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Satisfaction and effectiveness of opioid pain management among adults with cystic fibrosis: A mixed methods study

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Abstract

Background: Chronic pain is common among people living with cystic fibrosis (CF) and associated with worse clinical outcomes. Despite this, little is known about how pain is managed and how opioids are used to treat pain. The purpose of this convergent mixed methods study was to examine self-reported satisfaction and effectiveness of pain management strategies among a sample of adults with CF who are prescribed opioids.

Methods: We developed an online survey querying 4 domains - demographics, pain characteristics, pain communication, and management strategies. This was distributed nationally to adults with CF (n = 48) via various online platforms. We obtained quantitative and qualitative responses regarding satisfaction and effectiveness of pain management. Emerged themes from qualitative data were compared with responses from quantitative survey domains.

Results: Participants reported high levels of satisfaction and effectiveness with their opioid pain management plans. However, qualitative themes emerged regarding fears of addiction, experiences of feeling stigmatized by the healthcare system and ineffectiveness and inefficiency of alternative therapies for adequate pain relief.

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Sarah Allgood: Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing, Project administration, Funding acquisition. **Jessica L. Zmlak:** Formal analysis, Writing – original draft, Writing – review & editing. **Elisabeth Dellon:** Conceptualization, Methodology, Writing – review & editing. **Siddhartha G. Kapnadak:** Conceptualization, Methodology, Writing – review & editing. **Jessica Goggin:** Conceptualization, Methodology, Writing – original draft, Writing – review & editing. **Noah Lechtzin:** Conceptualization, Methodology, Writing – review & editing, Supervision.

Declaration of Competing Interest

The authors have no conflicts of interest to disclose

Conclusions: Adults with CF reported opioids as an important component of their current pain management plans despite risks associated with opioid use. CF-specific pain management guideline development is warranted as is further research exploring pain development.

Keywords

Pain; Opioids; Adults

1. Introduction

Pain is estimated to affect 42% of adolescents and 77% of adults with cystic fibrosis (CF).¹ Sources of pain may be attributable to identifiable causes such as missed pancreatic enzyme doses or sinus infections, but there is a subset of individuals who experience debilitating pervasive and chronic pain with no discernable cause.² Regardless of cause and location, pain in CF has been associated with decreased health-related quality of life, depression and increased risk of mortality independent of disease severity, age, and sex.^{3,4} There is a paucity of evidence and lack of clinical guide-lines addressing pain management strategies, including what role opioids have in treating pain in CF. Prior research exploring how individuals with CF manage their pain is sparse.

Opioid drugs have a role in pain management, but evidence of their effectiveness for those with CF has not been reported and evidence for opioid effectiveness in those with any type of chronic pain not related to cancer is weak.⁵ A recent two-year prospective cohort study among persons with chronic non-cancer pain found that at two years, opioid users had no improvement in effective pain symptom relief. However, at two years they reported higher satisfaction with treatment, highlighting that satisfaction with opioid pain management does not necessarily equate with effectiveness of treatment.⁵ Clinicians cite concerns such as side effects, risk of abuse, and lack of clear guidelines regarding long-term efficacy for opioids in management of non-cancer chronic pain.⁶ These studies support growing evidence questioning the role of opioids for management of chronic non-cancer pain.

Concerns regarding clear guidelines supporting opioids in chronic non-cancer pain might make multimodal pain management approaches seem appealing. However, practical barriers to use may limit their actual role in pain management.⁶ Both patients and providers describe limitations related to cost, access, and time burden in utilization of non-pharmacologic pain management approaches.

