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# Review of Psychological Interventions in the Management of Arthritic Pain: The Case of Africa

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## Abstract

This chapter reviewed the scientific reports of the prevalence of arthritis pain and the potential of applying various psychological techniques in arthritis pain management among Africans. It initially reviewed the publications on arthritic disease-types, causes and prevalence among Africans and the current status of arthritic treatment options in Africa, cognitive, emotional, and behavioral components of arthritic pain experience, and then later focused on potential application of psychotherapies as part of comprehensive pain management protocol in African clinics and hospitals. The chapter discussed psychological explanations of pain and theoretical bases for pain management. It provided information on chronic arthritic pain assessment from a psychological perspective, beneficial psychotherapies and techniques applicable to this health condition. In general, the chapter explained the importance of incorporating psychological interventions as part of a comprehensive treatment plan to help improve the health outcome of arthritic patients presenting at hospitals in Africa. Psychological interventions are recommended to achieve better treatment outcomes for arthritis patients in African nations.

**Keywords:** Africa, arthritis pain, pain management, psychological intervention

## 1. Introduction

A 2015 research report stated that 90% of the global burden of disease lies in Low- and Mid- Income Countries [1]. A different report in the same year stated that over 24% of global disease burden lies in Africa, has access to only 3% health workers and less than 1% of the world's financial resources [2–4]. Healthcare system in Africa has estimated medical personnel (physician) to patient ratio of 2.7:10,000 compared to 5.9 South East Asia, 12.7 Eastern Mediterranean, 15.5 Western Pacific, 21.5 Americas, and 32.1 European region [3]. Generally, Africa is heavily burdened by non-infectious diseases and health conditions (e.g., diabetes, cancer, cardiovascular disease, pregnancy and childbirth related problems, musculoskeletal diseases, road accidents, etc.) and these are also the major causes of mortality and disability in the African population [3, 5–7]. Arthritis belongs to this category and is a major reason for adult disability in the continent. Rheumatoid arthritis was reported to

have worldwide prevalence of 1%, while between 1990 and 2010 prevalence in Africa seem to have increased from 0.36 to 0.42% [8]. In a more recent review, the prevalence of Rheumatoid arthritis was recorded as follows: 0.40% in South Asia, 0.37% in Eastern Mediterranean, 0.62% in Europe, 1.25% in America and 0.42% in Western Pacific, no information was provided on the African burden of Rheumatoid arthritis [7]. However, a study reported a 0.13% prevalence of Rheumatoid Arthritis in urban Barika Algeria, North Africa in 2013 with an estimated 0.15% prevalence for the general population [9].

Major challenges to arthritis management in Africa include the fact that its' economic/health import is downplayed in favor of communicable or infectious diseases. Consequently, research in this area is minimal with small sample population & clinic-based studies that are not representative of the true situation of arthritis disease (prevalence, treatment burden and resulting disability) in the African population. Also, little is known about causes and types of arthritis disease; and the psychosocial challenges patients face especially with regards to gender, ethnic or tribal dichotomies in the continent. However, these issues are beyond the scope of this chapter. This paper is focused on providing information about the state of psychological interventions in the management of arthritis pain in Africa and what can be done to improve the situation so as to offer more effective pain management protocols to arthritis patients. This review covers the use of psychological interventions in arthritis treatment in general drawing from clinical practices and studies conducted across gender and outside Africa.

## **2. Arthritis disease: Types, symptoms and prevalence**

Arthritis is widely recognized as a leading cause of pain and disability among the aged (adults 50 years and above) across the globe. Its burden is well noted in developed nations like the United States and measures are taken to care for sufferers. The case is different in African countries, starting with under-diagnosis due to little or no presentation of cases at orthodox hospitals, misconceptions about the disease, poverty, expensive (unaffordable) medical care, inadequate medical facility and distractions by heavy burden of infectious diseases in the health sectors, as such little attention is given to arthritis disease in these countries. South Africa with on 85 rheumatologists is reported to have the largest number of rheumatologists in Africa [3].

