Much of the research examining psychosocial factors in musculoskeletal conditions has been on arthritis. There are over 100 types of arthritic conditions that affect the joints, the tissues surrounding the joints, and other connective tissues. The World Health Organization (WHO) estimates the global prevalence of arthritis is 4.1% (Moussavi et al., 2007), with osteoarthritis (OA) and rheumatoid arthritis (RA) most common. RA is a chronic, degenerative autoimmune disease that causes inflammation in the affected joints (National Institutes of Health & National Institute of Arthritis and Musculoskeletal and Skin Diseases, 2014). OA occurs as the cartilage between joints breaks down. OA most commonly affects the knees, hips, lower back, neck, and finger and hand joints (Arthritis Foundation, 2017). The prevalence of RA is between 0.3% and 1% of the population in developed countries (World Health Organization, 2017), with rates among women two to three times that of men. OA is largely a disease of aging, with a much higher prevalence than RA, particularly among older adults. OA is estimated to affect 18% of women and 9.6% of men globally aged over 60 years (World Health Organization, 2017).

Arthritis often contributes to the development of comorbidities and to functional impairments (Joyce, Smith, Khandker, Melin, & Singh, 2009; Sumner & Nicassio, 2016). In the US and other developed countries, arthritis is the most common cause of disability, with costs from medical care and lost wages amounting to billions of dollars each year (Centers for Disease Control and Prevention, 2017). Given longer lifespans and rising global populations, the prevalence of arthritis, OA in particular, is increasing (Briggs et al., 2016; Woolf & Pfleger, 2003).

Although biological factors, including genetics, age, and sex, all play key roles in triggering the onset of arthritis (Allen & Golightly, 2015), the disease course is moderated by psychosocial factors (Sumner & Nicassio, 2016). This chapter reviews literature on psychosocial factors that are associated with the course of arthritis, particularly RA and OA.

Symptoms of arthritis vary depending on the specific form. However, all involve pain, stiffness, and inflammation in and around one or more joints. Other common symptoms are fatigue, depression, and mood disturbance, and sexual dysfunction. Following a brief description of each of these symptoms as they relate to arthritis, research is reviewed for key psychosocial factors that have been documented to play a role in the course of arthritis. These include cognitive appraisals of the disease (i.e., illness perceptions), personality, stress, coping, and social support (see Figure 32.1).
Living With Arthritis

Sex and Gender

Osteoarthritis, fibromyalgia, and rheumatoid arthritis are examples of arthritic conditions that disproportionately impact women. In the United States, the lifetime prevalence of arthritis is 23.5% among women, compared to 18.1% among men (Barbour, Helmick, Boring, & Brady, 2017). Although reasons for the higher prevalence in women remain unclear, hormones and other reproductive factors are key contributors (Sumner & Nicassio, 2016). In addition, women with arthritis tend to report greater pain, symptoms, psychological distress, and activity and work limitations than do men with arthritis (Ødegård, Finset, Mowinckel, Kvien, & Uhlig, 2007; Theis, Helmick, & Hootman, 2007).

Stress

Arthritis is a significant source of stress. The inability to balance arthritis-related symptoms and life responsibilities can lead to distress as patients adapt to their new roles (Katz & Morris, 2007; Mitton, Treharne, Hale, Williams, & Kitas, 2007). Disease management activities (e.g., taking medications, attending health provider appointments), as well as functional limitations associated with arthritis, cause distress for many patients and their family members (Danoff-Burg & Seawell, 2012). Patients may be unable to resume their work-related, household, parental, and interpersonal roles (Somers, Kelleher, Shelby, & Fisher, 2016). Those with higher levels of role conflict and role overload are more likely to experience psychological distress, express lower levels of self-efficacy, and feel less supported (Coty, Salt, Myers, & Abusalem, 2017). Those who report higher role overload and conflict are more likely to report feelings of guilt and stress associated with work and interpersonal role demands (Gignac et al., 2012).

Pain

Pain is one of the most common symptoms reported by patients with arthritis and is typically not completely eliminated with medication (Keefe, Shelby, & Somers, 2010; Somers et al., 2016). It is one of the strongest and most consistent predictors of depression in both RA and OA patients (Covic, Tyson, Spencer, & Howe, 2006; Iaquinta & McCrone, 2015; Wolfe & Michaud, 2009). Many
psychosocial interventions focus on pain severity and have shown relative success in reducing pain for patients with RA and OA (Dixon, Keefe, Scipio, Perri, & Abernethy, 2007).