Despite the clinical implications of chronic pain in CF, little is known about how pain is managed among this population. Patients with CF and chronic pain have not been represented in previous studies regarding effectiveness of opioids for chronic non-cancer pain. Given that CF is a unique chronic disease impacting multiple organs, with varied symptom presentations, it is un-clear if previous research regarding effectiveness and satisfaction with opioids for non-cancer chronic pain management in other populations would apply in those with CF and chronic pain. Patient perspectives on their experiences are integral to building future pain management guidelines among this population. With this convergent mixed methods study among a sample of adults living with CF and using opioids, we aimed to characterize pain experiences, health care utilization, and examine

satisfaction and effectiveness regarding pain management. Furthermore, with a convergent mixed method study design integrating quantitative and qualitative data, we aimed to gain greater insight into the experience of pain in CF than would be obtained with quantitative or qualitative approaches alone.⁷

2. Methods

This study was part of a larger pain management strategies survey distributed in the United States via the Cystic Fibrosis Foundation Community Voice listserv, various social media sites, and CF care center patient listservs in Baltimore, Maryland, Chapel Hill, North Carolina, and San Diego, California for 30 days in February, 2018. This survey collected simultaneous qualitative and quantitative data from the same participants. Participant responses from those who self-reported the use of opioids were extracted from this larger survey to specifically explore the effectiveness and satisfaction with pain management plans that contain the use of opioids.

Inclusion criteria included age ≥ 14 years old, self-reported diagnosis of CF, self-report of opioid prescription to treat pain, access to technology such as computer or smart phone, and ability to read/write English. Lung transplant recipients were excluded. A waiver of written consent was requested in lieu of participation in the study acting as consent. The study was approved by the Johns Hopkins Medicine Institutional Review Board.

This online cross-sectional survey was developed in collaboration with CF, pain, palliative care, and transplant experts and included four domains: demographics, pain characteristics, pain communication, and management strategies (pharmacological, non-pharmacological, complementary/alternative modalities). Participants completed 29 multiple choice and Likert scale questions as well as qualitative narrative responses. Likert-scale responses were organized to present negative responses first to minimize risk of bias. Participants were encouraged to elaborate on perceptions and experiences regarding pain characteristics, management strategies, and healthcare utilization via open-ended qualitative questions.

Demographic information included: age, gender, marital status, education, work status, race/ethnicity, insurance status, and base-line percent predicted forced expiratory volume in one second (FEV1%) range.

The pain characteristics domain used components of the Brief Pain Inventory, a validated measure used extensively in pain research to explain pain frequency description, and effect on day-to-day life and mood.⁸ This domain also included questions regarding formal chronic pain diagnoses and CF-related pain beliefs.

The communication domain explored if and how participants discussed pain with their healthcare team. Positive responses prompted a 5-point Likert probe on satisfaction of support received from those conversations. Respondents provided qualitative responses regarding how they feel pain should be approached as part of their healthcare plan.

The management domain explored over-the-counter medication use (e.g. acetaminophen, ibuprofen, lidocaine patches, etc.), prescription medications (e.g. opioids, anti-depressants,

steroids, etc.), non-traditional medicines (e.g. herbal supplements, essential oils, marijuana if legal in state of residence, etc.), and therapies (e.g. heat, ice, massage, guided imagery, etc.) specific for treatment of pain. Positive responses prompted a 5-point Likert probe on satisfaction, effectiveness and how they learned about pain management therapy/medication.

Descriptive statistics including frequencies, median, mode, and range were used to describe the study sample and characterize the Likert-scale responses. Qualitative responses underwent conventional content analysis. Conventional content analysis is a qualitative data analysis approach in which researchers determine the presence of certain words, themes, or concepts within some given qualitative data. We used content analysis in our study to analyze the presence, meanings and relationships of such certain words, themes, or concepts.⁹ Responses were read independently by SA and JZ to allow for general impressions of content to develop into categories and preliminary codes. Discrepancies were reconciled through team consensus for emergent codes. Results were mixed by comparing emerged themes with responses from each survey domain. Results were anonymized and reported as self-identified gender and age in years. Peer review of the analysis was performed by a mixed methods expert to ensure trustworthiness.

