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# Treatment Preferences in Patients with Knee or Hip Osteoarthritis: An Overview

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## 1. Introduction

Osteoarthritis (OA) is a degenerative chronic condition that involves degradation of joints—primarily articular cartilage, synovium, and subchondral bones, producing joint pain, tenderness and stiffness. It can occur in any joint but knees, hips and small hand joints are the most commonly affected. Although OA can occur in any age group, its prevalence increases with age especially after the 4th or 5th decades of life (Jordan et al., 2007; Lawrence et al., 2008). OA is one of the most prevalent chronic conditions in Western countries, although prevalence rates vary depending on whether symptomatic or radiographic criteria were used (Busija et al., 2010; Comas et al., 2010), as it is well known that the severity of a patient's symptoms often is not correlated to the degree of disease progression evaluated on radiographs (Hannan et al., 2000). Women show, in general, a greater risk of prevalent OA and more severe symptoms, particularly after menopausal age (Srikanth et al., 2005).

OA is a leading cause of disability and decreased quality of life, as it produces important functional limitations in daily activities (Elliot et al., 2007; van Dijk et al., 2008; Salaffi et al., 2005). The socioeconomic burden of the condition is immense and is not only the leading cause of disability in Western countries but is also responsible for a large number of physician visits, hospitalisations, and time lost from work (Kotlarz et al., 2009; Bitton, 2009).

There is no known cure for OA, so available treatments aim to relieve symptoms and improve or maintain functional capacity. Therapeutic options include nonpharmacologic, pharmacologic, and surgical interventions. Nonpharmacologic therapies, such as exercise, weight loss, physiotherapy, heat and cold application, or assistive devices entail no inherent risks and therefore they are recommended at all levels of severity, although they have revealed a modest effect in reducing symptoms (Scott & Kowalczyk, 2006).

Acetaminophen is also a safe core treatment recommended as a first line option for pain relief. At more severe levels of symptoms, oral non-steroidal anti-inflammatory drugs (NSAIDs) should be considered, although they have shown a higher risk of adverse effects (gastrointestinal, liver and cardio-renal) than acetaminophen or topical NSAIDs. Therefore, when selecting the agent and dose, healthcare professionals must take into account

individual patient risk factors, including age, and they should be used at the lowest effective dose for the shortest possible period of time.

When nonsurgical treatments are ineffective at relieving symptoms and there is prolonged and established functional limitation and severe pain, referral for joint replacement surgery is recommended. This is a highly efficacious and cost-effective procedure for the treatment of advanced OA in its capability to relieve pain, increase mobility, and improve the quality of life (Losina et al., 2009).

In the last two decades there has been increasing interest in shared decision-making (SDM) as a collaborative model of health care (Charles et al., 1997; Edwards & Elwyn, 2009). SDM, as opposed to a more traditional authoritative and paternalistic patient-practitioner relationship, requires information exchange between patients and professionals, where the latter offer technical information about the disease and available treatments, while patients offer their personal knowledge about their concerns, expectations and preferences about treatments, their efficacy and potential risks, in order to reach a consensus about medical decisions. SDM is especially applicable in those situations where there is uncertainty about the probability of outcomes, or when there are two or more treatment options that offer a similar balance between benefits and risks. From this perspective, taking into account patients' preferences is increasingly advocated as an optimal model of collaborative care.

In the case of OA, as commented above, clinical recommendations vary depending on symptoms severity and prior experience with other treatments. In spite of this, OA is a clinical condition that is highly sensitive to patient preferences at all stages of severity. Treatments recommended for mild symptoms (exercise, physiotherapy, acetaminophen, etc) have modest efficacy but no inherent risks of adverse effects, while more effective options which reduce pain and increase functionality, such as NSAIDs or opioid analgesics, present a higher risk of side effects. Even a highly effective procedure such as total joint replacement (TJR) is subjected to relevant trade-offs between its demonstrated benefits and risks associated with every surgical intervention, or other factors such as convalescence or costs, in those societies without universal healthcare systems. Therefore, patients with OA are continually faced with decisions that imply relevant trade-offs between benefits and the risk of undesired outcomes, so their personal preferences should be incorporated during deliberations and decisions about treatment of their condition.