**Fatigue**

Fatigue impacts RA patients’ physical functioning (Breedveld et al., 2005), ability to work (de Croon et al., 2005), and frequency and intensity of daily stressors (White, White, & Fox, 2009). Predictors of fatigue in RA patients include physical functioning, depression, anxiety, maladaptive coping strategies, and inadequate support (Nikolaus, Bode, Taal, & de Laar, 2013). Severe fatigue is present in almost half of patients diagnosed with an inflammatory rheumatic disease (Overman, Kool, Da Silva, & Geenen, 2016). Among musculoskeletal disorders, the highest rates of fatigue are reported by patients diagnosed with fibromyalgia (82% report severe fatigue). In addition, 59% of those diagnosed with multiple rheumatic diseases, other than fibromyalgia, reported exceptionally high levels of fatigue (Overman et al., 2016).

**Depression**

Prevalence rates reported for depression in patients with RA have been found to range from 14.8% to 38.8% (Matcham, Rayner, Steer, & Hotopf, 2013). Relative to the general population, those with arthritis have a two to three times increased risk of reporting depression and anxiety (Harris, 2016; Murphy, Sacks, Brady, Hootman, & Chapman, 2012; Shih, Hootman, Strine, Chapman, & Brady, 2006). Risk factors for depression among individuals with arthritis include personality (e.g., neuroticism); physiological factors (e.g., pain, fatigue, physical disability); other psychosocial factors (e.g., low self-esteem, lack of emotional support and emotional coping); and demographic factors such as identifying as female, being younger in age, and having lower income/education (Coty et al., 2017; Covic et al., 2006; Dobkin, Filipski, Looper, Schieir, & Baron, 2008; Iaquinta & McCrone, 2015; Wolfe & Michaud, 2009). Matcham, Ali, Irving, Hotopf, and Chalder (2016) found that after adjusting for age, gender, disease duration, and baseline tender joint count, higher levels of depression and anxiety predicted increased tender joint count and patient global assessment of disease activity over time.

**Psychosocial Factors and Disease Course**

**Personality**

Personality influences how illness is perceived and coped with, and the type of treatment sought. Among patients diagnosed with RA, neuroticism is associated with greater self-reported arthritis symptoms (Persson & Sahlberg, 2002). Furthermore, it predicts increased psychological distress over time (Evers, Kraaimaat, Geenen, Jacobs, & Bijlsma, 2002). Personality also moderates the relationship between coping and coping effectiveness among those with RA (Newth & DeLongis, 2004). RA patients who are high in extraversion use a greater variety of coping strategies and more adaptive coping strategies (cognitive reframing, emotional expression, and active problem solving) compared to those lower in extraversion (Newth & DeLongis, 2004). In another study, patients who were high in neuroticism were less likely to reject aggressive treatments for their RA (Leon et al., 2016).

**Illness Perceptions**

Several studies indicate that illness perceptions can influence the course of arthritis. RA patients who perceive their disease has numerous symptoms and is uncontrollable are more likely to
become depressed and anxious, with worse pain and fatigue over time (Murphy, Dickens, Creed, & Bernstein, 1999; Scharloo et al., 1999; Sharpe, Sensky, & Allard, 2001). In particular, catastrophizing about pain is associated with increases in both depressive symptoms and pain across time (Holtzman & DeLongis, 2007).

The way an intimate partner perceives a patient’s illness can have physiological and psychological consequences as well. In a sample of OA patients and their spouses, Martire et al. (2006) found that spouses who were more accurate in their perceptions of their partner’s pain responded less negatively and provided support that was more satisfying to the patient. Further, spouses who were more accurate in their perceptions reported less stress from providing support. Sterba et al. (2008) found that women with RA had better psychological adjustment after four months if they and their spouses were congruent on their perceptions of control over RA.

**Stress**

There is some evidence that stress plays a role in arthritis onset. Experiencing even one major stressful life event has been found to be associated with an increased risk of RA, with each additional major life event increasing the risk further (Wesley et al., 2014). Evidence is clearer for the role of stress in disease course. Daily stressors have been found to influence short-term fluctuations in disease activity and arthritis symptoms for RA, OA, and fibromyalgia patients (Affleck et al., 1997; Finan et al., 2010; Parrish, Zautra, & Davis, 2008; Smith & Zautra, 2002; Zautra et al., 1997). Elevations in daily stressors have been found to predict fatigue for arthritis patients (Evers et al., 2014; Parrish et al., 2008). Daily interpersonal stressors that extend across a longer period can also negatively influence health. Chronic interpersonal stress may be particularly toxic as such stress is associated with greater stimulated cellular production of Interleukin-6, which is an indicator of systemic inflammation and joint destruction (Davis et al., 2008).