Mixing in this convergent design occurred during data collection, analysis, and interpretation of results. Quantitative and qualitative data were collected concurrently from the same participants. Themes from qualitative data were compared with responses from quantitative survey domains. Results of quantitative and qualitative data were integrated in joint data displays (Tables 2 and 3).⁷

3. Results

The survey study included 274 participants, 101 (37.2%) reported being prescribed medications for pain. Of those prescribed pain medication, 48 or 17.5% of original sample reported being prescribed opioids for pain. Due to our study's focus on opioid pain management, our analytic sample was limited to those participants (N = 48) (Table 1). The median age of the sample was 36 years with a range of 18–72 years. Most of the sample identified as female (n = 41, 85%), White (n = 44, 92%), and had completed at least some college (n = 39, 81%). Half of the sample were married or in a partnership. Over half (n = 25, 52%) were unable to work or attend school due to health problems. Nearly half (n = 23, 48%) reported FEV1% predicted < 50% and 23% and were undergoing transplant evaluation.

3.1. Pain characteristics

The majority of participants (n = 34, 70%) believed their pain was CF related. Top five pain locations reported were chest (n = 36, 75%), joints (n = 36, 75%), head (n = 33, 68%), sinus (n = 31, 65%), and abdomen (n = 30, 63%). Thirty-three participants (68%) reported pain affected their daily life very often or always with 86% of the overall sample reporting experiencing pain > 4 times per week. In addition, pain was reported to affect mood moderately to a great deal by nearly three-quarters of participants (n = 35, 73%) (Fig. 1).

3.2. Opioid pain management and experiences

The most prescribed opioids reported in the sample were tramadol (n = 21, 43%), oxycodone (n = 21, 43%), and hydrocodone (n = 14, 29%), with less than 5% of participants reporting methadone, fentanyl, or morphine prescriptions (Table 2). Largely, participants were satisfied or very satisfied with their use of opioids. However, satisfaction varied across types of opioid medications. 75% of participants stated they were satisfied or very satisfied with oxycodone compared to only 43% with tramadol. When analyzing overarching themes of effectiveness and satisfaction, qualitative responses revealed several subthemes including delayed use for pain, tolerance concerns, fear of addiction, and opioid side effects.

3.2.1. Effectiveness

3.2.1.1. Delayed use for pain (opioids as a last resort): Participants often described pain as unmanageable by other modalities or non-opioid medications and utilized opioids as a last resort when other methods failed to provide adequate relief. Most participants approached opioid use cautiously and elected to use opioids only when other options were exhausted.

“I do not take this (tramadol) all the time, I only take this when the pain is debilitating and makes me cry or I cannot move from the stiffness of my joints causing me severe agony. I do not want to become addicted.”

(Female, 29)

3.2.1.2. Tolerance concerns: Many viewed opioid use as long term and related pain management to their chronic disease process. Pain management was ineffective for some when tolerance was reached and dosing schedules not adjusted accordingly. Participants expressed fear of needing escalating doses over time.

“..And you need more and more and more, and I’m not even 30. How much am I going to need if I live to 50? .. But what else am I supposed to do?”

(Female, 27)

3.2.2. Satisfaction

3.2.2.1. Fear of developing opioid addiction: Participants expressed concerns over developing addiction. While opioids were effective for pain control, participants expressed knowledge about risks of abuse and were balancing these concerns with pain management.

“At times it works and at times it doesn’t. I am so afraid of being addicted to them that it keeps me from taking them when I need them and I just bear the pain.”

(Female, 29)

3.2.2.2. Opioid Side Effects: Most participants described opioids as effective in managing pain. However, they reported side effects related to opioid use. Participants weighed the benefits of pain management with undesirable side effects including negative effects on their GI system (i.e., constipation, nausea, liver damage)

“The oxycodone often works but it effects my GI system negatively. Would love to see an alternative.”

(Female, 49)

Participants also reported negative mental effects including lethargy and mood changes. ... *"it takes away my ability to participate in life because it makes sleepy or loopy."* (Female, 35)

3.3. Multimodal pain management

Most participants reported using a multi-modal approach to pain management incorporating non-opioid medications and/or non-pharmacological therapies including physical therapy, acupuncture, and/or procedures such as nerve blocks (Table 3). However, when asked to further explain experiences with these therapies, themes and subthemes emerged around effectiveness (suboptimal pain control, contraindication to use) and satisfaction (financial barriers, treatment time requirements)

3.3.1 Effectiveness

3.3.1.1. Contraindications to use.: A key sub-theme identified regarding non-opioid pain medications was that use was often contraindicated by comorbidities. End-organ damage i.e., impaired renal function, liver disease, and risk for hemoptysis limited utilization of these drugs.

