Original Article

Optimism Predicting Daily Pain Medication Use in Adolescents with Sickle Cell Disease

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Abstract

*This study examined the influence of optimism on pain medication use in adolescents with sickle cell disease (*n = *27; 18 females, 9 males). Participants completed a baseline measure of optimism and an average of 100 daily-diary assessments of pain severity and medication use. Results indicated that adolescents who experienced more severe pain used more analgesic and opioid medications. Optimism was a significant moderator of the relation between pain and opioid-medication use. At medium and high levels of optimism, pain was positively related to opioid use, but at low levels of optimism, the same relation was not present, suggesting that more optimistic adolescents are better able to match their medication use to their pain severity. Future research should examine how other psychosocial factors might influence pain medication use in adolescents and adults who experience pain, and clinicians should take into account psychosocial factors when working with pain populations.* J Pain Symptom Manage 2007;33:302–309. © *2007 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.*

Key Words

Sickle cell disease, pain medication use, optimism

Introduction

Sickle cell disease (SCD) is a genetic disorder affecting approximately one in 500 African Americans.[1] The most prevalent complication associated with SCD is pain episodes caused by tissue damage; however, the onset, duration, frequency, and intensity of SCD pain vary greatly within the clinical population.[2] In previous daily-diary studies of SCD pain, children and adolescents have reported pain episodes on 7–30% of diary days,[3–5] and an average pain rating of 5 on a 10-point scale.[3] Studies also indicate that the majority of SCD-pain episodes are managed at home without hospitalization.[5] Gil et al.[3,6] reported that adults with SCD managed their pain without health care contacts (e.g., visiting or phoning a doctor or hospital) on 82% of reported pain days, and adolescents with SCD managed their pain without health care contacts on 81% of reported pain days.

Typically, the protocols for treating a pain episode from SCD include rest, rehydration,

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and pain relief through medication. SCD pain episodes are managed pharmacologically by nonopioid analgesics and opioid analgesics, used singly or in combination.[7] For mild pain, analgesics such as acetaminophen and ibuprofen are recommended as needed. Research indicates that these drugs are rarely effective in relieving severe SCD pain;[8] however, they are often necessary in situations such as work or school where sedation from opioids should be avoided. When pain is more severe, opioid combination products that include codeine or oxycodone are recommended. Single-entity opioids, such as morphine, are recommended in addition to the nonopioid analgesics for the most severe pain.[9] While opioids are more effective in relieving severe pain, the American Pain Society (APS) generally recommends the use of these drugs for SCD pain for time periods less than 24 hours or to treat severe pain crises.[7]

We were interested in how adolescents with SCD use pain medication because little is known about the factors beyond pain that contribute to how adolescents manage their medication use. It appears that some adolescents are better able to independently manage their pain than others. Most adolescents manage their pain at home without health care contacts, while others seek more health care assistance, such as through visiting the emergency room or being hospitalized.[3,6] An understanding of the factors that contribute to medication use could improve the ability of health care professionals to teach effective home management of SCD pain.

Research suggests that children and adolescents are generally matching their pain medication use to their SCD pain levels. In a study of daily home pain management in children and adolescents with SCD, Dampier et al.[8] found that some type of medication was taken on 88% of pain days. One oral nonopioid or opioid analgesic was used on 58% of days that medication was used, and multiple analgesics and opioids were used in combination on the remaining 42% of days. Participants were twice as likely to medicate their pain when the episode had lasted for more than 24 hours, and medication was more frequently used on days with more intense pain. This is consistent with findings from Gil et al.,[3,6] indicating that children and adolescents with SCD are more likely to take nonopioid and/or opioid medication on days they experience more severe pain. Despite the general trend toward matching medication use to pain, Gil et al.[6] report that 29% of adolescents did not use any medication during the study period, even on days when they were in pain, while 15% of adolescents reported taking medications on some days when they were *not* experiencing pain. These data suggest that factors beyond pain play a role in adolescents' use of pain medication.

In accordance with a growing interest in how positive aspects of psychosocial functioning relate to health and well-being (see Taylor and Sherman[10] for a review), the purpose of the present study was to examine the influence of dispositional optimism on pain medication practices in adolescents with SCD. Dispositional optimism is defined by generalized, positive expectations for the future,[11,12] and has been shown to be fairly stable over time and across situations.[13,14] Conversely, pessimism is independently defined by generalized negative expectations for the future. Optimism has been conceptualized as a cognitive or explanatory style for negative life events. According to some theories, those who are optimistic attribute negative events to external, unstable, specific explanations, while those who are pessimistic make internal, stable, global attributions for negative events.[15] Further, self-regulation theory asserts that optimistic expectations, coupled with realistic appraisals of future events, can lend responses to more successful outcomes. Optimism can serve as an important motivator to react in ways that are more likely to directly affect outcome.[10] Moreover, research on adolescents cites optimism as an important predictor of resilience.[16–18] Although some positive psychosocial factors such as expectancies for pain relief are pain specific, dispositional optimism is a more global construct that is not specific to pain.

Studies in the health psychology literature have found significant associations between optimism and pain and other health symptoms. Allison et al.[19] showed a relation between dispositional optimism and physical pain symptoms in adults with head and neck cancer. Individuals with high optimism reported significantly less pain than individuals with low optimism, both before treatment and three months after treatment.[19] Optimism