Clinical Practice Guideline: **Psychosocial Factors in Pain Management**

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INTRODUCTION

Disabling musculoskeletal pain disorders are prevalent in the United States and other resource-rich countries. Chronic pain conditions are generally among the most difficult to treat due to their long duration, debilitating nature and multiple psycho-social, economic, ethical, and medico-legal issues related to pain management. Patients who are suffering with chronic pain generally require a multidisciplinary approach to treatment that addresses all of these factors. Pain management plans that provide accurate diagnoses and effective therapies help ensure better treatment outcomes and appropriate usage of healthcare resources.

Psychosocial factors have been identified as important determinants for the development of a chronic pain condition and the outcomes of chronic pain management. Kendall (1997) originated the term "Yellow Flags" to describe psychological risk factors as well as social and environmental risk factors which likely give rise to the chronicity of a musculoskeletal condition or disability. It is essential to implement a process to identify Yellow Flags and effectively treat patients displaying these signs in order to better prevent and manage patients' painful conditions.

COMMON YELLOW FLAGS

- **Fear/fear avoidance behavior** – avoidance of feared movements or activities where the feared activity may be functional for pain management or rehabilitation
- **Catastrophizing** – cognitive distortion; tendency to view minor issues as major issues
- **Passive coping** – behavioral tendency toward passive reactions to issues and/or identifying as a victim
- **Depression** – low mood; diminished interest in usual activities; decreased energy; changes in sleeping and/or eating; social withdrawal; excessive feelings of guilt; trouble concentrating; increased ruminating and negative self-talk
- **Social and financial problems**
- **History of mental illness**
- **Belief that pain is harmful** – belief that their pain or physical condition is potentially harmful or disabling when it is in fact, not
- **Secondary gain** – special rights and privileges achieved from perpetuation of the chronic condition. The patient willingly accepts this role, although they may not be entirely conscious of their actions. Waddell's nonorganic signs in low back pain patients have been established to evaluate eight behavioral signs which imply that a patient may be exhibiting secondary gain behavior (Waddell, 1980; Apeldoorn, 2008). However, a systematic review found a low association with psychological distress, poor discrimination of organic and non-organic issues, as well as methodological limitations of supporting research (Fishbain et al., 2004).
- **Malingering** – conscious exaggeration or fabrication of symptoms for the purpose of secondary gain

This clinical guideline is intended to assist in the recognition of yellow flags when treating a physical condition, and to provide subsequent intervention strategies to address these factors. Effective identification and interventions which address these psychosocial factors ensure more effective treatment outcomes in patients with chronic pain conditions. If the patient presents with symptoms outside of the scope of the practitioner's specialization or training, then the patient should be referred to an appropriate health care practitioner.

EVIDENCE-BASED INTERVENTION AND RESPONSE TECHNIQUES

Cognitive-behavioral therapy and exercise therapy are common yellow flag intervention/response techniques which have been described in clinical literature. Several evidence-based interventions including desensitization, resiliency techniques, and addressing fear avoidance and pain catastrophizing are described below.

Desensitization

Desensitization techniques can be implemented to assist the patient with fear avoidance behaviors. This is the gradual, incremental exposure to the fear-provoking stimuli. An example is the patient who avoids lumbar extension due to fear of pain. Extension exercises

are recommended for many patients with lumbar pain. Desensitization would be used to gradually decrease the patient's discomfort with the needed extension exercises. This technique may be used for patients exhibiting a mild case of fear avoidance behavior.

Resiliency Techniques

These techniques have been used to help patients with catastrophizing behavior and depression. Often this behavior and state of mind is associated with a lack of resilience in the face of stress. Ong et al. (2010) conducted a clinical study on 95 patients and reported a correlation between pain catastrophizing and resilience. His team found that psychological resilience predicts decreases in pain catastrophizing through positive emotions. A study of 149 patients admitted to an 8-week functional outpatient program supports these findings through positive associations between higher pain resilience at baseline and better quality of life. Higher catastrophizing at baseline was associated with poorer outcomes (France et al., 2020). A more recent study by Nwankwo et al. (2021) on resilience and pain catastrophizing among patient with total knee arthoplasty on 117 patients suggests that resilience predicts postoperative knee function, as well as general physical health in those undergoing total knee arthoplasty.