"...can't take NSAIDs due to kidney function. But sometimes out of desperation I take a Celebrex because it helps so much."

(Female, 63)

3.3.1.2. Suboptimal control of severe pain.: Non-pharmacological methods were described as having limited effect on participants' pain, including ineffectiveness for severe pain. These methods were seen as having low efficacy, being difficult to access, and serving only an adjunctive to pain management.

"Just like exercise, this helps 'loosen up' my muscles a bit sometimes. But, with more moderate to severe pain, yoga is not a complete solution. Also, hard to start when you're really in pain."

(Female, 35)

3.3.2. Satisfaction

3.3.2.1. Financial barriers.: Treatment options such as physical therapy, acupuncture, and CBD oil were often minimally or not covered by insurance. Participants often limited, avoided, or modified recommended use of multimodal treatments in response to prohibitive out-of-pocket expenses.

"Regarding physical therapy: The main disadvantage to these are the extremely high cost. ... one session costs a lot and to get the relief I need I would need to go 2–3 times per week. There is no way I could afford that. However, I do benefit from it when I can afford to get a couple here and there."

(Male, 28)

3.3.2.2. Treatment time requirements.: In addition to expenses, participants reported time commitment hindered ability to participate in treatment such as physical therapy.

“I have done several rounds of physical therapy with mixed results. The traditional PT Schedule did not really work for me, rather the timeline was greatly extended to get results.”

(Male, 33)

3.4. Discussing pain management with CF health care providers

Nearly half (42%) of participants were satisfied or very satisfied with their current outpatient pain management. However, participants reported feeling uncomfortable addressing pain with CF teams, with sixteen (33%) reporting not discussing pain during clinic visits.

1. Several subthemes regarding satisfaction emerged including fears of being stigmatized, dismissal of pain experiences (vs. feeling supported) and having a champion.

3.4.1 Satisfaction

3.4.1.1. Fears of being stigmatized.: Participants perceived stigma associated with the type of people who use opioids – abusers, addicts – and shared fears that care teams may perceive them to be addicted and drug seeking if they request another prescription or changes to their regimen. Feelings of being torn between treating pain effectively or stopping opioids to improve care team perceptions were expressed.

“We are scared to tell the doctors we’re in pain and need to do something about it because of the fear of being labeled a pill seeker. So, it becomes a very bottled-up mess that I truly believe is under reported and definitely under treated. Which is a major shame because when properly relieved of even just some of the pain makes life so much more enjoyable.”

(Male, 28)

3.4.2.1. Dismissal of pain experiences (vs. feeling supported).: Many participants shared feeling that their pain experiences were dismissed or minimized by care teams, often being told that pain is part of having CF, or having other issues like lung health take priority to pain. Others expressed frustration that their sources of pain were poorly understood and felt care teams were not helping them to understand their pain, leading to fears that their experiences were being minimized.

“It’s a constant thing I live with, and it feels like it’s expected with having CF and therefore not seen as an urgent concern. I’ve had a doctor tell me, ‘it’s just a part of the disease progression,’ and I don’t want to accept that. There should be more done to address this in every visit, or refer me to a pain clinic to work on it.”

(Female, 36)

3.4.2.2. Having a champion.: While there were frustrations regarding pain management experiences, there was also an experience of feeling supported by someone within care

teams among participants. Some felt they had one provider either from within or outside their CF team who listened to them and worked hard to find ways to help them cope. Participants expressed thanks to these individuals for being able to find relief. They also shared how much this support in having an effective pain management plan improved their quality of life.

“It is a constant daily battle that I fight with pain. It seems to get worse the older I get. To be honest the pain aspect is my biggest complaint. It makes all the other CF stuff easy. But I am at a new pain clinic with doctors very familiar with CF pain who prescribe me pain medication along with weekly massage, chiropractor, and pulmonary rehab. It has gotten much more under control and my quality of life is so much better.”