Although research and implementation of SDM in OA remains scarce (Weng et al., 2007; Fraenkel et al., 2007), in the last decade an increasing number of studies have been performed that assessed patients' preferences about treatment options for OA and its characteristics. The aim of this article is to present an overview about the research on preferences and use of treatments by patients with hip and/or knee OA.

## **2. Patients' awareness, use and satisfaction with treatments**

Several studies have analyzed patient awareness, prior utilization and/or satisfaction with treatments for OA, using survey measures. With some exceptions, results show that medications represent the most frequently used option in the treatment of OA. For instance, Juby et al. (2005) observed patients with clinical and radiographic evidence of OA (either hip or knee), and found a good awareness of 12 treatments, with diet modification and viscosupplementation being the less known (and used) options, with approximately 40% of the sample. Medications (non-narcotic and narcotic analgesics, NSAIDs, cyclooxygenase inhibitors COXIBs, steroid injections) were the most frequently known (more than 85% of

the sample) and used treatments (50% to 75%), and between half and two-thirds of the patients who have taken them reported to be satisfied with their efficacy. Tallon et al. (2000) also found medications to be the most frequently used treatment among knee OA patients, with more than 70% of participants considering them moderately or extremely helpful. In both the studies commented, nonpharmacological treatment options such as physical therapy or aids/adaptations were used by 40% to 60% of participants, and of these, a similar percentage considered them satisfactory. Joint replacement surgery was the least frequently used treatment, as it is recommended only for those with high severity, but among those who have undergone this procedure it was the most valued.

Mitchell & Hurley (2008), with 415 patients who consulted a primary care physician for knee pain of more than 6 months duration also found drugs (analgesic or NSAIDs) to be the treatment most frequently received (83%), followed by physiotherapy (41%), with other therapies showing rates of use lower than 10%. Sixty per cent of participants reported their preferences, and among these, physiotherapy was the most preferred treatment (41%), while only 4% reported drugs as their primary option.

Blake et al. (2002) obtained quite a different result, with rates of treatments tried more equally distributed, exercise being the most frequently used (35%), while oral medications were tried by approximately 25% of respondents (only over-the-counter medication was included in the survey). This study was population-based and data on treatment use refer to those participants who reported knee or hip pain (37% of the sample) and therefore, although a small subsample was required to present verifiable radiographic evidence of OA, it cannot be assured that other rheumatic conditions were not present in the sample. The fact that only use of over-the-counter medication was assessed was possibly responsible for the discrepancies with the studies previously commented.

Other studies have analyzed patients' preferences when two specific treatments are compared. For instance, Wolfe et al. (2000) studied a cohort of patients with OA, rheumatoid arthritis and fibromyalgia, assessing their preferences for acetaminophen versus NSAIDs. Among OA patients, 56% of them considered acetaminophen significantly or somewhat less effective than NSAIDs, and 30% stated that the efficacy of both drugs was about the same. When considering overall satisfaction with the drugs also taking into account their side effects, results were almost identical. In the context of a randomised trial comparing treatments for knee OA, three studies reported patients' preferences for the treatments implemented. Underwood et al. (2007) offered patients the possibility of participating in a randomised trial or a preference study comparing topical versus oral ibuprofen for chronic knee pain. Among those who decided to participate in the preference study, 74% opted for the topical modality of the drug. Denegar et al. (2010) randomised 34 patients, in a crossover design, to heat, cold or contrast therapy, and after trial termination 47% of participants stated a preference for warm treatment, while equal preferences were observed for cold and contrast (24% in both cases). Foster et al. (2010), in a trial comparing physiotherapy advice and exercise versus the same condition plus acupuncture, assessed treatment preferences (not only for those implemented in the trial) before treatment was commenced, and found that only 20% of the participants stated a treatment preference; of these, 10% stated advice and exercise, 13% acupuncture and 44% both.