Arthritic disease has been described as a chronic inflammatory disorder that affects joints of the body [10]. It has painful, debilitating and detrimental [5, 11] effects on the health and well-being of those affected. While it is assumed to be more common among the elderly (65+ years), it afflicts people of all age brackets including children, male and female alike. Over a hundred type of arthritis have been recorded [11, 12] overtime and across the globe. Studies in Africa have noted the existence of seven types of arthritis- 1) Rheumatoid arthritis 2) Osteoarthritis (Mseleni Joint Disease) 3) Ankylosing Spondylitis 4) juvenile idiopathic arthritis 5) juvenile chronic arthritis 6) psoriatic arthritis 7) Gout 8) Osteoarthritis. Literature showed that most studies on arthritis were conducted with non-African populations. Majority of the studies conducted in African Nations were centered on Rheumatoid Arthritis (RA) a few on osteo arthritis. Some meta-analytic reviews were on the prevalence of various types of arthritis in Africa. Both genetic and environment have been reported to contribute to the onset or arthritic conditions (e.g. aging, obesity, injury). The arthritis conditions identified among Africans will be briefly discussed.

*Rheumatoid Arthritis (RA):* RA is described as an autoimmune disease in which the immune system attacks the lining of joints and connected tissues [8, 7] causing

inflammation of small joints of the hand, wrist, knee and feet. It is a chronic condition that if left untreated leads to extensive erosion on cartilage causing deformity and disability [13]. Its symptoms include daily pain, morning stiffness, fatigue, swelling of joints, generalized weakness, loss of weight, and low-grade fever. This is the most studied arthritic condition in Africa [6]. Generally, RA is reported to have 1–2% prevalence in western world and 1% worldwide [14]. Another report showed an increasing incidence of RA across African Nations including Uganda, Kenya, Nigeria and South Africa [6]. Report reveals a prevalence rate range of 0.1% to 2.5% in various urban and rural settings of Democratic Republic of the Congo (DRC), Lesotho and South Africa [10]. RA is most prevalent in South Africa with a prevalence ratio of 2:3 for men to women [8]. The report on Nigeria and Liberia with the next highest occurrences of RA showed greater incidence in men with a prevalence range of 3:1 for men to women. However, two studies that used the American College of Rheumatology (ACR) 1987 rheumatic arthritis criteria for diagnosis found no incidence of RA in Botswana and Nigeria.

*Osteoarthritis (OA)*: Osteoarthritis occurs among older people of 65+ years. It is described as a

*Degenerative joint disease that can affect any bodily joint but typically affects the hands, hips, kneel and spine. OA causes degradation of articular cartilage overtime resulting in bones rubbing up against one another leading to pain, joint swelling, tenderness and limited mobility ([12], p. 5-6).*

It has also been affirmed that the degenerative nature of osteoarthritis affects cartilage and its surrounding tissues, remodels the subarticular bone, causes osteophyte formation, ligamentous laxity, weakening of particular muscles and at times synovial inflammation [13]. Mseleni Joint Disease is a type of osteoarthritis common among people in Northern Kwazulu Natal province of South Africa and locally known as anyonga, meaning a disease of the joints [15]. It affects large joints in mid childhood. Some symptoms include joint pain, morning stiffness and stiffness on resumption of activity, limited mobility, bone enlargement, joint instability and severe physical disability. OA disease progresses slowly, and knee OA is reported as the most prevalent compared to hand and hip OA. People who are above age 50, obese, inactive, who smoke and who have joint injury are at greater risk of developing OA. The incidence of OA increases with age and it is reported more in women than males aged over 50 years. Osteoarthritis is recorded as the most prevalent form of arthritis in Africa with a prevalence range of 55.1% to 82.7% in urban and rural South Africa respectively [10]. However, it is not as extensively studied as RA.

*Juvenile Arthritis*: This includes Juvenile Idiopathic Arthritis (JIA) and Juvenile Chronic Arthritis (JCA) among others that afflict children of 15 years and younger. Juvenile arthritis is a progressive inflammatory autoimmune disease that may affect multiple joints (e.g., knee, hand, elbow, ankle, wrists, etc.) in the body by the time the child becomes an adult resulting in restricted mobility [12]. The symptoms include swelling, joint pains and stiffness. JIA is reported as the most prevalent arthritis in this class [10]. Reported records of the prevalence of JIA among African children (10–15 years) are as follows: 0.003–0.33% prevalence in Egypt and 0.1% in Cameroun.

*Psoriatic Arthritis*: It is described as a chronic inflammatory joint disease with negative test for rheumatoid factors and cutaneous psoriasis [16]. The symptoms include morning stiffness, joint pain, skin flaking, intermittent swelling, fatigue and itching. This type of arthritis has also been noted to be incident in Africa with a 4.4% prevalence rate in urban South Africa, 1% & 0.1% in Uganda and Cameroun respectively. In Africa records of its incidence is linked to HIV infection.