(Male, 28)

4. Discussion

Through quantitative survey data and rich in-depth patient-reported experiences, our study provides valuable insight into pain management among people with CF. Results of quantitative data showed that satisfaction with and effectiveness of pain management plans was mostly positive. However, when exploring these findings, qualitative themes emerged providing nuanced information regarding not just negative effects of opioids such as fears of addiction, but also experiences of feeling stigmatized by the healthcare system and ineffectiveness and inefficiency of alternative therapies. These findings highlight the pain experience from the patient’s perspective, which in turn, has important implications for the CF care teams.

4.1. Challenges in addressing pain in the CF clinic

Despite most reporting satisfaction with pain management, many participants desired more integrated care and better understanding of the relationship between chronic pain and CF. The overwhelming majority of participants believed their pain was directly related to CF, and, as in other studies, reported a wide range of locations and types of pain. In addition, many voiced frustrations with not knowing, nor understanding contributory mechanisms to their pain. CF causes many painful disease processes such as sinus disease and GI pain that are often easily identified and improved by treating the underlying cause. However, persistent, generalized pain or pain not linked to a specific event can be difficult to understand and, likewise, treat.¹⁰ Side effects from antibiotics and inflammation as part of the CF disease process are likely contributors, but little is known about other characteristics of both CF and psychosocial contributors to chronic pain development³. A better understanding of these contributory mechanisms of pain development in CF is needed.

Only 58% of this sample reported having a chronic pain diagnosis, possibly reflecting that, although care providers are treating pain, many individuals are missing formal pain diagnoses to support use of opioids as their primary means of pain control. It is possible that these participants were therefore receiving episodic management of pain versus comprehensive pain management approaches associated with a more formal chronic pain diagnosis. It is also possible that absence of a chronic pain associated diagnostic code in

the medical record could prohibit or limit insurance reimbursement to alternative therapies such as acupuncture and manipulative therapies such as physical therapy and chiropractic. Secondary chronic pain – chronic pain that is a symptom of an underlying condition – is a relatively new diagnostic distinction from primary chronic pain, but could be useful in CF, as it has been for others who experience pain as a result of life-limiting chronic disease.¹¹ Improvements in how pain is understood as well as normalizing pain in CF via use of the secondary chronic pain diagnosis may improve both satisfaction and effectiveness of pain management plans.

Participants discussed fears of stigmatization as an addict or pill seeker, highlighting a need for belief and validation of their pain experience by CF teams and other providers. This fear of stigmatization has been reported in non-CF chronic pain populations and the CF population alike¹². Whether driven by actual disbelief of an individual's pain, or by the individual's anticipation that their healthcare team will not believe them, fear of stigmatization may contribute to hesitancy to talk about pain. As communication is key to trust and understanding in the therapeutic relationship, this hesitancy is particularly concerning. Therefore, CF health care providers should ask about pain at each encounter versus waiting for patient-initiated pain conversations.

4.2. Barriers to effective pain control

Recent updates in chronic pain management recommends a multi-modal approach to address not just physical, but mental and psychological factors that contribute to how pain is processed and experienced.¹³ Participants were familiar with and reported using a multitude of non-pharmacological and non-opioid pharmacologic strategies to help with pain control to varying degrees of efficacy and satisfaction in addition to their use of opioids. Suboptimal pain control, contraindications to use, availability, costs, and the time commitments required by many modalities, however, limited their contribution to effective pain management plans, which is consistent with findings from non-CF chronic pain studies. In addition, participants reported limiting their use of opioids sparingly and as a last resort, citing fears of addiction and increased drug tolerance with resultant decreases in medication. Participants' wariness regarding opioids is supported by a growing body of evidence supporting that risks and ineffectiveness of opioids far outweighs the benefits in non-cancer chronic pain. A recent comparative effectiveness systematic review concluded while opioids offer beneficial effects on non-cancer chronic pain compared to placebo, they do not appear to be superior to non-opioid therapies.¹⁴