Identifying "Secondary Gains"

Sometimes patients will desire to remain with their pain or dysfunction unchanged because of the "rewards" that they receive for their condition. These rewards are the secondary gain. The secondary gains received as benefits may include release from work, release from social obligations or civic duties, and financial compensation gained though worker compensation or legal settlement.

Exercise Therapy as a Tool for Prevention and Management of Chronic Pain

In an article by Kroll (2015), he states that the benefit of exercise for pain control likely comes from the impact of exercise on the endogenous opioid system and on central pain modulatory systems. Patients with some chronic pain conditions seem to have a dysfunctional endogenous pain modulatory system, which should be considered when prescribing exercise. The prescription of exercise for chronic pain must address the biomechanical issues and the psychosocial factors that contribute to the patient's pain and disability. Patient education, coordination of care within the health care team, and selecting an exercise regimen that is meaningful to and achievable by the patient are all important components to promote a successful rehabilitation program.

In addition, Ambrose and Golightly (2015) view physical exercise as a non-pharmacological treatment of chronic pain. Despite variance in origin or pathogenesis, chronic pain conditions are similarly characterized by chronic pain, poor physical function, mobility limitations, depression, anxiety, and sleep disturbance, and they are treated alone or in combination by pharmacologic and non-pharmacologic approaches, such as physical activity (aerobic conditioning, muscle strengthening, flexibility training, and movement

therapies). Physical activity improves general health, disease risk, and progression of chronic illnesses such as cardiovascular disease, type 2 diabetes, and obesity. When applied to chronic pain conditions within appropriate parameters (frequency, duration, and intensity), physical activity significantly improves pain and related symptoms. For chronic pain, strict guidelines for physical activity are lacking, but frequent movement is preferable to sedentary behavior (Ambrose & Golightly, 2015). This gives considerable freedom in prescribing physical activity treatments, which are most successful when tailored individually, progressed slowly, and account for physical limitations, psychosocial needs, and available resources. General guidelines include exercising non-painful areas of the body if possible, in addition to low-intensity exercises such as walking as a first step. The following should also be considered: "...[individuals' beliefs, expectations, and exercise preference should be assessed before exercise prescription to minimize the risk of a poor outcome," and "...these beliefs and expectations could be modified through education or other interventions to improve pain responses to exercise in people with chronic pain." (Vaegter & Jones, 2020). Additionally, it is important to note that compliance with exercise interventions is the key to their success. Those interventions with a greater measured compliance produced significantly larger reductions in pain compared to those where compliance was uncertain or not monitored (Mills et al., 2019).

Early activation and restoration of function and early interventions, even if pain persists, are generally recommended to prevent long-term disability for people with low-back pain to minimize sick leave from work, as it is known that inactivity has detrimental effects on back pain. Rice et al. (2019) reiterate that exercise is an important component of effective chronic pain management, and it is well-established that long-term exercise training provides pain relief. In healthy, pain-free populations, a single bout of aerobic or resistance exercise typically leads to exercise-induced hypoalgesia (EIH), a generalized reduction in pain and pain sensitivity that occurs during exercise and for some time afterward. However, it is important to recognize that EIH is more variable in chronic pain populations and is more frequently impaired; with pain and pain sensitivity decreasing, remaining unchanged or, in some cases, even increasing in response to exercise. Pain exacerbation with exercise may be a major barrier to adherence, precipitating a cycle of physical inactivity that can lead to long-term worsening of both pain and disability. Given this, it is important for practitioners to understand how EIH works, why it may be impaired in some people with chronic pain, and how to address it clinically.

Pain Catastrophizing

Pain catastrophizing "...is one of the strongest psychological predictors of pain outcomes." (Schütze et al., 2018) People with chronic pain tend to demonstrate impaired safety learning in addition to excessive fear generalization. These have been extensively reported in anxiety disorders, as well as in patients with chronic pain (Meulders, 2020). Fear responses to chronic back pain indicate that the specific fear of pain, or fear of injury, appear to be more disabling than the pain itself (Crombez, 1999). Pincus et al. (2002)

suggested a cognitive-behavioral model of pain related fear indicating that if pain, possibly caused by an injury, is interpreted as threatening (pain catastrophizing), pain-related fear evolves. This leads to muscular reactivity, hypervigilance, and avoidance behavior. Long-term avoidance may increase levels of disability, disuse, and depression. Depression is likely to maintain the pain experience, thereby exacerbating the increasing fear and avoidance. In non-catastrophizing patients, pain related fear is unlikely to occur while rapid confrontation with daily activities is likely to occur, leading to fast recovery. Both depression and disuse are known to be associated with decreased pain threshold and tolerance levels. Thus, pain-related fear is conceptualized as a potent risk factor both in inducing disability and maintaining it.

