last two years, have you seen any other health professional about your osteoarthritis?

☐ **YES** ☐ **NO** (if no, go to Q7)

Tick ✓all health professionals you have seen over the last 2 years

- ☐ Rheumatologist
- ☐ Physiotherapist
- ☐ Occupational Therapist
- ☐ Dietitian
- ☐ Orthopaedic Surgeon
- ☐ Pharmacist
- ☐ Podiatrist
- ☐ Complementary Medicine Specialist (e.g. Chiropractor, Osteopath, Homeopath, Naturopath, Masseur)

If you ticked any boxes, please answer the next question.

**Question 6**

For each of the health professionals that you have seen during the last 2 years, can you rate how helpful they were in dealing with your osteoarthritis:

*Please tick ✓one box only for each question*

| | | HAVEN'T SEEN | TOTALLY USELESS | SLIGHTLY HELPFUL | HELPED A BIT | VERY HELPFUL | EXTREMELY HELPFUL |
|---|---|---|---|---|---|---|---|
| (a) | Rheumatologist | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (b) | Physiotherapist | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (c) | Occupational Therapist | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (d) | Dietitian | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (e) | Orthopaedic Surgeon | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (f) | Pharmacist | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (g) | Podiatrist | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (h) | Complementary Medicine Specialist (e.g. Chiropractor, Osteopath, Homeopath, Naturopath, Masseur) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

## ABOUT YOUR TREATMENT

**Question 7**

The following lists some common treatments for reducing the pain and disability associated with osteoarthritis. How helpful have you found these treatments?

*Please tick ✓ one box only for each question*

| | | HAVEN'T TRIED | TOTALLY USELESS | SLIGHTLY HELPFUL | HELPED A BIT | VERY HELPFUL | EXTREMELY HELPFUL |
|---|---|---|---|---|---|---|---|
| (a) | Weight loss | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (b) | Exercise | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (c) | Aids and assistive devices *(eg joint supports, walking frames etc)* | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (d) | Physiotherapy | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (e) | Over the counter pain killers and anti-inflammatory medications *(eg aspirin, paracetamol [Panadol], ibuprofen [Nurofen])* | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (f) | Prescription anti-inflammatory medications *(eg naproxen [Anaprox], diclofenac [Voltaren], meloxicam [Mobic] celecoxib [Celebrex])* | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (g) | Prescription pain-killer medications *(eg codeine [Panadeine, Nurofen Plus], tramadol [Tramal, Zydol], dextropropoxyphene [Doloxene, Di-Gesic], buprenorphine [Temgesic], oxycodone [OxyContin])* | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (h) | Creams that you rub on to relieve pain and inflammation (eg diclofenac [Voltaren] gels) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (i) | Complementary therapies *(eg acupuncture, chiropractic massage etc)* | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (j) | Complementary medicines *(eg herbal medicines, vitamin supplements, glucosamine, chondroitin, fish oil etc)* | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (k) | Injections in the joint | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (l) | Other treatments *(eg electrical nerve stimulation, heat and/or cold therapy etc)* | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (m) | Joint replacement | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Question 8**

(a) How frequently do you exercise? (go for a walk, swim, do the gardening etc.)

| DAILY | WEEKLY | FORTNIGHTLY | MONTHLY | NEVER |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

(b) Apart from the pain, are there any other things that reduce your capacity to exercise?

☐ **YES** ☐ **NO**

If **yes**, please describe what they are

_____

_____

_____

_____

**Question 9**

(a) Are there any other medications that you are regularly taking for conditions **other than your osteoarthritis**?

☐ **YES** ☐ **NO**

If **yes**, can you name the medications?

_____

_____

_____

_____

## ABOUT COMPLEMENTARY MEDICINES

**Question 10**

Patients often seek complementary medicines for the treatment of osteoarthritis, particularly if they have had insufficient results from using conventional medications. Complementary medicines commonly used for the treatment of osteoarthritis include glucosamine, chondroitin, fish oil, vitamins and mineral supplements.

(a) Have you tried any complementary medicines for the treatment of your osteoarthritis?