**Coping**

Those with arthritis must cope with both physiological (e.g., pain, fatigue, and joint deterioration) and psychological (e.g., perceptions of identity, changing body image, perceived control) aspects of the illness. How individuals adapt to these changes plays a role in their overall adjustment. Nagano, Sudo, Nagaoka, Yukioka, and Kondo (2015) found that stressful major life events negatively impact the disease course only among people with RA whose emotional responsiveness to these events was poor. People with RA who were able to identify and express their emotional reactions to life events did not show worse disease course over time.

Stanton, Revenson, and Tennen (2007) point out that avoidance-oriented coping (e.g., denial, disengagement) predicts maladjustment among those with chronic illness, whereas approach-oriented coping (e.g., information seeking, problem solving) is generally more effective. Consistent with this, England et al. (2012) found cognitive reframing and active problem solving to positively impact quality of life in RA patients.

Researchers have used longitudinal designs with repeated assessments of the daily lives of people living with arthritis to examine momentary changes in coping strategies, distress, pain, and other dynamic variables over time (Conner et al., 2006; Holtzman, Newth, & DeLongis, 2004). For example, one study found that increases in catastrophizing among patients with RA were associated with subsequent increases in negative affect and pain intensity over the course of a day. However, when patients reported increases in satisfaction with spouse support, the relationship between pain and catastrophizing was attenuated (Holtzman & DeLongis, 2007).
Gender Differences in Coping With Arthritis

Given the higher prevalence of arthritis among women, it is not surprising that most studies have fewer male participants. This often results in research being underpowered when examining gender differences. However, in studies that are sufficiently powered, women tend to use a larger variety of coping strategies. Englbrecht et al. (2012) found that women with RA use more cognitive reframing, active problem solving, and emotional expression compared to men with RA. A study exploring coping styles and support preferences in men with RA reported coping by engaging in information seeking or maladaptive coping strategies like withdrawing socially (Flurey et al., 2017). In another study of men with RA, participants reported incorporating their disease into their identity to adjust to their condition, and refrained from asking for support (Lack, Noddings, & Hewlett, 2011).

Dyadic Coping

A growing body of research is investigating coping as a dyadic phenomenon in which the coping responses of each partner are mutually influential. The support and coping of a target partner can have a significant impact on both their own and the other partner’s well-being (Revenson & DeLongis, 2011). For example, if a partner is unable to judge the patient’s pain, communication revolving around pain can become ineffective and lead to increased patient and caregiver burden, more problematic support, and poor coping (Lehman et al., 2011; Martire et al., 2006). Those with critical spouses tend to engage in more maladaptive coping (Manne & Zautra, 1989). Conversely empathic responding from a spouse buffers against the negative effects of spouse depression on functional and marital outcomes (Stephenson, DeLongis, Esdaile, & Lehman, 2014).

Social Support

Following diagnosis, social support can provide encouragement to maintain positive health behaviors, help patients better understand problems associated with their illness, provide valuable feedback and information, and reduce emotional distress (Danoff-Burg & Revenson, 2005; Danoff-Burg & Seawell, 2012; Revenson, 2003). Greater social support has been associated with lower levels of depression (Demange et al., 2004), reduced pain and disability (Evers, Kraaimaat, Geene, Jacobs, & Bijlsma, 2003; Lee, Kahana, & Kahana, 2016), greater self-esteem (Fitzpatrick, Newman, Lamb, & Shipley, 1988), and life satisfaction (Smith, Dobbins, & Walkston, 1991). Furthermore, social support encourages the use of adaptive coping strategies, such as cognitive reframing, emotional expression, and problem solving, among RA patients (Holtzman et al., 2004).

The support a person receives (i.e., specific supportive behaviors) and the support a person perceives (i.e., perceived availability of, and satisfaction with, support) may result in drastically different outcomes (see Chapter 18). Perceived support has been found to be beneficial for both physical and psychological outcomes in arthritis. It has been associated with reduced depressive symptoms in patients with both OA and RA (Ferreira & Sherman, 2007; Zyrianova et al., 2006) and functional limitations and psychological distress in RA patients (Demange et al., 2004).