Further studies also show that providing guidance and advice within early stages of onset of the pain helps to prevent the development of chronicity of disabling pain. Indahl et al. (1998) conducted a 5-year longitudinal study and found that reactivation and reassurance are key in promoting recovery. Factors that promote resilience (e.g. emotional support systems and good health) can both promote healing and reduce the chronification of pain (Cohen et al., 2021). Either the patient's primary care practitioner or health care specialist can provide this intervention within this early stage of pain development. Additionally, hope is an important factor that has an impact on those suffering from chronic pain, something that is influenced by several factors (Katsimigos et al., 2021). According to Kregel et al. (2017), it is likely that conservative treatments may induce functional and structural brain changes in prefrontal regions in patients with chronic musculoskeletal pain. For example, cognitive behavioral therapy induced a shift from affective to sensory-discriminative brain activity after behavioral extinction training.

YELLOW FLAG ASSESSMENT

It is important to have a method to determine if the patient is exhibiting yellow flag signs so that these factors may be addressed accordingly. Two key outcomes are described when assessing the presence of yellow flags: 1) a decision as to whether more detailed assessment is needed (psychosocial); or, 2) identification of any salient factors that can become the subject of specific intervention, thus saving time, and helping to concentrate the use of resources.

Yellow flag quantification measures provide the practitioner with an understanding of the contribution of the psychosocial factors to the patient's chronic pain state. Research indicates that solely assessing the patient medical history is a poor identifier of yellow flags (Grevitt et al., 1998). Effective outcome assessment tools for yellow flags are the "Yellow Flag Questionnaire", "Keele STarT Back Screening Questionnaire", and "Fear avoidance Belief Questionnaire." The Yellow Flag Questionnaire (Kendall et al., 2004) contains a collection of questions which can be grouped into four categories: 1) pain; 2) psycho-social; 3) function; 4) fear-avoidance. Yellow flag questionnaire scores of 105 or greater indicate that the patient is at risk. The Keele STarT Back Screening Tool is a brief,

validated tool (Hill et al., 2008) utilized in primary care which is designed to screen patients with low back pain for Yellow Flags. It contains a series of nine questions designed to classify patients into one of three subgroups for targeted care management: low risk, medium risk (physical indicators), and high risk (physical and psychosocial yellow flag indicators). Psychosocial History taking and psychological screening may lead to identification of more serious mental health issues that require referral for further evaluations with a behavioral health professional. According to Veirman et al. (2019), it is important to note that "...no tools for the prediction of pain-related distress, a key indicator of health, or for the prediction of acute pain onset, including postoperative pain. These appear to be significant gaps in the literature."

The practitioner will gain a better understanding of the patient's needs and become more responsive through active listening. Once appropriate cues are recognized which indicate signs of risk factors and specific yellow flags are identified via questionnaire, the practitioner should implement behavioral intervention methods, which are within their scope of practice, based on the factors that are implicated within the patient's screening profile.

A yellow flag management algorithm consisting of an assessment flowchart (Fig. 1) and clinical assessment guidelines, which were adapted from Kendall et al. (2004), are provided below. The practitioner may use this as a guide to determine the appropriate, timely implementation of possible intervention responses with specific steps and redirects.

There are seven domains that we consider in the clinical assessment of yellow flags. Each one has specific behaviors and are listed in order of importance for each category below.

1) Attitudes and Beliefs about Back Pain
    - Belief that pain is harmful or disabling resulting in fear-avoidance behavior, (e.g., the development of guarding and fear of movement)
    - Belief that all pain must be abolished before attempting to return to work or normal activity
    - Expectation of increased pain with activity or work, lack of ability to predict capability
    - Catastrophizing, thinking the worst, misinterpreting bodily symptoms
    - Belief that pain is uncontrollable
    - Passive attitude toward rehabilitation

2) Behaviors
    - Use of extended rest, disproportionate downtime
    - Reduced activity level with significant withdrawal from activities of daily living