☐ **YES** ☐ **NO**

If you responded **"no",** go to the section headed **"INFORMATION ABOUT YOUR OSTEOARTHRITIS"** on page 16.

If you answered **"yes",** please answer the next question.

(b) Can you indicate the extent to which you agree with the following statements about complementary medicines:

*Please tick ✓ one box only for each question*

| | | STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE |
|---|---|---|---|---|---|---|
| (i) | They control my pain | ☐ | ☐ | ☐ | ☐ | ☐ |
| (ii) | They will help my condition | ☐ | ☐ | ☐ | ☐ | ☐ |
| (iii) | They are safe and will not hurt me. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (iv) | They helped someone with the same condition as mine. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (v) | Medications prescribed by my doctor are not working. | ☐ | ☐ | ☐ | ☐ | ☐ |
| (vi) | I believe that they will cure my condition. | ☐ | ☐ | ☐ | ☐ | ☐ |

(c) If you are using any complementary medicines, can you name them?

_____

_____

_____

_____

_____

(d) Is your doctor aware that you are using complementary medications?

☐ **YES** ☐ **NO**

## INFORMATION ABOUT YOUR OSTEOARTHRITIS

**Question 11**

Having reliable and up-to-date information is vital in helping you to properly deal with your osteoarthritis. We are interested in knowing about the information available to you in helping you to manage your condition.

On a scale from 0 to 10 (*0 being "no understanding" and 10 "full understanding")* please mark a box with a **tick** ✓ to indicate your level of understanding about the following areas related to your condition:

(a) Your illness

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I DO NOT UNDERSTAND — I FULLY UNDERSTAND

(b) Your treatments *(medications, physiotherapy etc*)

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I DO NOT UNDERSTAND — I FULLY UNDERSTAND

(c) What to expect from your illness in the future

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I DO NOT UNDERSTAND — I FULLY UNDERSTAND

(d) Programs and services that are available to help you

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I DO NOT UNDERSTAND — I FULLY UNDERSTAND

***(Question 11 cont'd)***

(e) Pain management

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I DO NOT UNDERSTAND — I FULLY UNDERSTAND

(f) Fatigue management

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I DO NOT UNDERSTAND — I FULLY UNDERSTAND

(g) Ways to increase your independence

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I DO NOT UNDERSTAND — I FULLY UNDERSTAND

(h) Complementary medicines *(herbal medicines, vitamin supplements, glucosamine, chondroitin, fish oil etc.)*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I DO NOT UNDERSTAND — I FULLY UNDERSTAND

(i) Complementary therapies *(acupuncture, chiropractic massage etc)*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I DO NOT UNDERSTAND — I FULLY UNDERSTAND

(j) Community resources *(pool programs, exercise programs etc)*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

I DO NOT UNDERSTAND — I FULLY UNDERSTAND

**Question 12**

Please rate the following information sources for helping you to manage your osteoarthritis?

*Please tick ✓ one box only for each question*

| | | HAVEN'T USED | TOTALLY USELESS | NOT VERY HELPFUL | HELPED A BIT | VERY HELPFUL | EXTREMELY HELPFUL |
|---|---|---|---|---|---|---|---|
| (a) | Your G.P. (family doctor) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (b) | Your medical specialist (Rheumatologist) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (c) | Physiotherapist and/or Occupational Therapist | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (d) | Podiatrist | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (e) | Other health professional | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (f) | Family and/or friends | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (g) | Osteoarthritis support groups | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (h) | Newspapers, magazines, books | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (i) | Television | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| (j) | The Internet | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

**Question 13**

Overall, what do you think of the information that you have to manage your osteoarthritis?

_____

_____

_____

_____

**Question 14**

(a) Overall, how satisfied are you with the information you have received to manage your osteoarthritis?

| VERY SATISFIED | SATISFIED | NEUTRAL | DISSATISFIED | VERY DISSATISFIED |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | ☐ | ☐ |

(b) Do you have any other comments about your information needs for managing your osteoarthritis?

**Question 15**

Is there anything else you would like to tell us about your osteoarthritis, its treatment and your contact with health professionals?