### 3. Studies that use preferences elicitation techniques

A number of studies have used different techniques to elicit patients' preferences about treatments or its characteristics. The most frequently used technique has been Conjoint

Analysis (CA), a task where patients construct their treatment preferences by making trade-offs between competing treatment characteristics (e.g., efficacy, risks or route of administration) in a series of rating tasks. Preferences are then predicted based on trade-offs between specific treatment characteristics and not the treatment itself. CA enables both health-related and nonhealth-related attributes, taking into account a wider range of outcomes.

Byrne et al. (2006) used CA to assess racial differences in preferences for TJR in a sample that includes general population and patients with knee OA. Participants were faced with different hypothetical scenarios of surgical and nonsurgical states for OA, developed from combinations of several attributes with different levels: pain, walking, costs, death, complications and failure of the surgical procedure. Results showed that all attributes except failure of TJR significantly predicts participants' choices: as differences between surgical and nonsurgical scenarios were smaller for pain and walking ability, and when the attribute of surgery (costs, death, complications) is larger participants were less likely to opt for surgery. Regarding participant characteristics, women, African-American and older individuals were less likely to choose surgery, while income level or kind of sample (public or patient) did not have a significant effect on choice.

Fraenkel et al. (2004) also used CA to assess knee patients' preferences for medications commonly prescribed for OA when an inadequate response for acetaminophen is obtained (nonselective NSAIDs, COXIBs, opioid analgesics) as well as other agents such as glucosamine and/or chondroitin sulphate, and capsaicine. Seven characteristics (with different levels) of medication were combined in the CA tasks: label, administration route, time to benefit, response rate, common adverse effects, risk of ulcer and monthly copayments. Results showed that the risk of adverse effects had the greatest impact on patient preferences; nonselective NSAIDs were almost never preferred, while topical capsaicine was the most preferred option even when it was reported as much less effective than the other alternatives. No significant associations between patients' demographic or clinical characteristics and treatment preferences were obtained.

In a more recent article, Fraenkel et al. (2008) also used CA to compare knee patient preferences for characteristics corresponding to four treatment options: topical capsaicin, oral medications (acetaminophen, NSAIDs), intra-articular injections and exercise. Once again, patients' preferences were more strongly influenced by the risk of side effects compared to the chance of benefit. Exercise and NSAIDs were the most and least preferred options respectively, whether this latter option was described as 20% (base case) or 50% (benefits maximized) more effective compared to the other options.

In Ratcliffe et al. (2004), however, physical mobility was the most important attribute influencing patients' preferences, although risk of serious adverse effects and level of joint aches were also significant predictors (level of joint pains and risk of mild to moderate side effects did not attain statistical significance in the prediction of patients' choices). These results were moderated by factors such as symptoms severity, age or income; for instance, the importance attached to the level of mobility achieved decreased as the severity of symptoms increased. Chang et al. (2005), when combining health states for OA with different gastrointestinal side effects profiles (using a visual analogue scale, VAS), also found that the influence of side effects depends on the severity of the disease: it is lower when OA pain is severe and higher when OA pain is milder.

Kopec et al. (2007) analyzed patients' maximum acceptable risk increments (MARI) for different adverse effects from OA medication, using a probabilistic threshold technique. In this task, patients are presented with two treatment options that only differ in one attribute (e.g., pain relief), so most patients would logically opt for the more effective one. Then, the task proceeds by increasing (in the most favourable option) by small units the probability of one of the side effects presented, until the respondent switches to accepting the alternative option. Results showed that the lowest MARI was observed for heart attack/stroke (3% to 5%, depending on the level of pain relief and initial risk) and highest for dyspepsia (23% to 35%). Higher initial-risk levels correlated with greater subsequent willingness to run additional risk to obtain a benefit in pain relief.