**Gout:** This particular type of arthritis is considered to have significant genetic underlining as it is found to run in families [12]. Its symptoms include acute joint pain, swelling in the knees, foot and big toe. It is more prevalent in males than females. The prevalence of gout is reported as 0.70% among white South African and 0.30% among HIV-infected population in Burkina Faso.

**Ankylosing Spondylitis:** It is a chronic, progressive arthritic condition that leads to severe disability. It occurs in early adulthood with symptoms like pain in the mid and lower back, heel, eyes, shoulder, ankle, and knee, reduced flexibility in the spine, sleep disorder, inflammatory bowel disease, and abnormal bone formation. Some occurrences of this type of arthritis are recorded in South Africa, Cameroun and Egypt [10, 17].

## **2.1 Arthritis pain experience**

Pain often contributes to dramatic reduction in a patient's quality of life. Like every other pain, arthritis pain is multidimensional [18]. It has physical, social, psychological and economic dimensions and how each person perceives these dimensions influences their treatment outcome. Despite the obvious, treatment of pain and arthritis pain in particular is usually and largely based on the biomedical procedures like medication, surgery and physical therapy. Traditionally, arthritis disease known as a musculoskeletal disorder is classified as a biological and physiological condition. As such, its epidemiology, pathogenesis as well as treatment efforts have been majorly focused on and drawn from the biomedical field. This has largely served to under-prioritize the potential contributions of other approaches especially psychological approaches to the treatment and care of arthritis patients. It has also indirectly suppressed the understanding of pain, in this context arthritic pain, as a psychological experience with cognitive, emotional and behavioral components.

Pain is described as an unpleasant experience signaled by behavioral expressions such as crying, screaming, withdrawal, change in posture, gait or facial expression [19] which limits, hinders or alters the bearer's behavior. Pain was defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage [14]. The relationship between the incidence of pain and possible cell damage or existence of disease provides clear evidence or support for the biomedical understanding of pain. Nevertheless, this connection is not able to explain why two individuals with the same level of cell damage or disease activity would have varying degrees of pain. The biomedical perspective is considered as being weak due to its inability to explain the differentials in pain responses of patients with similar disease activity [20], neither is it able to address psychological factors in the experience of pain. Again, the biomedical drug treatment approach to the management of arthritis in Africa with recourse to non-pharmacological or surgical treatments may have increased the likelihood for self-medication among sufferers. This is most likely because of the problems of inaccessible, unavailable or expensive healthcare services in Africa (especially among rural women dwellers). A situation that may explain the seemingly low prevalence rates arthritis disease reported by studies originating from Africa. Therefore, the argument that pain sensation is not merely a biological process but mostly a psychological experience forms the basis for this call to fully adapt psychological techniques in the management of arthritis pain among Africans and all people in general. The importance of this call for the use of psychological techniques in the treatment of arthritis pain, relates to the bio-psychosocial model of [21] which postulated that no particular factor can account for health outcome. Rather, that health outcome depends on the synergistic and reciprocal interactions

of various factors that relates to a patient's disease experience. In this paper, it is argued that because the perception of pain depends on a lot of factors including but not limited to age, sex, wellbeing, cognition, belief, learning, emotional stability, culture, economic status, etc., The insistence or rigidity that sustains the biomedical model of pain management has to be reevaluated in light of new knowledge and best practices across the globe. When adopted, psychological methods [21–23], would mostly enhance patients' health outcome by:

- a. Improving patients' understanding of perceived illness
- b. Improving patients' adherence to treatment protocols and life style changes
- c. Improving level of acceptance of the illness
- d. Addressing ethno-cultural factors contributing to illness experience and illness sustenance
- e. Addressing issues of interpersonal relationship, communication, and social support relating to patient care.
- f. Addressing gendered issues that may be hindering positive health outcome or hinder access to health services.
- g. Assessing and treating pre- or co-morbid psychological problems like drug misuse/abuse, depression, anxiety, sleep problems, etc.
- h. Teaching patients effective selfcare and pain management protocols.