**Thank you for taking the time to complete this survey**



# APPENDIX J: CareTrack Australia – survey of GP management of osteoarthritis

University of South Australia

# CareTrack Australia

## Survey of GP management of patients with osteoarthritis, use of guidelines and practice characteristics

Dear Dr (last name)

Some time ago you agreed to participate in the CareTrack Australia study, a study aimed at improving the quality and safety of healthcare in Australia.

As a very important part of the study, we would be grateful if you could complete the attached survey, the purpose of which is:

- To learn more about the needs of patients with osteoarthritis
- To understand how clinical practice guidelines can better support healthcare.
- To identify characteristics within general practice which potentially influence better coordinated care.

Most questions simply ask you to tick applicable boxes. There are also some components of the questionnaire which allow you to make comments. We do encourage you to put your thoughts down in these comments sections. Often the information we get from these is of more value than the ticked questions.

**Please note that all information provided in this survey will be strictly confidential.**

When you have finished, please make sure you have completed all relevant sections and added your details on this page. Could you then please return the completed questionnaire in the postage paid envelope provided.

If you have any questions about this survey or seek clarification, please contact Martin Basedow on 0488 533 556.

**We sincerely thank you for completing this survey. For your time and effort, on receipt of a completed survey, we would be pleased to reimburse you $150. Can you please arrange for an invoice to be sent to us (alternatively we have included an invoice with your details)**.

If you would like to receive the results of this survey, please place a ✓ in the following box.

☐ Yes, I would like to have a copy of the final results of this survey.

## SECTION ONE: TREATMENT OF OSTEOARTHRITIS

The scenario presented below may be described as a fairly typical presentation of a patient with osteoarthritis. We are interested in understanding how you would manage this case.

### Scenario

Maria, an active 79 year old (BMI 23 kg/m²), was diagnosed with osteoarthritis 20 years ago. For the past 2 years her osteoarthritic pain has been controlled with paracetamol and meloxicam (both initiated by her GP). All medical conditions except osteoarthritis are well controlled. Recent investigations (electrolytes, lipids, renal and liver function, full blood count) are normal.

**Current medications:**

**paracetamol** 1 g four times/day (osteoarthritis)

**meloxicam** 7.5 mg in the morning on 'bowls' days (osteoarthritis)

**verapamil** 240 mg/day; and **atenolol** 50 mg/day (hypertension – BP 133/85 mmHg, May '06)

**fenofibrate** 134 mg/day (hypertriglyceridaemia)

**latanoprost plus timolol** 1 drop/eye at night (glaucoma)

**amitriptyline** 10 mg at night (insomnia)

**docusate plus senna** 2 at night when required (constipation)

**Other information:** Nil drug or food allergies, history of gastrointestinal disease or diabetes. Eyesight is fair.

Her knee pain has increased in the past few months; it is moderate on waking and improves as she first starts moving. It worsens through the day to moderate and occasionally severe, especially with prolonged walking or standing. On examination, bony swelling is evident on both knees, and there is tenderness and crepitus on her right knee. Remaining physical examination is unremarkable.

According to Maria, paracetamol has been effective but 'wears off' quite quickly. Meloxicam helps but lately her knee pain has occasionally prevented her from playing bowls. She asks you to recommend 'something stronger' to 'help her knee pain' so that she can return to bowls.

## TREATMENT OPTIONS

**1.** Would you consider using any of the following for Maria's pain management?

(State why/why not in terms of effectiveness, place in therapy, precautions, interactions, etc.)

i) Glucosamine and/or Chondroitin Consider: ☐ Yes ☐ No

Reason: _____

ii) Conventional NSAID Consider: ☐ Yes ☐ No

Reason: _____

iii) COX-2 selective NSAID Consider: ☐ Yes ☐ No

Reason: _____

_____

iv) Tramadol Consider: ☐ Yes ☐ No

Reason: _____

v) Codeine Consider: ☐ Yes ☐ No

Reason: _____

vi) Oxycodone or Morphine Consider: ☐ Yes ☐ No

Reason: _____

**2a**. List the analgesic regimen you would use to manage Maria's osteoarthritis.

(Include paracetamol and/or meloxicam if they are to be continued.)