- Irregular participation or poor compliance with physical exercise, tendency for activities to be in a "boom-bust" cycle
- Avoidance of normal activity and progressive substitution of lifestyle away from productive activity
- Report of extremely high intensity of pain (e.g., above 10, on a 0-10 Visual Analogue Scale)
- Excessive reliance on use of aids or appliances
- Sleep quality reduced since onset of back pain
- High intake of alcohol or other substances (possibly as self-medication), with an increase since onset of back pain
- Smoking

3) Compensation Issues
   - Lack of financial incentive to return to work
   - Delay in accessing income support and treatment cost, disputes over eligibility
   - History of claim(s) due to other injuries or pain problems
   - History of extended time off work due to injury or other pain problem (e.g., more than 12 weeks)
   - History of previous back pain, with a previous claim(s) and time off work
   - Previous experience of ineffective case management (e.g., absence of interest, perception of being treated punitively)

4) Diagnosis and Treatment
   - Health professional sanctioning disability, not providing interventions that will improve function
   - Experience of conflicting diagnoses or explanations for back pain, resulting in confusion
   - Diagnostic language leading to catastrophizing and fear (e.g., fear of ending up in a wheelchair)
   - Dramatization of back pain by health professional producing dependency on treatments (e.g., pain medication), and continuation of passive treatment
   - Number of times visited health professional in last year (excluding the present episode of back pain)
   - Expectation of "techno-fix" (e.g., requests to treat as if body were a machine)
   - Lack of satisfaction with previous treatment for back pain
   - Advice to withdraw from job

5) Emotions
   - Fear of increased pain with activity or work
   - Depression (especially long-term low mood), loss of sense of enjoyment
   - More irritable than usual

- Anxiety about and heightened awareness of body sensations (includes sympathetic nervous system arousal)
- Feeling under stress and unable to maintain sense of control
- Presence of social anxiety or disinterest in social activity
- Feeling useless and not needed
- Hopelessness about ability to recover or future improvement of symptoms

6) Family
   - Over-protective partner/spouse or other family member(s), emphasizing fear of harm or encouraging catastrophizing (usually well-intentioned)
   - Solicitous behavior from partner/spouse or other family member(s) (e.g., taking over tasks)
   - Socially punitive responses from partner/spouse or other family member(s) (e.g., ignoring, expressing frustration)
   - Extent to which family members support any attempt to return to work
   - Lack of support person to talk to about problems

7) Work
   - Work history, including patterns of frequent job changes, experiencing stress at work, job dissatisfaction, poor relationships with peers or supervisors, lack of vocational direction
   - Belief that work is harmful; that it will do damage or be dangerous
   - Unsupportive or unhappy current work environment
   - Low educational background, low socioeconomic status
   - Job involves significant bio-mechanical demands, such as lifting, manual handling heavy items, extended sitting, extended standing, driving, vibration, maintenance of constrained or sustained postures
   - Inflexible work schedule preventing appropriate breaks
   - Job involves shift work or working unsociable hours
   - Minimal availability of selected duties and graduated return to work pathways, with unsatisfactory implementation of these
   - Negative experience of workplace management of back pain (e.g., absence of a reporting system, discouragement to report, punitive response from supervisors and managers)
   - Absence of interest from employer

