

# CLIENTS' SATISFACTION WITH PAIN MANAGEMENT BY HEALTHCARE PROVIDERS DURING SICKLE CELL CRISIS IN SELECTED HEALTH FACILITIES IN OGUN STATE NIGERIA – A CROSS SECTIONAL STUDY

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## ABSTRACT

**Introduction:** Vaso-occlusive crises leading to pain are the hallmark of sickle cell disease (SCD). The aim of the study is to assess satisfaction of client with pain management strategies adopted by healthcare providers in the management of sickle cell crises.

**Material and methods:** This quantitative cross-sectional study was conducted by employing a multi-stage sampling technique in selecting the 2 SCD clinics across tertiary hospitals. In all, 114 clients who met the inclusion criteria participated in the study.

**Results:** The majority of the participants were of ages 18 years to 20 years, mostly students with SS genotype. A high proportion of participants (52.0%) experienced a mild level of pain, while 2% reported severe pain within 6 months prior the study. The majority (67.5%) of the participants were placed on pharmacological strategies. Many of the participants (95.0%) were very satisfied with pain management strategy given to them. There is no statistically significant difference between the level of pain experienced by the participant and the administered pain management ( $F(2,111) = 0.591, p = 0.92$ ). Also, there is no statistically significant difference between the client's pain-comfort and healthcare provider's methods of pain management during SCD crisis ( $F(2,111) = 0.485, p = 0.422$ ). It is expedient to set up a more detailed pain assessment tool for the evaluation of the level of pain of SCD patients.

**Conclusions:** The study concluded that pharmacological and non-pharmacological approaches can be further adopted by healthcare providers to aid in the delivery of more efficient pain management to SCD clients so as to boost the level of satisfaction of SCD patients.

**Key words:** pain management, pharmacological, non-pharmacological, satisfaction.

## INTRODUCTION

Sickle cell disease (SCD) is a haemolytic anaemia associated with significant level of morbidity and mortality among the global populace. Sickle cell anaemia (HbSS) is the most austere form, while SC haemoglobinopathy (HbSC) is understood to be milder [1-4]. Al-Jafar described SCD as a congenital blood disorder inhibiting the normal functioning of haemoglobin [5]. The gene frequency of SCD is highest in West African countries, with 25-30% of people being carriers of HbS compared to 1 in 400 African Americans, and it is variable in European populations [6]. Severe morbidity and mortality ensue when SCD is not diagnosed and treated promptly [7]. In Nigeria,

the overall prevalence of the 2 common variances of SCD are HbSS (2.14%) and HbSC (0.14%) [8].

It is one of the most common inherited life-threatening disorders in humans that predominantly affects people of African, Indian, and Arab ancestry [9, 10]. Despite increase awareness about the disease, a number of people in Nigeria are still not aware of their genotype to effectively prevent the disease [11]. This had led to increased prevalence of SCD. Similarly, the prevalence of SCD in developed countries is increasing, partly due to migration from high-prevalence countries [12, 13]. It is estimated that over 14,000 people live with SCD in the UK, similar to France, while countries like Italy and Germany have seen increasing numbers of people living with SCD from Africa [14-16].

These have made SCD a global challenge needing urgent attention.

In African countries where comprehensive medical care is not readily available, mortality as a result of SCD in early childhood is common. The hallmark of SCD across all ages is pain [3, 17], mostly termed as vaso-occlusive crisis (VOC) [7]. The most commonly experienced symptoms of SCD include fatigue, bone aches, difficulty concentrating, difficulty gaining weight, and joint stiffness, with varying levels of severity [18-21]. Apart from VOC, scholars have documented fatigue as the most common symptom of SCD [19], resulting in reduced functioning, school/work absenteeism, and lower quality of life [22-25].

The effective management of pain goes a long way in preserving the patients and aiding an improving quality of life. The management of pain rests majorly in the purview of healthcare professionals, caregivers and likewise the patients. The effectiveness of the methods of care utilized in the management of pain has been under-studied, hence there is dearth of literature in this regard.