| | DRUG | DOSE | FREQUENCY | REGULAR OR AS NEEDED | DURATION |
|---|---|---|---|---|---|
| i) | | | | | |
| ii) | | | | | |
| iii) | | | | | |
| iv) | | | | | |

**2b.** What changes (if any) would you make to her other medications?

Change: _____

Reason: _____

Change: _____

Reason: _____

**3**. What non-drug therapy would you initiate?

i) _____

ii) _____

iii) _____

**4**. What other information would you give Maria about using analgesics to manage her pain?

i) _____

ii) _____

iii) _____

iv) _____

**5a**. Please describe your attitude towards complementary and alternative medicines and therapies in treating patients with osteoarthritis.

_____

_____

_____

_____

**6.** How many patients with osteoarthritis would you see per week (on average)?_____

**7.** How many hours per week do you work in the practice (on average)?_____

## SECTION TWO: CLINICAL PRACTICE GUIDELINES

**8**. What is your general attitude toward Clinical Practice Guidelines?

*Please tick ✓ one box only for each statement*

| | | STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE |
|---|---|---|---|---|---|---|
| i) | Guidelines support decision making in practice | ☐ | ☐ | ☐ | ☐ | ☐ |
| ii) | Guidelines support medical education | ☐ | ☐ | ☐ | ☐ | ☐ |
| iii) | Guidelines restrict GP autonomy | ☐ | ☐ | ☐ | ☐ | ☐ |
| iv) | Guidelines aim for cost containment | ☐ | ☐ | ☐ | ☐ | ☐ |
| v) | Guidelines oversimplify clinical medicine | ☐ | ☐ | ☐ | ☐ | ☐ |
| vi) | Guidelines should be promoted in various clinical areas | ☐ | ☐ | ☐ | ☐ | ☐ |
| vii) | Guidelines facilitate sharing information with patients | ☐ | ☐ | ☐ | ☐ | ☐ |
| viii) | Guidelines should be available to the general public | ☐ | ☐ | ☐ | ☐ | ☐ |
| ix) | Experts should know the guideline content | ☐ | ☐ | ☐ | ☐ | ☐ |
| x) | Guideline adherence is an important indicator of quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| xi) | Justification should be documented when not following recommendations | ☐ | ☐ | ☐ | ☐ | ☐ |
| xii) | Guidelines increase the risk of malpractice liability | ☐ | ☐ | ☐ | ☐ | ☐ |
| xiii) | Guidelines are quickly and easily available/found at the point of care | ☐ | ☐ | ☐ | ☐ | ☐ |

xiv) What other comments can you give about your general attitude to guidelines?

_____

_____

_____

_____

_____

**9**. What is your view regarding the important characteristics of clinical practice guidelines?

*Please tick ✓one box only for each statement*

| | | STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE |
|---|---|---|---|---|---|---|
| i) | Reasons or recommendations should be clearly stated | ☐ | ☐ | ☐ | ☐ | ☐ |
| ii) | Discussion of validity of evidence in the literature should be included | ☐ | ☐ | ☐ | ☐ | ☐ |
| iii) | Guideline aims are clearly specified | ☐ | ☐ | ☐ | ☐ | ☐ |
| iv) | External review results are presented | ☐ | ☐ | ☐ | ☐ | ☐ |
| v) | Developed by credible organisation or persons | ☐ | ☐ | ☐ | ☐ | ☐ |
| vi) | Each recommendation should have a uniform format | ☐ | ☐ | ☐ | ☐ | ☐ |
| vii) | Conflict of interest of the persons involved are specified | ☐ | ☐ | ☐ | ☐ | ☐ |

viii) What other comments do you have regarding the important characteristics of guidelines?

_____

_____

_____

_____

_____

**10**. Format for clinical practice guidelines

*Please tick ✓one box only for each question*

| | | DETAILED TEXT/MANUAL | SHORT (2-3 PAGES) SUMMARIES | FLOWCHART OR ALGORITHM | SINGLE PAGE CHECKLIST |
|---|---|---|---|---|---|
| i) | Which format do you prefer for clinical practice guidelines? | ☐ | ☐ | ☐ | ☐ |

ii) Please make further comments about the format of clinical practice guidelines.

