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Anxiety in Disabling Osteoarthritis: Implications for Research and Practice

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Anxiety, a highly prevalent mood disorder affects many adults, especially adults with various medical disorders [1] and chronic health conditions, such as arthritis [2]. Yet, even though anxiety disorders and their adverse health effects in adults with chronic health conditions can be demonstrated to be as marked as those observed for depression [3], when compared to depression, anxiety appears to be a frequently overlooked psychological symptom or comorbid disorder in most medical settings. Since anxiety can influence health status adversely, a number of researchers in the field have recently stressed a strong need for increased clinical efforts to screen for, and assess anxiety in the realm of primary health care and other health oriented settings. In addition, the high importance of correctly diagnosing what type(s) of anxiety syndrome (s) prevail has been stressed. As well, the ability to effectively minimize the progression of anxiety disorder syndromes, and its highly negative impact on the affected individual, including their ability to function physically, socially, and economically, has been the focus of recent publications [3].

The disease known as osteoarthritis, a highly common disabling chronic musculoskeletal health disorder affects many aging adults worldwide. In addition to producing symptoms of pain, and functional disability, adults with this condition often experience excess disability as a result of comorbid health conditions, such cardiovascular diseases and obesity. This highly common and disabling chronic illness, increases in prevalence with age, and specifically limits the ability to carry out activities of daily living, and markedly reduces life quality [4]. Most treatments for osteoarthritis tend to focus on the physical causes of the disease, rather than the importance of examining and treating related mood disorders than might be contributing to the disability experience. That is, treatment approaches for osteoarthritis commonly focus on the use of medications or surgery to relieve pain [5], rather than on related efforts to reduce anxiety that may affect as many as 50% of adults with osteoarthritis [6], and where the presence of anxiety is positively related to the level of disability [7]. However, even though persons diagnosed with arthritis may present with a higher prevalence of anxiety than those with no arthritis [8], and post-operative anxiety results in higher levels of persistent pain [9], strategies to reduce feelings of anxiety that can influence disease outcomes have not always been carried out in traditional clinical settings. This seems surprising because the immense burden of osteoarthritis on a nation's health care costs is well documented [10]. There is also no consistent body of literature on this issue, for example, while most advocate for improved assessments of mental health status for purposes of optimizing functional outcomes of the severely impaired patient [11], others have reported no such need [12].

To provide an in depth overview of this topic, and to inform health professionals working with older adults diagnosed with osteoarthritis, as well as researchers in the field about this issue, we recently examined all relevant articles in the PubMed data base over the times periods of 1976-2013 using the key words anxiety and osteoarthritis. In addition, related data from this researcher's clinical observations were scrutinized to examine if function is affected in osteoarthritis cases who have concurrent anxiety as reported by Lunghi et al. [13].

In support of findings by Lunghi et al. [13], Summers et al. [14]

found adults with osteoarthritis who had high levels of state anxiety had higher pain scores and poorer health status than those with low levels of anxiety. Those with high levels of trait anxiety also suffered more pain than those without an anxiety history. The aforementioned findings by Summers et al. [14] were supported by those of Salaffi et al. [15] who found osteoarthritis disability correlated with psychological variables, not radiological score. Similarly, a research study that examined the interrelationship between psychological factors and pain among adults with either hip or knee osteoarthritis showed a significant relationship between the individuals mental health status and their pain status and risk for possible pain flare-ups [16]. Creamer et al. [7] similarly found trait anxiety correlated significantly with the patient's level of self-reported disability, as did Badura-Brzoza et al. [17] in the context of postoperative mental and physical outcomes for a similar sample. In other research, Smith and Zautra [18] who found anxiety was related to the presence of current pain and future pain predictions, implied anxiety was a potential potent mediator of osteoarthritis disability. After noting that the negative impact on osteoarthritis outcomes was almost twice as large for anxiety as compared to depression, the researchers implied that the mechanism through which anxiety exerted its effects on the individual might be different from that of depression.

Similar trends were identified by Axford et al. [19] in their study that surveyed the relationships that existed between between disease severity, pain, disability, and depression among 54 patients with osteoarthritis, where more than 40% had anxiety, and where the anxiety level correlated with their disability levels. Similarly, in an earlier investigation outlined in a previous publication [20], we found evidence of cases with trait anxiety histories, alone or in combination with preexisting depression among 1000 hip surgery candidates. Some of these cases also reported the presence of state anxiety, some had both these conditions, and some with depression also had state anxiety, but no prior anxiety history.