#### 4. Willingness and use of total joint replacement

Total joint arthroplasty has been revealed to be an effective procedure for the management of end-stage hip and knee OA (Losina et al., 2009). Ninety per cent of those who undergo TJR experience relief of pain and functional improvement, and the probability of associated risks is lower than 1%. In spite of this, significant variations in the rates of utilisation of TJR have been found (Jones et al., 2005; Skinner et al., 2003). Race was the most frequently studied variable to explain these disparities, as numerous studies have shown that white patients are more likely than Afro-American patients to have TJR, results that can be extrapolated to other ethnic minorities (Escalante et al., 2000; Oishi et al., 1998). These disparities cannot be accounted for by differences in disease prevalence or in access to healthcare, since most of the candidates for these procedures are older persons with access to public health insurance, and studies in universal health care systems have also found ethnic disparities in utilisation. Haussman et al. (2010) have found that TJR recommendations were lower for Afro-American than white patients of similar age and disease severity, but after adjusting for patients' preference for TJR this difference was no longer significant. Therefore, it seems that patient-level factors may be responsible, at least in part, for these disparities.

Several studies have analyzed which variables, both at system and patient level, predict willingness to undergo TJR. Hawker et al. (2001, 2002, 2004) have demonstrated that some sociodemographic, clinical and psychological variables (patients' beliefs and/or expectations about TJR) significantly predict their willingness for surgery: younger age, having spoken to the physician about having surgery, higher perceived severity, less comorbidities, considering friends as the best information source, perceiving the risk of TJR revision acceptable, or some perceived indications for treatments. Income and educational level are significantly related to the potential need for TJR, but not with willingness to undergo the procedure. Suarez-Almanzor et al. (2005) observed that when patients were asked whether they had considered knee replacement in the past, the most powerful predictor of an affirmative response was to have a previous recommendation by their physicians, followed by not being Afro-American, being male, higher perceived efficacy, and more confidence in the physician. When the question referred to considering TJR in the future if it was recommended by the physician, only ethnicity and perceived efficacy were significant predictors. To date, studies strongly suggest that less willingness of Afro-Americans to undergo TJR compared with white patients is accounted for by several psychological factors: they have worse expectations about TJR outcomes (Ibrahim et al., 2002a), expect a longer hospital stay (Ibrahim et al., 2002b), are more likely to perceive

various traditional and complementary care modalities as efficacious (Ibrahim et al., 2001), and consider that prayer is a helpful option to face up to OA disability (Ang et al., 2002). These beliefs and expectations may have important historical roots; discrimination against African Americans, for example, may have created cultural expectations of avoiding medical interventions in favour of home remedies. In any case, these data reflect the importance of taking patients' preferences into account when making decisions about treatment, and the necessity of implementing interventions that could correct erroneous perceptions about the efficacy of medical procedures.

It seems logical that physician recommendation of surgery was the most powerful predictor to undergo TJR, as found by Hawker et al. (2006). This study only reported unadjusted analyses in the prediction of undergoing TJR and also found that age between 62-82, higher education level, higher body mass index, worse perceived severity, and a better perceived general health significantly predict the use of TJR. In Hamel et al. (2008), age was a significant predictor in unadjusted analyses, but not when the remaining predictors were introduced in the regression model. Independent significant predictors of receiving the procedure were higher income level, higher perceived severity and less concern about dying or having complications from surgery.

## 5. Qualitative studies

Qualitative studies may help to obtain a more in depth viewpoint on the experiences of patients with the disease, in addition to their beliefs, perceptions and concerns about therapies to follow and in general their relationship with the health system. In the case of OA, a considerable number of studies have been performed which analyse various issues related to living with the disease and the treatment options.