Telfer *et al.* reported that despite advances in the healthcare management of acute pain in SCD patients, a significant level of dissatisfaction still exists [26]. This was shown to be strongly associated with the naïve methods of pain management using opioid analgesics [27, 28]. The discrepancy between patients' report of satisfaction and reports of moderate to severe pain intensity could be related to the satisfaction measure used. In nearly all of the studies identified, the authors measured satisfaction at a global level: satisfaction with pain treatment [29], satisfaction with pain management [30], and satisfaction with care [31]. Despite the value of these measures of satisfaction, the items are too global and not sufficiently specific. When patients answer these global questions, they take into account several confounding factors, including communication with clinicians and time to receipt of pain medication, which may not relate to their pain intensity [32].

This study therefore seeks to provide insights into prevailing pain management strategies adopted in the care of SCD vaso-occlusive crisis, the satisfaction of patients with these identified strategies, and correlates of pain severity and pain management strategies.

## MATERIAL AND METHODS

### Study design and setting

This study used a descriptive, cross-sectional design to investigate satisfaction with pain management during sickle cell crisis among clients attending sickle cell clinics in selected health facilities in Abeokuta, Ogun State.

Clients living with sickle cell disease, who were above 18 years old and attending the sickle cell clinics at 2 selected hospitals in Abeokuta, Ogun State participated in the study.

### Participants

Participants were recruited using multi-stage sampling technique. Only clients who meet the inclusion criteria of having been diagnosed of SCD for at least one year and had been admitted to the hospital for at least 24 hours as result of an SCD crisis were recruited into the study.

### Variables and measurements

The research instrument used for this study was a questionnaire. The questionnaire was divided into 4 sections covering the scope of the study. The first section assessed the socio-demographic characteristics of the participants in the study, while the second part comprised 5 items on a scale of 0-10 to assess participants' pain levels. Participants were asked to rate their level of pain on the scale in the last week, 24 hours, and at the time of data collection. A score of 0 meant no pain at all, while 10 meant the worst pain possible. The level of pain was further graded into "No Pain" (0); "Mild Pain" (1-3); "Moderate Pain" (4-6); and "Severe Pain" (7-10) [33-35].

The third section of the questionnaire is an 8-item Likert scale that assessed methods of pain management. Participants were asked which of the pain management strategies is/are adopted in their management and the frequency of use of such strategies.

The last section assessed satisfaction with pain management methods and is made up of 19 items on a 5-point Likert scale. The mean score was used to categorise the into low and high levels of satisfaction with pain management.

The questionnaire was presented to a panel of experts for critiquing to ensure face validity and content validity. This was done to affirm that the instrument was adequate and appropriate for the study. The questionnaire was approved after all necessary modification were made. The questionnaire has a Cronbach alpha Coefficient score of 0.87. The questionnaire was therefore adjudged reliable.

Data collection was done by the researchers, with trained research assistants to help if participants were illiterate and were unable to read and fill out the questionnaire. The participants were met on hospital clinic days after obtaining permission from the hospital administrators. A research assistant was attached to each facility. The questionnaire was administered during the clinic support group meeting with the clients.

### Sample size

The sample size for the study was obtained using the Cochran formula [36] for assessing sample sizes for descriptive studies:

$$N = \frac{Z_{crit}^2 pq}{e^2},$$

where  $Z$  is the standard normal variance, the confidence level is 1.96 at 95%,  $p$  is the prevalence of SCD over the 5-year period under study (21.6%) [37],  $q = 1 - p$ , and  $d$  is the absolute precision or error margin tolerated, chosen as 5% (0.05).

$$N = \frac{1.96^2 (0.216) (1 - 0.216)}{0.05^2} = 260$$

**Table 1.** Socio-demographic characteristics of participants

Variables	Frequency (N = 114)	Percentage (%)
Gender		
Male	53	46.5
Female	61	53.5
Age (years)		
18-20	50	43.9
21-25	45	39.5
26-30	12	10.5
> 30	7	6.1
Ethnicity		
Yoruba	111	97.4
Igbo	3	2.6
Marital status		
Single	108	94.7
Married	6	5.3
Religion		
Christianity	58	50.9
Islam	52	45.6
Traditional	4	3.5
Educational level		
None	1	0.9
Primary	9	7.9
Secondary	47	41.2
Post-secondary	57	50.0
Employment status		
Not employed	17	14.9
Employed govt.	3	2.6
Employed private	8	7.0
Employed self	19	16.7
Student	67	58.8
Genotypic information		
SS	98	86.0
SC	16	14.0

To correct for the finite population, discover in the clinic to be used, which was found to be an average of 150 sickle cell patients duly registered for each clinic, a correction formula by Cochran was further adopted:

$$n = \frac{n_o}{1 + \frac{n_o - 1}{N}},$$

where  $n$  is the sample size, and  $N$  is the population size (150) [36].

$$n = \frac{260}{1 + \frac{260 - 1}{150}} = 95$$

With a non-response rate of 20%, the sample size becomes 114.