_____

_____

_____

_____

_____

**11**. Experience and opinions regarding RACGP OA Guideline*

*Please tick ✓one box only for each question*

| | | ONCE A WEEK OR MORE | MONTHLY, BUT LESS THAN WEEKLY | RARELY | NEVER | NOT AWARE OF THE GUIDELINE |
|---|---|---|---|---|---|---|
| i) | How often do you refer to the RACGP OA Guideline? | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | EXTREMELY HELPFUL | VERY HELPFUL | MILDLY HELPFUL | RARELY HELPFUL | NOT HELPFUL | NOT AWARE/ NOT USED |
|---|---|---|---|---|---|---|---|
| ii) | How helpful is the RACGP OA Guideline? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

iii) Please add other comments about the RACGP OA guideline?

_____

_____

_____

_____

*** RACGP Guideline for the non-surgical management of hip and knee osteoarthritis, available at http://www.racgp.org.au/guidelines/osteoarthritis**

iv) Do you refer to any other OA guidelines? ☐Yes ☐No

| | If Yes, how helpful do you find these other OA guidelines? | EXTREMELY HELPFUL | VERY HELPFUL | MILDLY HELPFUL | RARELY HELPFUL | NOT HELPFUL |
|---|---|---|---|---|---|---|
| v) | Name:_____ | ☐ | ☐ | ☐ | ☐ | ☐ |
| vi) | Name:_____ | ☐ | ☐ | ☐ | ☐ | ☐ |
| vii) | Name:_____ | ☐ | ☐ | ☐ | ☐ | ☐ |

viii) Do you have any other comments about specific OA guidelines?

_____

_____

_____

_____

## SECTION THREE: YOUR PRACTICE CHARACTERISTICS

**12.** How many GPs work in your practice? _____

**13**. How many practice nurses are employed for clinical work at your general practice (not as receptionists, but actively involved in patient care/assessment)? _____

**14**. Does your practice provide regular/routine preventive medicine health checks, screening and/or brief interventions for any of the following conditions and/or lifestyle factors?

| | ALWAYS | MOST OF THE TIME | SOMETIMES | RARELY | NEVER |
|---|---|---|---|---|---|
| i) Vaccinations | ☐ | ☐ | ☐ | ☐ | ☐ |
| ii) Cancer screening | ☐ | ☐ | ☐ | ☐ | ☐ |
| iii) Annual health checks | ☐ | ☐ | ☐ | ☐ | ☐ |
| iv) Assessment of physical activity | ☐ | ☐ | ☐ | ☐ | ☐ |
| v) Smoking assessment and Quitline advice | ☐ | ☐ | ☐ | ☐ | ☐ |
| vi) Assessment of diet/nutrition | ☐ | ☐ | ☐ | ☐ | ☐ |
| vii) Screening for hypertension | ☐ | ☐ | ☐ | ☐ | ☐ |
| viii) Screening for osteoporosis | ☐ | ☐ | ☐ | ☐ | ☐ |
| ix) Screening for hyperlipidaemia | ☐ | ☐ | ☐ | ☐ | ☐ |
| x) Screening for diabetes | ☐ | ☐ | ☐ | ☐ | ☐ |
| xi) Assessment of alcohol intake | ☐ | ☐ | ☐ | ☐ | ☐ |

**15**. How often do the following tasks happen in your practice?

| | ALWAYS | MOST OF THE TIME | SOMETIMES | RARELY | NEVER |
|---|---|---|---|---|---|
| i) Reminders sent to patients when they need to schedule an appointment for preventive care | ☐ | ☐ | ☐ | ☐ | ☐ |
| ii) Formal document review of patients on chronic care treatment plans to assess if they are following them (GPMP reviews). | ☐ | ☐ | ☐ | ☐ | ☐ |
| iii) Follow up when a report is not received from an external provider/service | ☐ | ☐ | ☐ | ☐ | ☐ |
| iv) Recall patients for review of their chronic disease (e.g. annual diabetes check) | ☐ | ☐ | ☐ | ☐ | ☐ |