As for sociodemographic variables which might have an influence on patients' preferences and decisions, in accordance with the results obtained in some of these studies, sex is one of the variables which may lead to differences in the way to live with OA and its possible treatments. Chang et al. (2004), observed that in general women generate more topics of interest than men (while in the sample there were twice as many women as men); some were exclusive to women: anatomy of OA, disadvantages of surgery, pain following surgery and methods to relieve this pain. In the case of intra-operative issues, women focused more on anaesthesia, and men on surgical technique. The study by Karlsson et al. (1997) focused specifically on sex-based differences. The results highlighted that women were more concerned about their function in basic activities, and tended to attain a worse functional level prior to considering surgery; they prefer to endure the suffering instigated by OA. They were more sceptical regarding the results of the arthroplasty and had less confidence in the doctor. The reasons provided for having more reservations towards surgery refer to expecting better technology to exist, their responsibilities as carers or concerns on becoming a burden to others.

Just as for the quantitative studies, race also seems to differentially affect living with OA and treatment preferences. In Chang et al. (2004), Afro-American patients generated less topics (especially men), and these dealt with more issues related to financial aspects, the ideal nature of the treatment or lack of trust in the doctor and health system in general. In Kroll et al. (2007), racial differences focused especially on four categories: causes of the disease (Afro-Americans tended to offer internal explanations, related to wear of the body and ageing, whilst Caucasians and Hispanics referred more frequently to external variables,

such as lesions or accidents), lifestyle changes (Afro-Americans report the disease as more debilitating, while white people and Hispanics, although they recognise the functional impairment, more frequently name the ways in which they try to overcome these limitations), trust and scepticism (Hispanics reveal less trust in the doctor, not so much in their skill as in their professional integrity. Afro-Americans were more sceptical as to technological progress), paying for surgery (Afro-Americans mention this topic more frequently, and are more concerned with obtaining money lent to be able to pay for the operation, while Hispanics mention the possibility of first undergoing the operation and then paying later on). Ibrahim et al. (2004), in a sample of Afro-American men, found that in relation to the category "cultural aspects of the care of arthrosis", the emerging topics referred to religious beliefs of the doctor and patient, in addition to the doctor's sex and race. For the latter aspect, the majority of the sample said they felt indifferent towards the doctor's race as the important thing is their professional skill; however, approximately 10% of the sample preferred a doctor of their same race, arguing that in this way they could better understand their problems. Regarding the sex of the doctor, one fifth of people who mentioned this topic preferred a doctor of the same sex as they were uncomfortable discussing private issues with someone of the opposite sex.

Other studies have offered information on various clinical factors or related to the health system which also has an influence on patient preferences and taking decisions. The study by Ballantyne et al. (2007) reveals how the assessment of the severity of OA is performed in general in a framework of comorbidity; although OA is considered as debilitating, it is not usually the primary health concern. The impact of the symptoms of OA (pain, lack of functionality), and their possible relief following the operation are essential topics for consideration of arthroplasty, in addition to the risks or side effects of the treatments, and they appear like this in most studies (Bower et al., 2006; Campbell et al., 2001; Chang et al., 2004; Karlsson et al., 1997; Kroll et al., 2007; Thorstensson et al., 2006). Waiting lists are debated in the study by O'Neill et al. (2007). Although participants confide in arthroplasty as a means to relieve symptoms, the uncertainty generated by waiting time once they have decided to operate has a negative effect on patient quality of life. Examples of other emerging topics regarding medical aspects of the disease and treatment were: anatomy of OA and duration of the prosthesis (Chang et al., 2004), body abnormality (Kroll et al., 2007), surgical techniques and indication for surgery (Chang et al., 2004; Karlsson et al., 1997), or improvements to general physical function (Thorstensson et al., 2006).

The social networks of patients are also a very important aspect in the decision to operate (Ballantyne et al., 2007; Bower et al., 2006; Kroll et al., 2007); family members or other people relevant for patients play a notable influence on their decisions to handle the disease, both by means of instrumental and emotional support, in addition to strengthening or contravening the beliefs of patients or providing them with new information. The role of the spouse is decisive in one sense or the other, to the extent that this is the person who will adopt the role of carer, and who in some way "shares" the psycho-emotional impact produced by OA; in many cases decisions are taken in part based on the capacity of the spouse to face up to the disease (Ballantyne et al., 2007; O'Neill et al., 2007). In the same way, the knowledge of other people who have undergone arthroplasty and the results obtained from this process are important when taking decisions on treatment (Chang et al., 2004). In some cases, however, the validity of friends as a source of information is questioned by patients themselves (Bower et al., 2006).