Receiving support, however, does not guarantee beneficial outcomes. For received support to be effective it must be delivered at the correct time, by the right person, and match the recipient’s needs (Cutrona & Russell, 1990; Revenson, 1993). Patients with arthritis might expect emotional support from their partners (Fekete, Stephens, Mickelson, & Druley, 2007) and informational support from health care providers (Danoff-Burg & Seawell, 2012). If support does not match the patient’s needs it can elicit poor psychological and physical outcomes (Martire et al., 2006; Wilson, Martire, & Sliwinski, 2017). If one partner constrains the other’s emotional disclosure, it can lead to poorer
Arthritis patients often become increasingly reliant on the support of their spouse as their condition worsens (Brouwer et al., 2004; Matheson, Harcourt, & Hewlett, 2010), and support from the spouse is an important predictor of a patient’s adaptation to arthritis (Holtzman & DeLongis, 2007). Such support can protect patients from depressive symptoms and poor psychological well-being (Benka et al., 2012). Negative responses from significant others can lead to decreases in desire to cope, an increase in maladaptive coping, and increased pain and poorer disease status in the long term (Griffin, Friend, Kaell, & Bennett, 2001; Holtzman & DeLongis, 2007; Manne & Zautra, 1989). When spouses are depressed, patients may be at particular risk: higher levels of spouse depressive symptoms predict increased disability and disease activity in RA patients across the course of a year (Lam, Lehman, Puterman, & DeLongis, 2009).

Health Disparities in the Experience and Treatment of Arthritis

Age

Elderly arthritis patients often do not receive the same treatment as younger patients, even with equivalent disease activity (Innala et al., 2014; Schmajuk et al., 2007). Disease-modifying anti-rheumatic drugs (DMARDs) are essential to prevent joint destruction and long-term disability (Singh et al., 2016). However, the chances of receiving DMARDs decrease with age (Jin et al., 2014; Schmajuk et al., 2007). Comorbidities (e.g., cardiovascular disease, cancer), vitality and frailty, and geriatric conditions (cognitive limitations, depression, mobility restrictions, incontinence) may play a role in how elderly patients are treated (Boots et al., 2013).

Race/Ethnicity and Socioeconomic Status (SES)

Although arthritis affects individuals of all racial and ethnic backgrounds, some groups have higher rates than others. For example, in the United States, Canada, Australia, and New Zealand higher rates of inflammatory arthritis have been found in indigenous compared to non-indigenous populations (McDougall, Hurd, & Barnabe, 2017). Regardless of whether a particular minority group has a higher disease incidence, minority group members have been found to experience a poorer disease course (Cross et al., 2014; McIlvane, Baker, Mingo, & Haley, 2008). Minority group members in the United States, including Black, Hispanic, and multiracial individuals, report higher levels of activity limitation, work limitation, and severe joint pain (Abraido-Lanza, White, Armbrister, & Link, 2006; Bolen et al., 2010).

Race and ethnicity may impact arthritis outcomes in part due to differences in medical care. Sandstrom and Bruns (2017) found that Latin and African Americans with arthritis were less likely to seek treatment. Interestingly, only the effects for African Americans persisted when controlling for income, insurance, and education, suggesting that, at least for Latinos, these effects might be due...
to poverty rather than cultural factors. However, other studies suggest that psychological, social, and cultural factors contribute to racial and ethnic differences in coping with arthritis, including medical care received (Abraído-Lanza, & Revenson, 2006; Armbrister & Abraído-Lanza, 2016; Constantinseanu, Goucher, Weinstein, Smith, & Fraenkel, 2009).

The effectiveness, accessibility, and utilization of health care services vary by SES, even in societies with universal health care (Baldassari & Callahan, 2016). Harrison et al. (2005) found individuals with RA who reside in areas that are higher in social deprivation report higher disease activity, higher pain, poorer physical function, poorer mental health and lower quality of life. In Canada, lower SES patients tend to have delays in RA diagnosis (Barnabe et al., 2014), despite the country’s universal health care system.

Onset of inflammatory arthritis is linked to childhood SES. The mechanisms for this are unclear (Carlens et al., 2009; Parks et al., 2013). Lifestyle factors such as obesity and cigarette smoking, which are associated with lower SES, play a role in arthritic outcomes, and may be one pathway through which childhood SES is associated with an increased risk of arthritis. (Baldassari & Callahan, 2016; Baldassari, Cleveland, & Callahan, 2013).

