


Patient Satisfaction With a Nurse-Led Pain Management Program: A Quasi-Experimental Study in Ethiopia

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Abstract

Introduction: Patient satisfaction is one of the important indicators of quality care.

Objective: To examine patient ratings of pain management satisfaction before and after introducing a nurse-led management program.

Methods: A quasi-experimental design with three cross-sectional surveys between October 1, 2016 and June 15, 2017. A total of 845 patients admitted to the four inpatient departments (medicine, surgery, maternity, and gynecology) of Jimma University Medical Centre were invited to participate in the study. A questionnaire adapted from the American Pain Society Patient Outcome Questionnaire, Pain Treatment Satisfaction Scale, and related literature was used for the survey. Data were analyzed using the chi-square test (categorical variables), t-tests for continuous variables, and robust regression to determine the effect of nurse-led management program on patient satisfaction. For all tests, *p*-values <.05 were considered statistically significant.

Results: Of the 845 patients invited, 782 (92.5%) participated in the surveys—Survey 1: *N* = 256; Survey 2: *N* = 259; Survey 3: *N* = 267. The proportion of patients who perceived that staff responded within 30 min increased from 67.8% in Survey 1 to 71.1% in Survey 2 and 74.2% in Survey 3. On a scale of 1 to 5 (1 = strongly dissatisfied and 5 = strongly satisfied), the overall mean patient satisfaction with pain management was 3.61 (SD 0.80) in Survey 1, 3.81 (SD 0.86) in Survey 2, and 4.10 (SD 0.64) in Survey 3. Moreover, the patients scored significantly higher on all satisfaction items in Survey 2 (B ranged between 0.12 and 0.41) and Survey 3 (B ranged between 0.24 and 0.74) compared to Survey 1.

Conclusion: The patients' ratings of their satisfaction and staff nurse responsiveness following the nurse-led pain management program have increased compared to the levels before the intervention. However, further studies, including those with a control group, are warranted to confirm the results.

Keywords

nurse-led pain management, patient satisfaction, staff responsiveness

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Introduction

The global burden of pain is rising (Enright & Goucke, 2016). According to the International Association for the Study of Pain, globally, one in five adults experiences pain, one in ten adults is diagnosed with chronic pain every year (Enright & Goucke, 2016; Goldberg & McGee, 2011), and about two-thirds of hospitalized patients suffer from uncontrolled pain (Farooq et al., 2016). This problem affects more low- and middle-income countries (LMICs) (King & Fraser, 2013), and thus the burden of unrelieved pain is

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disproportionally distributed across the world (Goldberg & McGee, 2011).

Pain management varies depending on the context. For example, while rich countries are more concerned with establishing a balance between an effective treatment of pain and fighting opiate addiction, the LMICs are worried about inadequacies in pain management (Morris & Roques, 2018; Ribeiro et al., 2012; Wang et al., 2016). Importantly, inadequately treated pain not only causes unnecessary patient suffering and reduces patient satisfaction rates (Malloggi et al., 2020; McFarland et al., 2016; Mitchell et al., 2014; Shin & Park, 2018) but also increases hospital stays, impairs physical function, delays recovery, and thus ultimately leads to poor quality of life (Alaloul et al., 2015; Simon, 2012).

Review of Literature

Globally, there has been a greater interest in understanding and measuring patient satisfaction after improving the health care environment since 2001 (Siegrist, 2013). However, in Ethiopia pain management has been given limited attention despite the fact that a considerable number of patients suffer from pain. For example, a study by Admassu et al. showed that 78% of post-operative patients experienced moderate to severe pain (Admassu et al., 2016), and 91.4% of post-operative patients reported insufficient pain care when treated at a university hospital in Ethiopia (Woldehaimanot et al., 2014).

There are several constraints for pain management practices, particularly in Ethiopia. These include factors predicting and delaying the provision of optimal pain management, such as the limited number of skilled nursing staff per patient (Weldetsadik et al., 2019), poor nurse–patient communication, and inadequate medication education (Shin & Park, 2018; Shindul-Rothschild et al., 2017). The other barrier may also be the way the nurses are organized in Ethiopia. For example, nurses were stationed far from patients, and patients had difficulty finding a nurse on duty with whom they could discuss their pain. Nurses' responses to patients' needs and the amount of time nurses spend with patients are among the numerous factors affecting patients' satisfaction (Shin & Park, 2018), implying that better care delivery organization and a meaningful engagement of nurses with patient care lead to proper pain management.