Prior experience with the health system is also a highly determinant factor, to the extent that negative experiences may affect patient beliefs or expectations (Ballantyne et al., 2007). Other factors which will be included in this section would be financial/work-related aspects such as the effect of OA and/or the operation on working life (e.g. early retirement; Kroll et al., 2007), the cost of the operation (Chang et al., 2004; Ibrahim et al., 2004; Kroll et al., 2007), technical and structural support (accessibility to the health system, or specific contexts related to treatment; Thorstensson et al., 2006), etc.

Psychological variables comprise most topics generated in different studies, including knowledge, beliefs, expectations or emotional reactions to living with OA and its treatment. Beliefs on the nature of OA seem important when considering surgery. In many cases patients consider that OA is a natural age-related process and this belief has a negative effect on the expected success of the treatment (Ballantyne et al., 2007; Campbell et al., 2001; O'Neill et al., 2007). However, one possible positive consequence of these kinds of beliefs could be the fact that OA is not a threat to the sense of own identity, to the extent that it is considered "suitable" at one's current age and therefore integrates easily into one's own identity (Ballantyne et al., 2007). In other cases, however, the alterations in roles and social relationships, or the lack of autonomy and independence produced by OA represent an invasive characteristic of own identity which affects self-identity and self-esteem.

Beliefs about who is eligible for the operation also play an important role in their selection (O'Neill et al., 2007). Some people believe that to consider surgery, the pain should be constant and the incapacity to move, total; obviously, this reduces the probabilities of considering arthroplasty, although the expectations on their results are positive. In the same sense, it may also occur that patients consider there should be people in worse physical conditions, for which reason they should be priority for surgery. The experience of pain and incapacity produced by the OA has a strong subjective component (O'Neill et al., 2007). In this sense, it has been seen that there are differences in the way these aspects are assessed; for example, Afro-Americans report the disease as more disabling than Caucasians (Kroll et al., 2007). However, as mentioned above, this greater disability perceived is not translated into a greater disposition to operate, quite on the contrary. Expectations on the results of treatments whether on their benefits or on their risks/side effects, also play a determining role when taking decisions on OA (Bower et al., 2006; Kroll et al., 2007; O'Neill et al., 2007). These expectations may come from external sources (doctors, friends, acquaintances) or the patient's own experience, for example over medication (Bower et al., 2006) or practicing exercise (Thorstensson et al., 2006).

Different kinds of reaction to OA symptoms have also been detected (Karlsson et al., 1997). Reacting by means of adaptation would refer to the psychological acceptance of the disease by means of regulating one's own emotions with a positive attitude and trying to adapt lifestyle to the new physical condition. A response by means of action would also refer to trying out new treatments.

## 6. Conclusions

In the last few decades there has been a gradual change in models of healthcare and the way to understand the doctor-patient relationship. From a medical model based on the disease and symptoms there has been a gradual progression towards what has been called patient-focused care whose main features would be respect for the patient's choices and values,

emotional support, providing information and education, coordination of clinical care or the involvement of the patient's family and friends (Gerteis et al., 1993)

From this new point of view, the patient's psychological attitude, reflected in beliefs and expectations on the disease, healthcare or the doctor-patient relationship, as well as emotional response and the establishment of socio-affective links with health professionals, turns into a highly relevant aspect which is necessary to incorporate into the healthcare process. Patient attitudes, beliefs, preferences and expectations are considered factors which may have an important influence on the treatment process and its results whether by means of behavioural factors such as compliance with treatment procedures or putting into practice certain lifestyles which may favour or, on the contrary, hinder the onset or development of the disease, whether because of the direct effect that beliefs and expectations could have on the results of medical interventions by means of psychological mechanisms still not well understood.