**Psychosocial Interventions**

Advancements in the biologic treatment of arthritis have been successful in reducing pain and disease activity. Treatments include direct-acting analgesic agents such as nonsteroidal anti-inflammatory agents, inflammation suppressants such as glucocorticoids, disease-modifying antirheumatic drugs (DMARDs), biologics (e.g., TNF blockers), and other surgical approaches like joint replacement (Walsh & McWilliams, 2014). However, prolonged use of biologic treatments can have adverse side effects (Somers et al., 2016). Patients who are assessed within three months of onset tend to have better disease outcomes (Bosello et al., 2011; van der Linden et al., 2010). However, less than 20% receive treatment in the first three months (De Cock et al., 2014).

Psychosocial interventions are frequently needed in conjunction with biologic therapies, as medication alone is often not effective (Keefe, Somers, & Martire, 2008). A variety of interventions have been developed to help patients to manage arthritis. Cognitive behavioral therapy (CBT) is the most common approach (Knittle, Maes, & De Gucht, 2010; Somers et al., 2016), often focusing on reducing negative cognitions and catastrophizing about pain and illness symptoms (Keefe et al., 2010). The goal of CBT with respect to arthritis is to teach patients cognitive and behavioral strategies targeted towards management of psychosocial factors associated with their pain, fatigue and disability.

Mindfulness meditation is increasingly included as a component of CBT for addressing pain (Day, Jensen, Ehde, & Thorn, 2014; see Chapter 39). It encourages attending to thoughts, emotions, and bodily sensations on a moment-to-moment basis with an open mind and non-judgmental attitude (Day et al., 2014). A study investigating psychosocial interventions found that RA patients who were assigned to those that incorporated mindful awareness and acceptance were tended to experience decreased pain catastrophizing, disability, fatigue, and stress compared to those assigned to CBT and pain education (Davis, Zautra, Wolf, Tennen, & Yeung, 2015). Given that arthritis can impact a patient’s family, and visa versa, recent psychosocial interventions have been developed that include both the patient and partner/caregiver in the intervention (Martire, Schulz, Keefe, Rudy, & Starz, 2007; van Lankveld, van Helmond, Naring, de Rooji, & van den Hoogen, 2004).

Other factors that impact effectiveness of interventions are comorbid conditions and accessibility of interventions. Comorbid medical conditions such as cardiovascular disease and obesity are often present in OA and RA (Briggs et al., 2009; Murphy, Lyden, Phillips, Clauw, & Williams, 2011). Interventions that target both arthritis and other comorbid medical conditions may elicit better pain outcomes. Among obese arthritis patients, higher levels of pain can impact weight management behaviors like diet and physical activity (Choi et al., 2014; Der Ananian, Wilcox, Watkins, Saunders, & Evans, 2008).
Low SES and minority groups are underrepresented in intervention research. Most studies do not report the percentage of participants from minority groups, and few studies make systematic efforts to ensure interventions are culturally appropriate (McIlvane et al., 2008; see Robbins, Allegrante, & Paget, 1993, for an exception). Financial resources, physical and psychological burden, travel, transportation, and time commitments all must be considered when creating interventions for low SES and minority populations. Harrison et al. (2005) found that patients participating in an intervention who were living in the lowest SES neighborhoods had the greatest improvement in disease activity.

Internet interventions allow accessibility for patients who are physically, financially, or geographically disadvantaged (Rini, Porter, Somers, McKee, & Keefe, 2014). Online interventions can lead to increases in self-efficacy and reduced pain catastrophizing (Rini et al., 2015; Trudeau et al., 2015). A majority of self-management interventions in RA have been designed and tested primarily in women. Women appear to be more receptive to current information delivery methods such as physician counseling, which reflects the need for gender specific interventions (Theis et al., 2007).

Conclusion

Living with arthritis and musculoskeletal diseases can present psychosocial challenges. Personality, illness perception, stress, coping, and social support all play important roles in the course of these diseases. Psychosocial interventions provide useful tools for improving multiple facets of disease management and quality of life. Research is needed to investigate differences and similarities between various forms of arthritis and musculoskeletal diseases, as well as focusing on health disparities and gender issues. This will facilitate the development of general and disease specific interventions.

Note

Preparation of this chapter was supported by a research grant to the first author, as well as fellowships to the second and third authors, all from the Social Sciences and Humanities Research Council of Canada.

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