Further examination showed those who presented with co-occurring depression and anxiety histories were more significantly disabled prior to surgery than those without a mood disorder (Table 1). We also found, those with co-occurring depression and anxiety histories recovered at a significantly slower rate than those with no such history ($p < 0.001$) and experienced more pain than those who only had anxiety, and those with no anxiety ($p < 0.008$). Those with state anxiety at baseline recovered more slowly than those in any other diagnostic category. A subsample analysis also showed a higher percentage of cases were discharged to Rehabilitation Centers, rather than home if

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Received October 28, 2013; Accepted October 29, 2013; Published November 4, 2013

Citation: Marks R (2013) Anxiety in Disabling Osteoarthritis: Implications for Research and Practice. Aging Sci 1: e105. doi: [10.4172/2329-8847.1000e105](https://doi.org/10.4172/2329-8847.1000e105)

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Mood Status	Distance Walked				
	N	1st Day After Surgery	3 rd Day After Surgery	Actual Improvement	% Improvement
Depression +Anxiety	17	7.5 ± 13.1	74.5 ± 65.9	67	90
Trait Anxiety	18	9.8 ± 18.5	68.7 ± 48.6	58.9	85
State Anxiety	19	50.9 ± 45.4	70.6 ± 44.1	19.7	27
No Problems	37	13.5 ± 21.7	116.2 ± 65.6	102.7	112
P value		0.001	0.046		

Table 1: Day 1 and Day 3 post-surgical walking distances achieved in feet for 91 adults with disabling hip osteoarthritis as assessed by analysis of variance with the lowest improvement rates demonstrated by those expressing state anxiety.

they presented with a pre-existing anxiety history ($p < 0.001$) (Table 1).

In sum, osteoarthritis, a highly prevalent disabling condition among older adult, is often assumed to be progressive with few treatment options, and the role of mood factors in mediating disease progression is often ignored. Despite the lack of definitive evidence, the literature supports the view that the routine assessment and treatment of anxiety will reduce the extensive burden of osteoarthritis. To improve the outlook for the aging population, as a whole, given that osteoarthritis accounts for more hospital visits than any other condition in the older population, concerted efforts to assess and treat both anxiety among this patient group to offset its highly negative impact on pain, life quality, and ability to successfully manage their own health or recover optimally from surgery are needed. As outlined by several authors cited in this editorial, there is considerable support for the view that the mood disorders of anxiety and/or anxiety and depression, which occur at higher rates in people diagnosed as having arthritis than healthy individuals [8] is a possible mediator of osteoarthritis disability. It consistently influences pain levels and the level of function adversely [21] due to its impact on reducing pain tolerance [14], which in turn, encourages inactivity and pain, and possibly a cycle of deleterious physiological events that can hasten disease progression, and influences patients' quality of life [4] and reported outcomes quite negatively as a whole [22-26].

Unfortunately, as argued by Memel et al. [27], clinicians often fail to routinely monitor their patients for anxiety and hence fail to treat this treatable condition. However, to stem the rising disability rates among aging populations, and to minimize escalating economic as well as social costs of osteoarthritis, in particular, routine assessments of anxiety in clinical and surgical settings followed by tailored and targeted interventions with follow-up visits would appear to be highly desirable as outlined by Montin et al. [4] and Perruccio et al. [28].

More research to clarify the mechanisms of action of depression and anxiety, and their unique and interactive relationship to osteoarthritis disability, plus more efforts to examine the unique effects of trait versus state anxiety on the condition is also advocated. Examining how anxiety and osteoarthritis pain are linked temporally, as well as how anxiety affects feelings of helplessness, loss of self-control, perceived threat of dependency, and altered self-esteem is also recommended. Controlled intervention studies to evaluate what strategies will provide the best outcomes for patients with different forms of anxiety and osteoarthritis presentations is highly desirable as well [18].

As outlined in 2012, Murphy et al. [29] found one in three older adults with arthritis reported having anxiety or depression, and that anxiety occurred at twice the rate of depression. Yet only half of the respondents reported having sought some form of intervention, implying a great unmet treatment need exists among adults with arthritis. Since osteoarthritis is increasingly being diagnosed in younger

and younger age groups, as well as in older adults, and the disease is not reversible, and progresses over time in conjunction with anxiety [30], in addition to treating its physical symptoms, increasing anxiety screening and treatment usage where desirable is strongly indicated for all adults presenting with this condition in the context of primary care, geriatric care, nursing home, residential care and surgical settings. More research, education, and evidence based practices in this realm are also clearly indicated to minimize the immense human suffering and health care systems costs worldwide attributable to osteoarthritis, which is expected to increase in prevalence along with the increasingly prevalent aging population.

This brief article aimed to provide the reader with a deeper insight into the role of anxiety in the disabling osteoarthritic disease process, often only addressed from a physical standpoint, so as to guide researchers or practitioners in apprehending the great potential of recognizing the importance of screening for, and treating anxiety where it is found among cases of osteoarthritis. The article's goal was to provide a greater understanding of this often overlooked topic that has immense health implications for the aging population and for the practitioner, policy maker, and researcher in this field.

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