Regarding taking medical decisions, this new way of understanding the role of the patient and their relationship with health professionals has led to the concept of shared decision-making, a joint process of deliberation between the doctor and patient where preferences are incorporated into taking decisions on diagnostic or therapeutic procedures within a process of mutual communication between both, where the professional provides information based on scientific evidence on the efficacy and safety of available treatment options, while the patient incorporates their psychological experiences, concerns, preferences and expectations over reaching a consensual decision on the procedure to follow.

In the case of OA, research performed to date has been delimiting a series of factors which determine patient choices as to different treatment options for their disease. Race was the most frequently studied variable because of the consistent results on less frequent use of TJR by ethnic minorities, especially Afro-Americans. Other studies report sex-based differences in living with the disease, patient concerns regarding their quality of life and on the results of treatments. These studies have revealed the importance of dealing with the beliefs and expectations of patients on the disease and available treatment options to the extent that these factors account for a substantial part of the behaviour of patients regarding their disease and quest for healthcare.

The studies commented in this article used different methodologies which hinder the integration of results, which on the other hand lead to discrepancies in some cases. For example, studies which use preference elicitation techniques found, in general, that patients' preferences are more influenced by the risk of adverse effects than potential benefits (while this effect is moderated by variables such as severity level, as patients with more serious symptoms tend to agree to run a greater risk in exchange for obtaining symptomatic relief). This data is clearly reflected in the investigation by Fraenkel et al. (2004, 2008) regarding NSAIDs, which because of a greater possibility of adverse effects are less preferred by patients given less effective but safer options. However, studies which have analysed by means of self-reporting techniques patients' use and preferences on the different treatments find that NSAIDs are not only among the most frequently used but they also reveal a high degree of acceptance by patients. Studies which use Conjoint Analysis propose explicit trade-offs to patients between risks and benefits of treatments while preferences are made on the characteristics of treatments and not on these by themselves; therefore, the possibility of bias because of recognition of the product or commercial brand and the experience of patients with these treatments is removed. For their part, studies such as those by Wolfe et

al. (2000) and Juby et al. (2005) ask patients about the use they have made of different therapeutic options and their satisfaction with these and do not oblige participants to establish trade-offs between treatment characteristics. In this sense, preference elicitation techniques enable a more "pure" measure of these, in the sense of not being explicitly influenced by experience (and satisfaction) of patients with the treatment assessed. However, we can ask ourselves to what extent these procedures offer a somewhat "artefactual" image of patients' preferences derived from trade-offs between the consequences of treatments based on population-related probabilities, compared to assessments made by people who have experienced both adverse effects and the benefits of treatments. Prior investigations have reported that people from the general population assess certain states of health more negatively than those patients who suffer them. In this context it would be interesting to analyse the results of the CA separately for people who have experienced adverse effects of treatments compared to those who have not suffered from them. Studies on communication of risks both in the health and other fields have also revealed that people are more insensitive to major variations in the likelihood of very life-threatening emotional events, such as cancer or a nuclear accident (Slovic et al., 2005; Rottenstreich & Hsee, 2001).

Participation of the patient in taking decisions on their own health has turned into an object of debate and research in the last few decades. Calls to involve the patient in the process of taking decisions is based on practical arguments, in the sense of achieving more quality and efficiency in health services, and from an ethical point of view as a consequence of the emphasis on rights of autonomy and patient participation. In this sense, the preferences and values of patients have to occupy a relevant place in the process of healthcare and both investigators and health professionals should develop strategies to incorporate these preferences into taking medical decisions. Although currently there is no absolute unanimity on the meaning of "shared decision-making", it may be generally accepted that this refers to a process of communication between patients and health professionals regarding reaching a consensus on diagnostic or therapeutic procedures to follow—a dynamic process both from a non-historical and historical point of view where the information, concerns, values and preferences are shared and debated for which, in fact, they may be modified during this process. This does not mean the patient lays down their own preferences; in fact, these may be based on erroneous perceptions of medical procedures. Therefore, for example, it has been commented that racial differences over disposition to undergo TJR are in large part explained by the worse expectations of Afro-American patients over the results of this operation when scientific evidence reveals that this is a highly effective procedure with a low level of risk. These erroneous perceptions may be modified during the process of communication which suggests SDM, but this will not occur unless they are debated explicitly by the actors in the healthcare process. These difficulties may be overcome by means of implementing interventions promoted by SDM, such as training professionals on a consultative style which promotes participation of the patient or the use of patient decision aids (PtDAs). These are instruments designed to set out the scientific evidence in a understandable way for patients in addition to helping them clarify their values and preferences regarding the features of the diagnosis or treatment procedures in terms of efficacy, safety or other relevant aspects, with the aim of facilitating taking decisions alongside their doctor. There are few studies which have analysed the effect of the application of these tools to patients with OA, but results are promising. Therefore,