### Statistical analysis

There was instant review of collected data to avoid omissions and correct any missed data before the participant left. Furthermore, data cleaning was done before the entry into statistical application software (SPSS 21.0), with which the data analysis was performed. Data were analysed using descriptive (frequency, mean, and standard deviation) and ANOVA inferential statistics.

### Ethical considerations

The study was approved by the Research and Ethics Committee of Ogun State Hospitals Management Board and Federal Medical Centre, Abeokuta. Participation was made optional, and all participants voluntarily consented to be part of the study. Collected data were stored and handled with utmost confidentiality.

### RESULTS

Table 1 shows the socio-demographic characteristics of the participants. The gender distribution of the participants revealed that there were more female participants in the study (53.5%). The majority the participants were below 30 years of age, and only 7 (6.1%) participants were above 30 years of age.

The genotypic information of the participants revealed that the majority (86.0%) had the HBSS gene while 14.0% had the HBSC gene. Pain levels among the participants in the study showed that 36.8% experienced pain in the last week, 33.3% in the last 24 hours, while only 13.2% experienced pain at the time of data collection (Figure 1). The result further showed that in the week prior the study, 63.2% reported no pain while 20.3% indicated a very mild level of pain. Also, 12.3% experienced moderate level of pain while 5 (4.5%) of the participants experienced a severe level of pain during the period. When asked

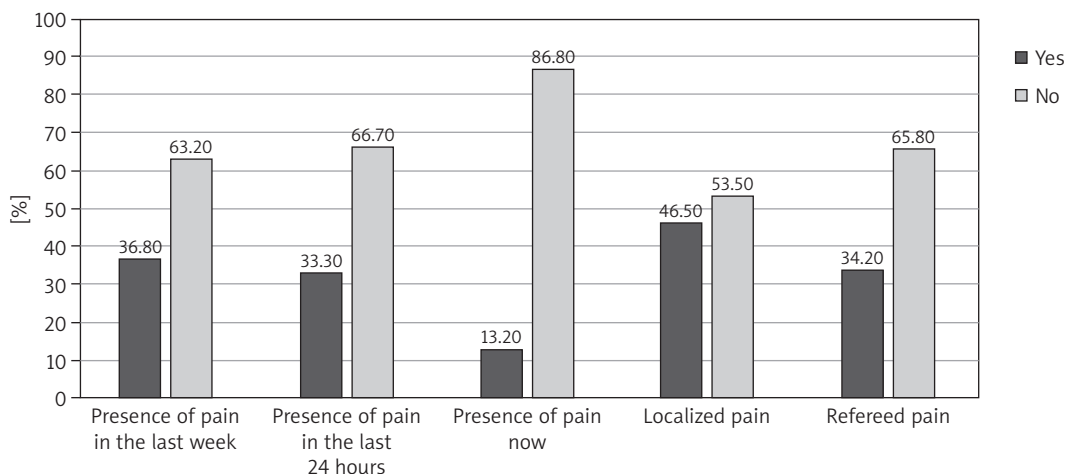


Figure 1. Location of participants' pain

to give a 24-hour pain assessment recall prior to the time of data collection, 66.7% indicated that they had no pain and about 28.1% had mild pain, and those that experienced moderate and severe levels of pain were 3.6% and 1.8%, respectively. At the point of data collection, the vast majority (86.8%) of the participants were not experiencing any pain. Some of the participants (11.5%) were experiencing a mild level of pain while only few (1.8%) were experiencing a moderate level of pain (Table 2).

A little less than half (46.5%) of the participants believed that their pain was localized in a particular part of their body. On the other hand, 34.2% believed that their pain referred to a different part of their body (Figure 1). Most of the participants describe the presence of burning (60.5%), tingling (58.8%), and sharp (54.4%) pain sensation. On the other hand, half of the participants described the presence of intense and lacerating pain. 48.2% described the presence of numbing pain. About 4 in every 10 participants in this study described the experience of excruciating (45.6%), piercing (43.9%), and horrible (41.2%) pain (Table 3).