**16**. Do you participate in any of the following quality improvement processes? *Please tick ✓ all that apply*

i) Clinical practice meetings with all staff at least monthly ☐

ii) Improvement Foundation activities (eg primary care collaboratives) ☐

iii) Maintain an incident register ☐ vi) Medication audits on patient records ☐

iv) Patient feedback surveys ☐ vii) Clinical audits ☐

v) Sharing data with the Medicare Local ☐ viii) Case presentations/conferences ☐

**17**. Has your practice developed or modified clinical protocols or pathways for chronic disease management?

*Please tick ✓all that apply*

| | | | |
|---|---|---|---|
| i. Hypertension | ☐ | v. Diabetes | ☐ |
| ii. Hyperlipidaemia | ☐ | vi. COPD | ☐ |
| iii. Asthma | ☐ | vii. Depression/Anxiety | ☐ |

iv. Other (name) _____

**17a**. Are these clinical protocols/pathways incorporated into your electronic patient management system as templates (e.g. within GPMP and/or Mental Health plans)?
*Please tick ✓one box* ☐ Yes ☐ No ☐ N/A

**17b**. If Yes, do you extract the information for audit purposes?
*Please tick ✓one box* ☐ Yes ☐ No

**17c**. If not incorporated into your electronic patient management system, briefly describe how these protocols/pathways are used in your practice.

_____
_____

**18**. Please indicate the extent to which you agree with the following statements regarding your general practice.

| | STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE |
|---|---|---|---|---|---|
| i) The doctors and nurses here work well together as a coordinated team | ☐ | ☐ | ☐ | ☐ | ☐ |
| ii) I have the support I need from other staff in my practice to care for patients | ☐ | ☐ | ☐ | ☐ | ☐ |
| iii) I am satisfied with the quality of collaboration that I experience in my practice | ☐ | ☐ | ☐ | ☐ | ☐ |
| iv) Our practice places a high priority on consistent improvement in patient care processes | ☐ | ☐ | ☐ | ☐ | ☐ |
| v) Our practice has systems and clinical processes in place to prevent, identify and correct problems that have the potential to affect patients. | ☐ | ☐ | ☐ | ☐ | ☐ |

**19**. Is your practice involved in a training program for GP Registrars?
*Please tick ✓one box* ☐ Yes ☐ No

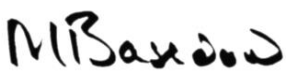
**20**. Is your practice accredited?
*Please tick ✓one box* ☐ Yes -AGPAL ☐ Yes -QPA ☐ No

## Thanks for your help with the survey

# Appendix K: Statement of authorship declaration forms

**Article 1**: Basedow M, Esterman A (2015) Assessing appropriateness of osteoarthritis care using quality indicators: a systematic review. *Journal of Evaluation in Clinical Practice*. Volume 21, 782 – 789.

**Martin Basedow (Author 1):** Conceived the research question and designed the study, collected, managed and analysed the data, interpreted the findings, drafted and finalised the manuscript.

*Signed:*  *Date: 20 September 2015*

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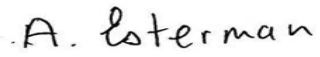
**Adrian Esterman (Author 2):** Contributed to the design of the study, assisted with the statistical analysis of data, provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 22 September 2015*

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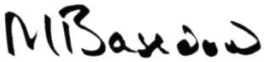
**Article 2 (unpublished – submitted to Arthritis Care & Research, October 2015)**: Basedow M, Hibbert PD, Hooper TD, Runciman WB, Esterman. Australians with osteoarthritis; satisfaction with healthcare providers and the perceived helpfulness of treatments and information sources.

**Martin Basedow (Author 1):** Conceived the research question and designed the study, collected, managed and analysed the data, interpreted the findings, drafted and finalised the manuscript.