## **2.2 Arthritis pain treatment options in Africa**

There is a clear challenge of limited empirical studies on arthritis in Africa. A report [10] showed that between 1975 and 2014, about fifty studies relating to arthritis were published across Africa. However, none of those studies and none that was found in the course of writing this chapter were focused on African women or arthritis treatment. Instead, most were on prevalence and the remaining, either studied risk factors or are meta-analytic reviews of others. Meanwhile, information on women experience of arthritis pain and its treatment is lacking. Studies from other parts of the world including United States of America, United Kingdom and France point to the use of non-drug treatments in the management of arthritis pain. A meta-analytic study that assessed the efficacy of psychosocial interventions in the management of arthritic pain in the United States, reported that patients who received psychosocial interventions displayed significantly lower post-treatment anxiety, depression and psychological disability [23, 24]. Reported the use of non-pharmacological treatments as depending on disease progression, personality, environment and objectives of the patient [25]. Some identified non-pharmacological treatments include physiotherapy, balneotherapy, spa therapy, psychological interventions, therapeutic patient education, dietetics and acupuncture.

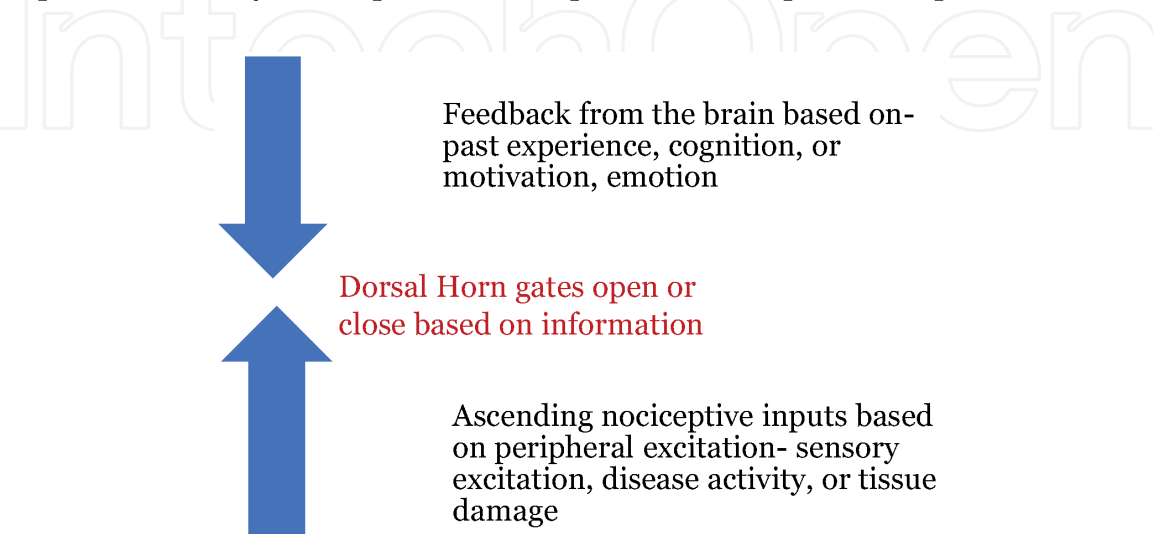
## **3. Psychological theories on pain and pain management**

Attempts to explain pain and human experience of pain dates back to the time of Descartes in the 17th century, with pain described and understood as a sensory

experience. Later theories like the pattern theory also derived from the biomedical models, till mid-20th century when Melzack and Wall in 1965 propounded the gate control theory of pain. Unlike the biomedical models before it, the gate control theory expanded the understanding of pain perception and experience to include psychological factors like stress, emotions, motivations, past experience, context and their impact on pain processing in the brain. This new understanding of pain opened doors for the use of psychological therapies in the control and management of pain. The understanding that not all kinds of pain can be explained by disease activity or tissue damage that are responded to by peripheral nerves gave room for a potentially better explanation of pain [26]. Consequently, the gate control theory proposed that higher neural mechanisms in the brain make meaning of a pain experience by incorporating other individualized factors including cognition, emotion, and motivation.

This theory contributed to a better understanding of pain so that it is scientifically understood and clinically practical that pain is dependent on a reciprocal relationship between ascending nociceptive input from peripheral nerves (pathophysiology) and feedback from higher brain activities (psychological factors) see **Figure 1**.