Participants' descriptions of their pain, as shown in Table 3, revealed that 27.2% said they had a mild tingling pain and 17.5% reported severe tingling pain. Furthermore, 27.2% had mild burning pain and 9.7% had a severe burning pain. Among the participants, 13.2% reported that they had a severe numbing experience, 12.3% experienced a severe lacerating pain, and 14.0% had severe intense pain. Also, 29.8% had mild inflammation, 27.2% had mild sharp pain, and 13.2% experienced severe sharp pain.

Table 2. Pain rating among participants

Self-Rating	Week prior to study		24 hours prior to study		Present state	
	n	%	n	%	n	%
No pain	72	63.2	76	66.7	99	86.8
Mild pain	23	20.2	32	28.1	13	11.5
Moderate pain	14	12.3	4	3.6	2	1.8
Severe pain	5	4.5	2	1.8	0.0	0.0

Table 3. Pain experiences and rating among participants

Experience	Presence or absence of the experience		Rating of the experience			
	Absent	Present	No pain	Mild pain	Moderate	Severe
Tingling	47 (41.2)	67 (58.8)	47 (41.2)	31 (27.2)	16 (14.1)	20 (17.5)
Burning	45 (39.5)	69 (60.5)	45 (39.5)	31 (27.2)	27 (23.7)	11 (9.7)
Lacerating	57 (50.0)	57 (50.0)	57 (50.0)	33 (28.9)	10 (8.8)	14 (12.3)
Numbing	59 (51.8)	55 (48.2)	59 (51.8)	32 (28.1)	8 (7.0)	15 (13.2)
Excruciating	62 (54.4)	52 (45.6)	62 (54.4)	29 (25.4)	11 (9.7)	12 (10.5)
Piercing	64 (56.1)	50 (43.9)	64 (56.1)	30 (26.3)	9 (7.9)	11 (9.7)
Horrible	67 (58.8)	47 (41.2)	67 (58.8)	18 (15.8)	12 (10.5)	17 (14.9)
Intense	56 (49.2)	58 (50.8)	56 (49.2)	26 (22.8)	16 (14.0)	16 (14.0)
Inflammation	57 (50.0)	57 (50.0)	57 (50.0)	34 (29.8)	11 (9.6)	11 (9.6)
Sharp	52 (45.6)	62 (54.4)	52 (45.6)	31 (27.2)	16 (14.0)	15 (13.2)

The result showed that 66.7% of the participants indicated that a comprehensive assessment is always done at presentation in the hospital (Table 4). 54.4% of the participants stated that pain-relieving drugs were always administered by the care providers within 30 minutes of arrival, while 21.9% reported that it was only done sometimes. 7.0% said opioids (codeine or morphine) were always given during their experience of persistent pain. Furthermore, 38.6% said they always received intravenous (IV) administration of pain-relieving drugs, while 29.8% received it sometimes.

Table 5 shows the assessment of effectiveness of method and medication route of pain management.

Half of the participants (50.0%) always received emotional support and counselling by the healthcare

providers, while 27.2% said they were sometimes provided with non-pharmacological approaches, such as distraction, massage, muscle relaxation, and positioning. The assessment of the medication used by participant as presented in Table 6 showed that the oral route was the most common route of analgesic administration (82.5%). Also, 44.2% of the participant had an after-taste of the oral medication. However, 65.8% of the participants in this study opined that IM/IV pain medication worked quickly for them compared to oral drugs.

The findings from this study showed that the majority of the patients who participated (85.1%) were satisfied with the information received about their pain and its treatment. Also, the majority (73.7%) of

**Table 4.** Pain management strategies

Items	Always	Sometimes	Rarely	Never
Comprehensive assessment is done at presentation to the hospital	76 (66.7)	25 (21.9)	3 (2.6)	10 (8.8)
Pain relieving drugs are administered by the care providers within 30 minutes of arrival	62 (54.4)	25 (21.9)	14 (12.3)	13 (11.4)
Opioid (codeine, morphine) was added because of persistent pain	8 (7.0)	18 (15.8)	8 (7.0)	80 (70.2)
Intravenous fluid was administered to hydrate	32 (28.1)	30 (26.3)	8 (7.0)	44 (38.6)
Intravenous administration of pain-relieving drugs was given	44 (38.6)	34 (29.8)	9 (7.9)	27 (23.7)
Emotional support and counselling by the health care providers	57 (50.0)	38 (33.3)	0 (0.0)	19 (16.7)
Non-pharmacological approaches, such as distraction, massage, muscle relaxation, and positioning were provided	29 (25.4)	31 (27.2)	25 (21.9)	29 (25.4)