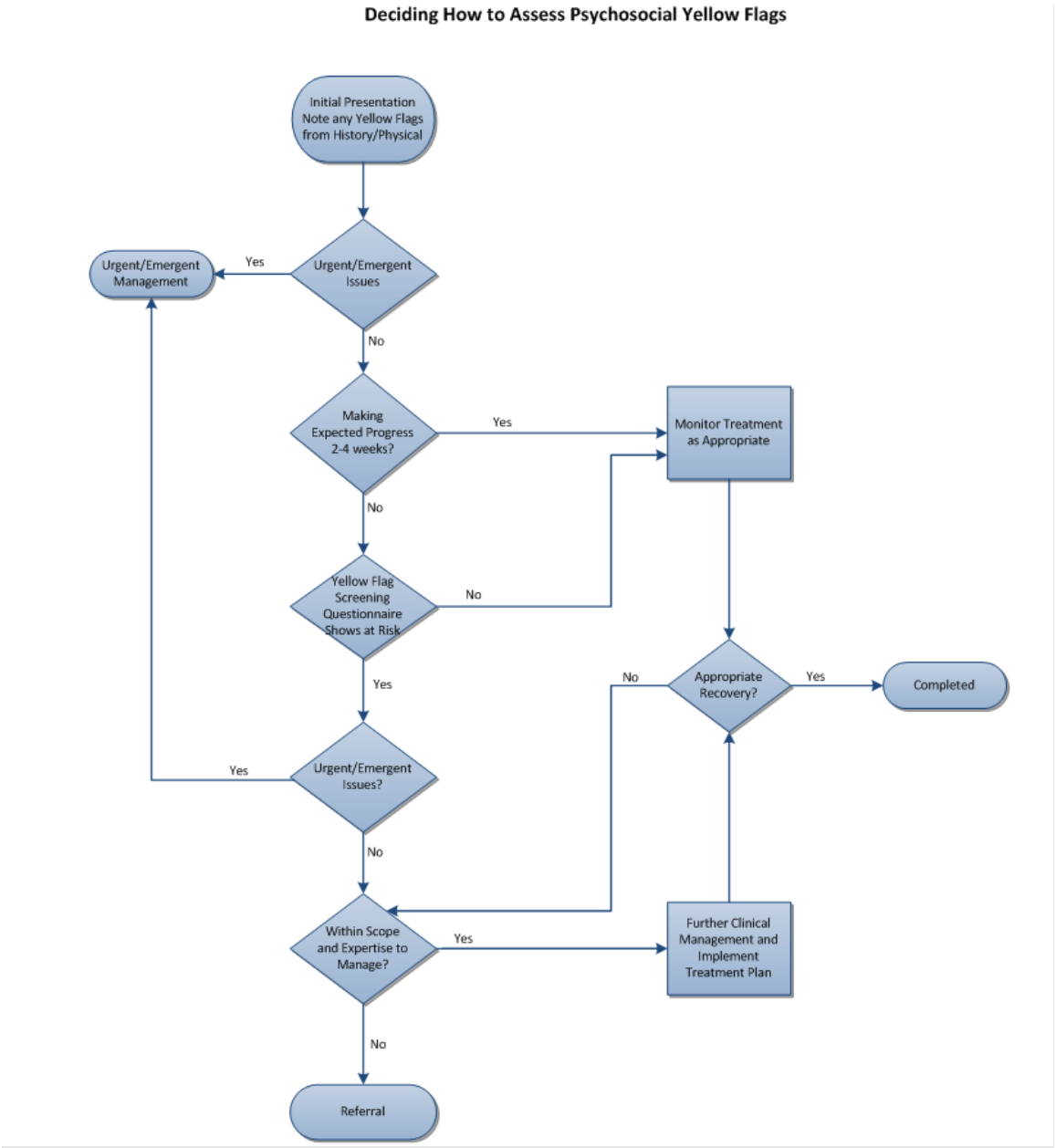

Figure 1: Yellow Flag Assessment Algorithm

CLINICAL MANAGEMENT TOOLS

Emerging evidence suggests that coordinated, multidisciplinary rehabilitation that is focused on teaching patients better pain coping skills through cognitive behavioral therapy (CBT), meditation, as well as other mindfulness techniques are an effective way to improve functional outcomes. In fact, programs that combine active physical therapy with CBT have the potential to alter how back pain is treated (Samson, 2016). CBT is short-term therapy aimed at changing thought, belief and behavior patterns. Pincus et al. (2002) reported that straightforward behavioral strategies involving a graduated return to activity, rather than being contingent on the symptom of pain, have demonstrated significant reduction in long-term problems. Moreover, education, exercise, CBT, and other many non-pharmacological approaches have demonstrated efficacy for *any* type of pain, whether used alone or in conjunction with pharmacotherapy (Clauw et al., 2019).

Kendall et al. (2004) provided a guideline suggesting steps for behavioral management of low back pain problems which the practitioner may apply accordingly within the clinical scenario as a pain management tool.

Suggested steps for early behavioral management of low back pain:

1. Provide a positive expectation that the individual will return to work and normal activity. If the problem persists beyond 2-4 weeks, provide reality-based counseling of potential outcome (e.g., loss of job, the need to begin reactivation from a point of reduced fitness).

2. Be directive in scheduling regular reviews of progress. When conducting these reviews shift the focus from the symptom (pain) to function (level of activity). Instead of asking “How much do you hurt?” ask “What have you been doing?” Maintain an interest in improvements, even the minor advances. If the patient is referred to a health professional for assistance in treatment or management, specify a date for a progress report at the time of referral. Delays will be disabling.