*Signed:*  *Date: 20 September 2015*

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**Peter Hibbert (Author 2):** Provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 30 September 2015*

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**Tamara Hooper (Author 3):** Provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 26 September 2015*

---

**Bill Runciman (Author 4):** Contributed to the design of the study, provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 24 September 2015*

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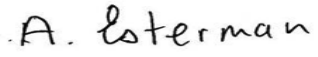
**Adrian Esterman (Author 5):** Contributed to the design of the study, assisted with the statistical analysis of data, provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 22 September 2015*

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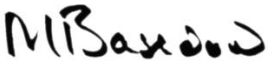
**Article 3:** Basedow M, Runciman WB, March L, Esterman A (2014) Australians with osteoarthritis; the use of and beliefs about complementary and alternative medicines. *Complementary Therapies in Clinical Practice* 20 (4), 237 – 242.

**Martin Basedow (Author 1):** Conceived the research question and designed the study, collected, managed and analysed the data, interpreted the findings, drafted and finalised the manuscript.

*Signed:*  *Date: 20 September 2015*

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**Bill Runciman (Author 2):** Contributed to the design of the study, provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 24 September 2015*

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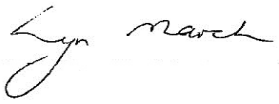
**Lyn March (Author 3):** Provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 21 September 2015*

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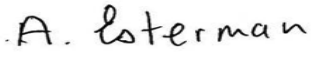
**Adrian Esterman (Author 4):** Contributed to the design of the study, assisted with the statistical analysis of data, provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 22 September 2015*

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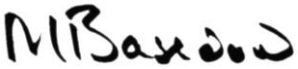
**Article 4:** Basedow M, Williams H, Shanahan EM, Runciman WB, Esterman A (2015) Australian general practitioner management of osteoarthritis following the release of the RACGP guideline for the non-surgical management of hip and knee osteoarthritis *BMC Research Notes* 8:536

**Martin Basedow (Author 1):** Conceived the research question and designed the study, collected, managed and analysed the data, interpreted the findings, drafted and finalised the manuscript.

*Signed:*  *Date: 20 September 2015*

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**Helena Williams (Author 2):** Provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 1 October 2015*

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**Michael Shanahan (Author 3):** Provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 22 September 2015*

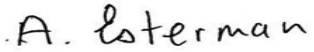
---

**Bill Runciman (Author 4):** Contributed to the design of the study, provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 24 September 2015*

---

**Adrian Esterman (Author 5):** Contributed to the design of the study, assisted with the statistical analysis of data, provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 22 September 2015*

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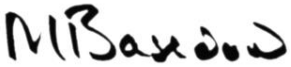
**Article 5:** Basedow M, Runciman WB, Lipworth W, Esterman A (2015) Australian general practitioner attitudes to clinical practice guidelines and some implications for translating osteoarthritis care into practice. *Australian Journal of Primary Health*. http://dx.doi/10.1071/PY15079

**Martin Basedow (Author 1):** Conceived the research question and designed the study, collected, managed and analysed the data, interpreted the findings, drafted and finalised the manuscript.

*Signed:*  *Date: 20 September 2015*

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**Bill Runciman (Author 2):** Contributed to the design of the study, critically reviewed the manuscript and provided intellectual content to the manuscript.

*Signed:*  *Date: 24 September 2015*

---

**Wendy Lipworth (Author 3):** Provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 21 September 2015*

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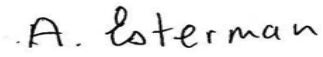
**Adrian Esterman (Author 4):** Contributed to the design of the study, assisted with the statistical analysis of data, provided intellectual content and critically reviewed the manuscript.

*Signed:*  *Date: 22 September 2015*

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# APPENDIX L: Article 2 – acceptance for publication

From: Ms Megan Gunson <megangunson@dovepress.com>
Sent: Wednesday, 1/06/2016 9:56 AM
To: Basedow, Martin - basmy008

Dear Mr Basedow,

I am pleased to inform you that your submission, "Australians with osteoarthritis; satisfaction with healthcare providers and the perceived helpfulness of treatments and information sources.", has been accepted for publication in "Journal of Multidisciplinary Healthcare". The publication processing fee is now payable and an invoice is accessible here:
https://www.dovepress.com/invoice.php?pa=edit&invoice_id=20036&l=cmRgLYIl1fylcHMYovTbVQyM655518
(If you require any amendments to your invoice, or to process the payment online/by bank transfer, please reply to this email.)

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