**Table 5.** Assessment of effectiveness of method and medication route of pain management

Statements	Not on the type of medication	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
My oral pain medication leaves after an aftertaste	20 (17.5)	5 (4.4)	34 (39.8)	16 (14.0)	30 (26.3)	9 (7.9)
My IM/IV pain medication works quickly	20 (17.5)	29 (25.4)	46 (40.4)	12 (10.5)	6 (5.3)	1 (0.9)
My IM/IV pain medication hurts when it is inserted	22 (19.3)	12 (10.5)	33 (28.9)	29 (25.4)	15 (13.2)	3 (2.6)
My IM/IV pain medication leaves too many bruises	22 (19.3)	12 (10.5)	23 (20.2)	10 (8.8)	41 (36.0)	6 (5.3)

**Table 6.** Satisfaction with administered pain management strategies

Items	Very satisfied	Satisfied	Undecided	Dissatisfied	Very dissatisfied
The information that you received about pain and its treatment	50 (43.9)	47 (41.2)	4 (3.5)	12 (10.5)	1 (0.9)
The amount of time that doctors devoted to you during visit/consultation	44 (38.6)	53 (46.5)	12 (10.5)	4 (3.5)	1 (0.9)
The care provided by the nurses for your pain and its treatment	52 (45.6)	32 (28.1)	27 (23.7)	0 (0.0)	3 (2.6)
The form of your medication (e.g. pills, capsules, injections, etc.)	44 (38.6)	49 (43.0)	16 (14.0)	0 (0.0)	5 (4.4)
Frequency of your medication	50 (43.9)	39 (34.2)	16 (14.0)	3 (2.6)	6 (5.3)
The amount of pain medication you take	38 (33.3)	50 (43.9)	24 (21.1)	1 (0.9)	1 (0.9)
The time that it takes your pain medication to work	48 (42.1)	41 (36.0)	13 (11.4)	8 (7.0)	2 (3.5)
The level or amount of pain relief provided by your pain medication	37 (32.5)	43 (37.7)	24 (21.1)	10 (8.8)	0 (0.0)
The duration of pain relief provided by your pain medication	40 (35.1)	47 (31.2)	21 (18.4)	6 (5.3)	0 (0.0)
Overall, satisfaction with the current pain medication	44 (38.6)	66 (57.9)	1 (0.9)	2 (1.8)	1 (0.9)



**Table 7.** Cross-tabulation of pain management strategies and level of pain experienced by participants

Pain level	Pain management strategies			Df	F	Sig
	Pharmacological care, n (%)	Non-pharmacological care, n (%)	Both, n (%)			
No pain	34 (69.4)	1 (2.0)	14 (28.6)	2,111	0.591	0.556
Mild pain	41 (68.3)	8 (13.3)	11 (18.3)			
Moderate pain	1 (33.3)	0 (0.0)	2 (66.7)			
Severe pain	1 (50.0)	1 (50.0)	0 (0.0)			
Total	77 (67.5)	10 (8.8)	27 (23.7)			

Df – degree of freedom, F – F-test, Sig – level of significance

**Table 8.** Cross-tabulation of pain management strategies and level of satisfaction

Satisfaction	Pain management strategies				Df	F	Sig
	Pharmacological care, n (%)	Non-pharmacological care, n (%)	Both, n (%)	Total, n (%)			
Low	3 (50.0)	1 (16.7)	2 (33.3)	6 (5.3)	2,111	0.485	0.617
High	74 (68.5)	9 (8.3)	25 (23.2)	108 (94.7)			

Df – degree of freedom, F – F-test, Sig – level of significance

the participants were satisfied with the care provided by the nurses for pain and the treatment of the pain. There was no statistically significant relationship between the level of pain experienced by the participants and the pain management strategies adopted ( $F(2,111) = 0.591, p = 0.556$ ). Also, there was no statistically significant relationship between the level of satisfaction of the participants and the pain management strategies adopted ( $F(2,111) = 0.485, p = 0.617$ ) (Tables 7 and 8).