Supporting these findings, this sample largely reported their current opioid pain management plan to be effective, but also reported that alternative medications such as non-steroidal anti-inflammatories and acetaminophen were just as effective, if not more, than opioids. Participants described being cautioned away from non-opioid medications related to liver and/or kidney insufficiencies. While it is recommended that those with both renal and liver disease avoid NSAIDs, current clinical guidelines support use of acetaminophen for mild to moderate pain in both these populations^{15–17}, suggesting that removal of acetaminophen for pain management in those with CF-related liver disease or impaired renal function may be overly cautious. It is important to note, however, that no recent studies examining effects of

acetaminophen on organ function have been conducted in those with CF¹⁸, so heightened surveillance of liver function, especially given the impact of new highly effective modulator therapies (HEMT) on the liver, may be warranted in chronic acetaminophen use.

4.3. Important considerations in individuals receiving opioids

A recent study by Yaoli et al. (2021) surveying CF providers about attitudes of pain and opioid prescription practices found that greater than 50% of providers of adults with CF are uncomfortable or only slightly comfortable prescribing opioids. Addiction and the possibility of patients being ineligible for lung transplantation were reported as barriers to their use.¹⁹ However, for some CF patients with chronic pain, opioids are a critical component of their plan of care. In these instances, CF providers must actively engage with patients to monitor side effects, consult with specialists, and tailor an individualized prescribing plan for each patient as suggested in Table 4. Consistent with the CDC recommendations for clinicians regarding prescribing opioids for chronic pain²⁰, the use of opioids for those with CF and pain should be approached in a step-wise fashion that incorporates patient-driven considerations that evaluate and focused on a safe and effective management plan.

5. Limitations

This study should be considered in light of several limitations. The sample size in this study is small (N = 48) with missing quantitative data points on several survey items. The quantitative data is cross-sectional therefore we were able to identify associations versus causal relationships. This limitation is mitigated by mixed method design and inclusion of qualitative data. Female participants were over-represented and half of the sample had lung function representative of severe disease progression with many in the process of undergoing evaluations for a lung transplant. Though previous studies have reported no association between pain, sex, and/or lung function, it is possible that responses to pain management treatments are experienced differently by those groups not represented by this survey study. In addition, our study did not include those who have undergone lung transplantation. This population may also have unique pain considerations not represented by tis study. Further studies with larger sample sizes that incorporate a more equal representation of men and equal distribution of disease severity is necessary for generalizability to the broader CF population. Furthermore, our study did not assess participants for mental health co-morbidities such as depression, which is often linked to how pain is experienced and can be a risk consideration when adding opioids to pain management plans. Future studies exploring this relationship are warranted. This study pre-dated the wide-spread use of HEMT. It is possible that use of these medications may have an impact on pain and thus, how it is managed. A longitudinal cohort study is currently underway to explore the impact of HEMT on pain in adults with CF.

6. Conclusion

In our study, satisfaction with opioids for pain relief in adults with CF was influenced by many factors including recognition of negative risks associated with opioids and the importance in being open to communicate pain to healthcare providers. Effectiveness of

pain management plans that incorporate opioids was influenced by lack of non-opioid medications and barriers to multimodal therapies. This study highlights the need for guideline-driven practice standards, including the role of opioid medications for chronic pain management in CF.