3. Keep the individual active and at work, if at all possible, even for a small part of the day. This will help to maintain work habits and work relationships. Consider reasonable requests for selected duties and modifications to the workplace. After 4-6 weeks, if there has been little improvement, review vocational options, job satisfaction, any barriers to return to work, including psychosocial distress. Once barriers to return to work have been identified, these need to be targeted and managed appropriately.

4. Acknowledge difficulties with activities of daily living but avoid making the assumption that these indicate all activity or work must be avoided.

5. Help to maintain positive cooperation between the individual, an employer, the compensation system, and health professionals. Encourage collaboration wherever possible. Inadvertent support for negative perceptions of these relationships can be damaging to progress.

6. Make a concerted effort to communicate that taking a longer leave of absence from work will reduce the likelihood of a successful return to work. In fact, longer periods off work result in reduced probability of ever returning to work. At the 6-week point consider suggesting vocational redirection, job function retraining, or transferring to a new position.

7. Be alert for the presence of individual beliefs that they should stay off work until treatment has provided a 'total cure.' Be cognizant of patient expectations of simple solutions.

8. Promote self-management and self-responsibility. Encourage the development of self-efficacy to return to work. Be aware that developing self-efficacy will depend on incentives and feedback from treatment practitioners and others. If recovery only requires development of a skill such as adopting a new posture, then it is not likely to be affected by incentives and feedback. However, if recovery requires the need to overcome an adverse stimulus such as fear of movement (kinesiophobia) then it will be readily affected by incentives and feedback.

9. Be prepared to ask for a second opinion, provided it does not result in a long and disabling delay in patient treatment. Use this option especially if it may help clarify that further diagnostic examination is unnecessary. Be prepared to say "I don't know" rather than provide elaborate explanations based on speculation.

10. Avoid confusing the report of symptoms with the presence of emotional distress. Distressed people seek more help and have been shown to be more likely to receive ongoing medical intervention. Exclusive focus on symptom control is not likely to be successful if emotional distress is not dealt with.

11. Avoid suggesting (even inadvertently) that a patient who commutes to a job may be able to work at home or start their own business, because it will be under their own control. This message, in effect, allows pain to become the reinforcer for activity – producing a deactivation syndrome with negative consequences. Self-employment nearly always involves more hard work.

12. Encourage people to recognize, as early as possible, that pain can be controlled and managed so that a normal, active or working life can be maintained. Provide

encouragement for all positive behaviors – including suggesting alternative ways of performing tasks and focusing on transferable skills.

13. Inform patient that anticipation of pain can increase muscle tension and perpetuate the pain. This approach is particularly important in the patient who exhibits passive coping behavior or fear avoidance behavior.

14. Emphasize that being too careful is a poor form of self-treatment and encourage physical activity. Instruct patient to take brisk, regular walks; discourage patient from remaining in one position, lying, sitting or standing; Encourage light stretching for acute flare ups rather than rest.

In 2023, the World Health Organization (WHO) released its first-ever guidelines on managing chronic low back pain in primary and community care settings. The WHO recommends non-surgical interventions to help those suffering from chronic, primary low back pain. Their suggested interventions include education programs supporting knowledge and self-care strategies, exercise programs, some physical therapies (e.g. massage, spinal manipulative therapy), psychological therapies such as CBT, and medications such as non-steroidal anti-inflammatory agents (World Health Organization. (2023).

Referral

If the patient presents with symptoms of psychosocial conditions outside of the practitioner's scope of practice, it is best to refer the patient to an appropriate health care provider. Furthermore, if the patient presents an immediate danger to themself or others, contact 911 for emergency assistance.

CONCLUSION

Psychosocial factors can be key indicators of the likelihood of developing a chronic pain condition and the need for prevention and treatment methods targeted at these issues. A health care practitioner can readily identify patients with these Yellow Flag factors and use the information to formulate effective treatment plans. As discussed above, practical methods can be employed to assist patients with Yellow Flag conditions. Treatment strategies which implement cognitive behavioral therapy techniques, meditation, mindfulness practices and/or physical activity as therapy are more effective than traditional biomedical treatments alone and contribute to better usage of health care resources, decreased disability, and increased patient comfort and quality of life. "Cognitive behavioral therapy focuses on restructuring the negative cognition of the patient into realistic appraisal. Mindfulness may help improve pain acceptance. Self-management strategies with appropriate goal setting and pacing theory have proved to improve long-term pain-related outcomes in patients with chronic pain" (Ikemoto et al., 2019).

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