Psychological theories that form the bases for pain management psychotherapies include the behavioral, cognitive and humanistic models and modern models like the psychological flexibility model. Behavioral theories like operant conditioning of BF Skinner and classical conditioning of IvanPavlov explain behavior as an outcome of learning and as such a learned behavior can also be unlearned [27]. Therapies that generate from these theories like behavior modification techniques (e.g., token economy) cause behavioral change, either by decreasing unwanted behavior or increasing wanted behavior [28]. In the instance of chronic pain, these patients are taught new coping skills that would help them reduce or eliminate aversive or problematic pain behaviors. On the other hand, cognitive theories of psychology like Albert Ellis rational emotive behavior and Beck’s cognitive theory would address a patient’s thoughts, feelings and actions in relation to their pain experience [28]. These theories and therapies generating from them would explain problems like depression, pain catastrophizing, pain avoidance behaviors, feelings of helplessness, etc., that commonly accompany chronic pain conditions. The humanistic theories of psychology would explain pain experience in its social, economic, cultural, etc., contexts. How these factors could be contributing to the experience and sustenance of pain or how they can help alleviate the problem. Therapies developed from this



**Figure 1.**  
*An illustration of how activities in the higher brain areas and inputs from nociceptive neurons influence gate opening or closing in the dorsal horn to elicit a pain experience. Pain is experienced when the combined activities results in the opening of the gate.*

theoretical background would focus on providing emotional support while encouraging social support and selfcare strategies with a goal of reducing the psychological distress experienced by the patient. Finally, the *psychological flexibility model for chronic pain management* is a recently developed understanding that is attracting the attention of researchers and practitioners in recent times. The model refers to “the capacity to persist or to change behaviour in a way that (a) includes conscious and open contact with thoughts and feelings, (b) appreciates what the situation affords and (c) is guided by one’s goals and values”. This model integrates both cognitive and environmental influences in describing and understanding behavior [29]. It focuses on such processes like acceptance, cognitive defusion, flexible present-focused attention, self-as-observer, values, and committed action; of these, acceptance has risen in popularity among psychotherapist and in treatment of chronic conditions.

Effective pain management protocols are therefore expected to also cover the psychological (cognition, emotional, behavioral) aspect of pain experience. Pain management especially management of chronic pain (like arthritis pain) that is based on biomedical approach is apparently deficient of the psychological intervention protocol and would most likely result in poor health outcome. This is true and supports or explains the extensive acceptance and inclusion of psychological interventions in comprehensive wholistic pain management approaches used in developed nations like France.

Across the globe but especially in Africa, the use of psychological interventions in the management of pain is quite minimal. Psychological interventions are mostly present in the management of cancer patients, hence, the development of Psycho-Oncology; but lacking in the management of other chronic conditions particularly arthritis. This is despite the established knowledge that arthritis disease onset, progression, severity and treatment outcome affects and can be affected by a person’s life style, psychological and social circumstances [24]. It has therefore become imperative to reawaken psychologists and other health care professionals in Africa to the need to provide better healthcare service to arthritis patients by incorporating psychological interventions that could improve treatment outcome, quality of life, and adjustment skill for the patient. This can be done by referring arthritis patients presenting in the hospitals and clinics to psychologists for pain management psychological therapies. Such referral can be made when chronic arthritis pain results in or is as a result of the following:

1. Depression
2. Disability
3. Low self-efficacy for pain control
4. Pain catastrophizing
5. Inadequate social support (informational, behavioral and emotional)
6. Stress
7. Insomnia (Sleep disorder)
8. Emotional distress
9. Anxiety [24].



### **3.1 Psychological focus in clinical pain assessment**

Assessment of chronic pain condition for which psychological intervention is required should be characterized by the following;

*3.1.1 Pain sensation must have been on for at least six months and more to qualify as chronic pain*

*3.1.2 Full history of the pain must be taken*

- a. Circumstances surrounding the pain; where and when it occurs
- b. Duration; how long does the pain last at each episode – chronic, intermittent or remitting.
- c. Severity of the pain from the beginning
- d. Which joint(s) of the body does the pain sensation occur and how often in a day, week, or month.
- e. What triggers the pain sensation and what makes it better or brings relief
- f. Use visual analogue scale to rate severity of pain experience at initial clinical assessment. An example is using a scale of 0–10, with zero as no pain and ten as severe pain
- g. Client's beliefs and thoughts about the pain; is pain seen as unacceptable, a punishment or beyond their control. This relates to pain catastrophizing.
- h. Client's feelings about and perception of the pain and the circumstances surrounding it. This relates to pain locus of control
- i. Client's lifestyle and coping strategies being used to cope with the pain; also assess client's activity level
- j. Client's belief about their ability to control the pain experience. This relates to pain self-efficacy
- k. Social context and stress level of patient suffering arthritis pain
- l. Addiction to drugs (including misuse or abuse of prescription drugs for pain management)
- m. Anxiety disorder
- n. Sleep disorder
- o. Depression