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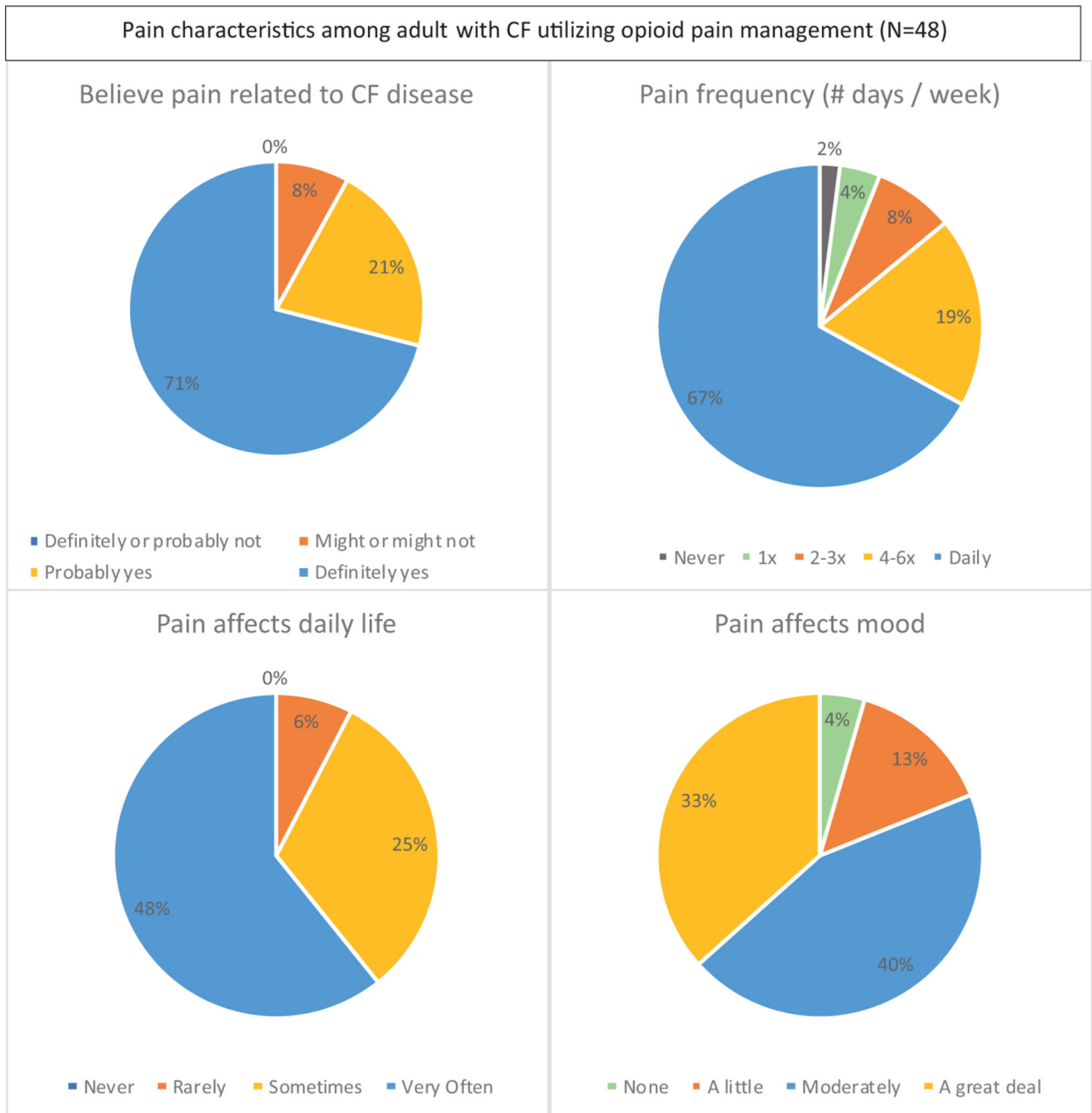


Fig. 1. Pain characteristics among adults with CF utilizing opioid pain management (N = 48)

Table 1

Demographic Characteristics of adult CF patients receiving opioid pain medication (N = 48)

Mean Age (SD)	38.4 (12.8)
Gender	
Female	85%
Marital Status	
Single	33%
Married/Partnered	50%
Divorced	13%
Education	
High School	10%
Some College	35%
College Graduate	46%
Master's Degree	8%
Race/Ethnicity	
White	94%
Hispanic	4%
Asian	2%
Insurance	
Private	44%
Medicare/Medicaid	56%
Baseline Lung Function	
Greater than 80%	8%
70–79%	19%
50–69%	21%
Less than 50%	50%
Undergoing lung transplant evaluation	23%
Chronic Pain Diagnosis	58%