## DISCUSSION

There were more female participants than males. This is similar to a recent study conducted by Abdo *et al.* [38] among adolescent and paediatric patients, which recorded more female participants, and likewise the findings of Elander *et al.* [39]. The modal age range was 18-20 years. This represents the most active period of life, i.e. adolescence and youth. The clinical characteristic results showed that a larger proportion of the participants had an HbSS blood group while a few had SC. This result agrees with the previous findings that there are more people with HbSS genotype compared to HbSC [3, 38, 40]. This gender distribution revealed that an equal proportion of participants by gender had HbSS; however, more females than males had HbSC.

The study assessed the pain experience of the participants at different time periods prior the study. The findings showed that the majority rated their pain experience to be zero within the last 6 months prior to the study. An above average proportion of participants had tingling and burning pain. This is characteristic of neuropathic pain. Previous scholars

documented the possibility neuropathic pain in patients with SCD [41-43]. This level is higher than in previous studies among adult patients with SCD [42, 44]. Other sensory pain experienced by participants was less than average.

Evaluation of the level of pain experienced by the participants showed that the majority experienced mild pain, while a few participants had severe pain. This result was not in agreement with the report of Abdo *et al.*, in which most participants experienced severe to moderate pain, which could be attributed to the lack of self-care knowledge that could have helped in alleviating pain [38]. The reason for the low proportion of participants in this study with moderate/sever pain compared to the study by Abdo *et al.* study might be that while their study was conducted among SCD patients in a secondary/tertiary level hospital, ours was conducted among patients attending a primary level of health care [38]. Usually, primary level health care involves uncomplicated simple cases, while complicated ones are referred to secondary/tertiary level health care facilities.

The study investigated the pain management strategies used in alleviating the pain of the participants. It was found that a comprehensive examination was carried out on the patients before administration of any management method. Furthermore, most participants' pain was addressed via a pharmacological approach, while few adopted both pharmacological and non-pharmacological approaches. Despite the documented advantages of the use of non-pharmacological strategies in the management of pain [17, 45], only few participants said it was adopted in their management. This study finding was similar to the findings of Abdo *et al.*, where pain was mainly man-

aged via pharmacological approach [38]. Suggested guidelines for management of SCD pain include the use of opioid and non-opioid medications in addition to non-pharmacological approaches [46-48]. It is therefore important to assess whether it is the lack of knowledge about non-pharmacological methods of pain management on the part of the health professional that results in the low use of the approach [49].

There was higher utilization of non-opioid medications than opioids in this study. This might be connected with the addictive nature of opioids, thereby discouraging their use in the management of SCD [27, 28]. The use of opioids was lower in this study when compared with the use as reported in earlier studies [38, 50]. This further confirms the poor management of pain in low- and middle-income countries like Nigeria [51]. Opioids are generally recommended in the acute management of SCD [7] but seldom used in Nigeria, which is evident from the findings of this study.

There was no significant relationship between the pain management strategies and the level of pain experienced by SCD patients in this study. Most participants were satisfied with pain management strategies delivered to them by the healthcare providers. This was further confirmed because the majority were satisfied with the level of information received about their pain and treatment [52]. The finding of the study revealed that participants reported that the doctors and nurses spent quality time with the patients.

Sickle cell disease patients need rapid assessment and pain management within 30 minutes of admission to the hospital, as well as reassessment following analgesic administration every 15 minutes until total pain relief. The impact of a nursing care service on the management of patients in a SCD is very important and necessary, to follow-up the patient and give an adequate explanation of proper usage of medications, analgesic of pain, hydroxyurea dose, folic acid, and regular immunization injections. These practices are associated with improved results and therefore lead to a decrease in the frequency of episodes of SCD and increased health care outcomes [47].

## LIMITATIONS

The main limitation to this study is that it focuses on satisfaction with pharmacological and non-pharmacological approaches to manage SCD patients' experience and perception of pain, whereas there are other personal issues like nutrition, quality of life, etc. that can influence individuals' perception of pain.

## CONCLUSIONS

The findings of the study showed a high level of satisfaction among the participants with the administered pain management strategies. There is gener-

ally low utilization of non-pharmacological strategies in the management of pain among the participants. Therefore, adoption of more non-pharmacological strategies to combat pain during crises can be a great advantage to patients with SCD.

## Disclosure

The authors declare no conflict of interest.

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