Weng et al. (2007), in an uncontrolled study, found an improvement in the expectations of the results of TJR in Afro-American patients in addition to a reduction in decision-related conflict in the overall sample following the application of a PtDA consisting of a video and booklet on OA and its treatments. In a randomised controlled trial where patients from the intervention group received the results of their scores in a CA test, Fraenkel et al. (2007) observed a significant increase in self-efficacy in the handling of OA and in preparedness to participate in decision-making with their physicians. Therefore, these tools represent a resource of major interest to encourage a more active role for patients, thereby improving their knowledge on the medical procedures in which they are involved, in addition to communication with their health professional on their values and preferences.

Healthcare in the 21st century must respond to new challenges in an increasingly complex society where the increase in life expectancy also entails an increase in chronic diseases with a more educated population and where the sources of information on health have quickly multiplied with the onset of new technologies. The change from a paternalistic model of healthcare to another where the patient adopts a more autonomous and active role seems unstoppable. The assessment and understanding of patients' values and preferences regarding their states of health and available medical procedures represents only part of the process of involving the patient in taking decisions on their health, but this is fundamental in order for this process to be successful. In the case of OA, research has shown that patients' preferences are influenced by a wide number of factors. Experimental tasks such as CA have pointed out the importance of treatment risks in patients' choices, since participants in those tasks tend to prefer options with lower risks although they involve a lower probability of benefit. However, survey based studies show that when patients are asked based on their experience, they are quite satisfied with more effective options although they involve a higher risk. Furthermore, these results are moderated by demographic or clinical variables such as age or disease severity. Future research must clarify these questions. Psychological and psychosocial variables such as beliefs about the disease and treatments, expectations about outcomes, trust in health professionals, previous experience with the Health System, social networks and perceived social support, conform a complex interaction of factors that play an important role in patients' preferences and choices, and therefore they should not be neglected in the health care of patients with OA.

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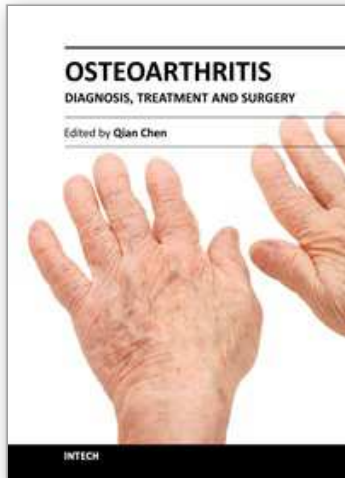
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Osteoarthritis is one of the most debilitating diseases affecting millions of people worldwide. However, there is no FDA approved disease modifying drug specifically for OA. Surgery remains an effective last resort to restore the function of the joints. As the aging populations increase worldwide, the number of OA patients increases dramatically in recent years and is expected to increase in many years to come. This is a book that summarizes recent advance in OA diagnosis, treatment, and surgery. It includes wide ranging topics from the cutting edge gene therapy to alternative medicine. Such multifaceted approaches are necessary to develop novel and effective therapy to cure OA in the future. In this book, different surgical methods are described to restore the function of the joints. In addition, various treatment options are presented, mainly to reduce the pain and enhance the life quality of the OA patients.

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