Table 2

Effectiveness, Satisfaction, and Experiences of Opioid Pain Management

Effectiveness and Satisfaction of drug for pain management	Opioid Active Ingredient						Qualitative themes
	Tramadol (N=21)	Oxycodone (N=21)	Hydrocodone (N=14)	Methadone (N=2)	Fentanyl (N=2)	Morphine (N=1)	
Effectiveness							Effectiveness impacted by:
My pain goes away all of the time when I use this medication	29%	55%	42%	0%	0%	100%	Tolerance Concerns Delayed use for pain (opioids as a last resort)
My pain goes away some of the time when I use this medication	24%	40%	58%	0%	100%	0%	
My pain doesn't change when I use this medication	33%	5%	0%	100%	0%	0%	
I can't tell if my pain changes or not when I use this medication	14%	0%	0%	0%	0%	0%	
My pain gets worse when I use this medication	0%	0%	0%	0%	0%	0%	
Satisfaction with Use							Satisfaction with Use Impacted by:
Very dissatisfied	10%	0%	0%	0%	0%	0%	Opioid side effects Fear of developing opioid addiction
Dissatisfied	24%	15%	15%	0%	0%	0%	
Neither satisfied or dissatisfied	24%	10%	23%	0%	50%	0%	
Satisfied	19%	35%	46%	50%	50%	0%	
Very Satisfied	24%	40%	15%	50%	0%	100%	

Table 3

Effectiveness, Satisfaction, and Experiences of Multimodal Pain Management Strategies

Effectiveness and satisfaction of strategy for pain management	Non-opioid pain medications					Pain self-management				Pain therapy services			Qualitative themes		
	NSAIDS (N = 30)	Antidepressants (N = 27)	Corticosteroids (N = 25)	Acetaminophen (N = 24)	Hot Packs/Heat Therapy (N = 26)	Probiotics (N = 12)	Ice packs/cold therapy (n = 14)	Physical therapy (N = 12)	Chiropractor (N = 11)	Acupuncture (N = 5)					
Effectiveness: When I use this strategy, my pain..														Effectiveness impacted by:	
Goes away all of the time	3%	0%	6%	0%	0%	0%	0%	8%	0%	0%	0%	8%	0%	0%	Suboptimal control severe pain Con- tradiction to use
Goes away some of the time	73%	100%	29%	58%	85%	42%	79%	67%	91%	20%					
Doesn't change	17%	0%	41%	25%	15%	8%	14%	8%	0%	40%					
I can't tell if it changes	7%	0%	24%	17%	0%	50%	0%	0%	9%	40%					
Gets worse	0%	0%	0%	0%	0%	0%	7%	17%	0%	0%					
Satisfaction with Use															Satisfaction with Use Impacted by:
Very dissatisfied	0%	0%	0%	4%	0%	8%	7%	8%	0%	8%					Financial Barriers/Treatment time requirements
Dissatisfied	30%	0%	6%	25%	0%	0%	14%	0%	9%	0%					
Neither Satisfied or dissatisfied	40%	0%	47%	58%	42%	67%	50%	33%	9%	67%					
Satisfied	23%	50%	47%	13%	50%	17%	29%	58%	63%	17%					
Very Satisfied	7%	50%	0%	0%	8%	8%	0%	0%	18%	8%					

Table 4
Suggested approach to a patient-driven pain management plan that incorporates opioids

Evaluation	Management
Evaluate characteristics and cause(s) of pain, recognizing that a discernable cause may not be apparent	Determine eligibility for non-pharmacologic and non-opioid pharmacologic options; consult with pain specialist, palliative care specialist, and/or pharmacologist as appropriate
Review the effects of pain on daily life and functional status	Set goals for pain management and provide education on potential adverse effects
Evaluate for contributions related to depression, anxiety, and/or dyspnea	Communication with and referral to other specialists as appropriate
Review efficacy, adverse effects, and barriers to previous and current treatments	Outline follow-up and safety monitoring plan; provide access to resources such as social support as needed
Address perceived stigma or other specific concerns related to pain and/or related treatments	Review satisfaction and adverse effects regularly; consider tapering doses as appropriate