There are also evidence-based pain assessment instruments developed to measure various pain related concern like coping and self-efficacy. Some commonly used ones are pain self-efficacy questionnaire, coping strategies questionnaire, brief COPE inventory, and chronic pain coping inventory. The scale a therapist

chooses to use depends on their interest. Generally, the scales are developed to measure behavioral and or cognitive aspects of pain experience or pain coping. A therapist can select a scale if they want to have a more objective assessment of how well a patient uses a particular coping skill when experiencing pain. The following are some coping skills assessed with the scales; diverting attention, reinterpreting pain sensation, guarding, resting, asking for assistance, coping self-statement, ignoring pain, praying and hoping, relaxation, task persistence, exercise, increasing behavioral activities, catastrophizing, stretching and seeking social support [30].

### 3.1.3 Treatment Planning

This will involve clinical decision about required or further investigation to help decide the nature of pain as well as the treatment protocol of choice. Assessment of personality variables, lifestyle, thinking pattern and social network are also important. And the results of biomedical investigations like laboratory, radiological and physical examinations should also be considered. Though arthritis pain is the general concern, psychotherapy should be tailored to suit the personal needs and circumstances of each arthritis patient. Patients, therefore, work with therapists in a collaborative manner during assessment and treatment planning stages, to design the best interventions possible to achieve their treatment goals in the shortest time possible or help them function better with minimal pain and psychological distress.

### 3.2 Psychological techniques in treatment or management of pain

- A. Cognitive restructuring aimed at changing existing beliefs about pain and creating new ways to think about it and resolve it.
- B. Relaxation techniques to help deal with anxiety induced by the painful condition
- C. Stress management, this is important as painful conditions can be stressful or worsened by other stressors (e.g., work related stress)
- D. Psychoeducation about possible psychological symptoms
- E. Assertiveness skills to help with pain communication between patients, their caregivers and other support network
- F. Hypnosis and Distraction techniques

### 3.3 Psychotherapies in arthritis pain management

Treatment approach can be either group or individual or both as the case may be. Therapy can be as short as 8 sessions; however, the length of psychotherapy depends on the severity of the problem. Common therapies applied to arthritis patients include:

- a. Cognitive-behavioral therapy: This is used especially when client is presenting with comorbid depression and or anxiety disorder. Techniques used here would address the affect, cognition and behavior of a patient in relation to pain experience. Some applicable techniques are relaxation, cognitive restructuring, problem solving, *in vivo* desensitization, sleep hygiene, etc., [28].

- b. Behavioral therapy: This is aimed at changing existing unhelpful pain behaviors, lifestyle, diet and to get the client to adopt new, more adaptive and pain relieving behaviors that will encourage continuous participation in work and recreational activities (habit reversal techniques). Some applicable techniques include assertions, exercise, deep muscle relaxation, token economy, etc.
- c. Psychosocial counseling: The goal here is to help the patient clarify, calibrate, differentiate and understand their various concerns. It is common that the practical problems like pain, reduced physical activity and low income would have accompanying emotional distress. Therapies using this model would help patients separate the two and address the practical problems and the emotional distress sequentially. It is supposed that once the emotional distress is resolved client would be more capable to perform tasks that could help resolve the practical problems. Some applicable techniques are supportive counseling, problem solving, psychoeducation for adaptive coping skills, etc.
- d. Other psychotherapies that could address issues like depression, catastrophizing, anxiety, fear of pain and other accompanying psychological problems can also be applied. However, psychological interventions for chronic pain management are best when applied as a multicomponent therapy that would address the various psychosocial dimensions of pain experience.

#### 4. Conclusion

Treatment of arthritis is largely done using drugs and surgery, however, the use of other non-pharmacological and psychosocial approaches have been widely noted in other parts of the world aside Africa. There is no clear and reliable evidence of the reality of arthritis disease burden in Africa. Hence, the seemingly misleading conclusion that arthritis is less prevalent in African nations compared to the developed and industrialized nations of the world. Rather, poverty, inadequate healthcare facility, expensive healthcare service as well as reliance on traditional remedies might explain the seeming lack of hospital presentations or low diagnosis of arthritis in Africa. Psychological interventions have been proven to be beneficial in other nations. The chapter highlighted various psychological interventions and their positive impacts on the existing arthritis treatment protocols.


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