Previous studies (Dräger et al., 2017; Haller et al., 2011; Ribeiro et al., 2012; Rice et al., 2019; Shindul-Rothschild et al., 2017; Stamer et al., 2019) do not address how to meaningfully engage nurses in their interactions with patients while delivering pain management, regardless of the patients' illness or admission unit, particularly in the Ethiopian context. Hence, the researchers developed a context-specific program to ensure nurse–patient interactions for pain management (the detailed intervention components are explained in the method section). Findings from a previous study showed that patient experienced reduction in mean pain intensity and interference with physical function when the

nurses had gained new knowledge and attitudes regarding pain and pain management system re-organized (Germossa et al., 2019). Moreover, several hospital-based studies indicate the magnitude of pain reported among post-operative patients in Ethiopia (Argaw et al., 2019; Belay Bizuneh et al., 2020; Eshete et al., 2019). The researchers have not identified studies investigating patient satisfaction with pain management regardless of their admission unit. Therefore, this study aimed to evaluate nurse-led pain management programs in terms of nurse responsiveness and patient satisfaction with pain treatment information, pain care provided by nurses, and medication regimen in an Ethiopian university medical center.

Methods

Design

The researchers used a quasi-experimental design with three cross-sectional surveys to evaluate patient satisfaction and patient perception of staff responsiveness before and after the nurse-led pain management program. The study was conducted in four inpatient units (medical, surgical, gynecology, and maternity) of Jimma University Medical Center (JUMC). JUMC is a 750-bed teaching hospital and tertiary referral medical center in Oromia, in southwest Ethiopia, which provides services to 15 million people. At this medical center, all nurses (all with a degree or diploma-level training) have the same bedside responsibilities regardless of their educational background. This paper is part of a research project designed to evaluate a nurse-led pain management program in a resource-limited hospital setting.

Intervention (Nurse-Led Pain Management Program)

The nurse-led pain management program (“the program”) consisted of two components: (1) development and provision of an in-service education program and (2) organizing a caring around the clock model (from now on, referred to as “rounding”). The researchers' assumed patients would experience better pain management if nurses had adequate knowledge and a positive attitude toward pain management, and if the care was organized, nurses would be able to approach patients systematically and proactively.

As a framework, the researchers' used Swanson's theory of caring where she presents five caring processes—Maintaining belief, Knowing, Being with, Doing for, and Enabling—which promote a therapeutic relationship (Shin & Park, 2018; Swanson, 1993).

Each of Swanson's caring processes has sub-dimensions that form the basis for nursing intervention and apply to the nursing process, whereby patients can be assisted in attaining, maintaining, or regaining an optimal level of well-being (Shin & Park, 2018). Building on the principle of maintaining belief, the caring process combines

compassion (knowing and being with) with competence (doing for and enabling) to achieve a patient's intended outcomes (Swanson, 1991, 1993). When applied to nursing practice, these five caring processes guide nurses to deliver care and promote patient well-being (Kalfoss & Owe, 2015; Lillykuty & Samson, 2018). In addition, Hutchings' caring around the clock model was considered as an appropriate framework for re-organizing how nurses approached the patients, with the aim of enabling a relationship for pain care (Harris et al., 2017; Hutchings, 2012; Hutchinson et al., 2017; Rondinelli et al., 2012).

In the nurse-led pain management program, the principles of enabling and maintaining belief were used to develop step 1 of the nurse support protocol, which the researchers used to guide nurses in the rounding process (see Supplemental Material 1). The protocol describes the nurse's self-introduction, role in pain management, rounding schedule, personnel involved in rounding, information about the purpose of pain management, and script communication. Step 2 of the nurse support protocol for rounding (see Supplemental Material 1) was designed based on the principles of knowing, being with, and doing for, which are about presence, pain assessment, and rating pain on the Numerical Rating Scale and administering pain medications and other nursing care as needed. Rounding was used to structure a nursing pain care system at a fixed time interval to assess and manage patients' pain care needs. Swanson discussed how care could be promoted and maintained in clinical settings, and proposed a variety of circumstances where the interaction would happen between nurses and patients, where nurses demonstrate care as essential to patient well-being as caring for them through clinical activities such as administering medications and monitoring patients by spending time with them (Shin & Park, 2018). Whereas Hutchings (Hutchings, 2012) emphasized meaningful interaction between patients and the nurses who provide care for them several times a day, so that they can ask for anything they need and do not feel helpless, or making nurse leaders visible to get daily feedback from the patient or provide real-time positive feedback to the staff (Hutchings, 2012).

Implementation of the Program

In component I of the intervention, all staff and head nurses in the units, nurse supervisors, and the nursing service director participated in an in-service education program for a total of 24 h. The researchers arranged the educational program in groups of training sessions with 30–40 nurses per session. The training was delivered in three ways. First, two consecutive days of intensive in-person sessions lasted for a total of 16 h. This was followed by facilitated self-learning (distributing reading materials in hard copy, soft copies on compact discs, and memory sticks that contain the training manual, presentation materials, selected research articles, and reference manuals). Lastly, the researchers gave 8 h of follow-up

refresher training after one month. The content of the education program was developed based on the Ethiopian Ministry of Health pain management guidelines (MOH, 2007), WHO guidelines (Arora & Baidya, 2013; WHO, 2007), and the four domains of pain management competency (multidimensional nature of pain, pain assessment and measurement, management of pain, and clinical condition) (Fishman et al., 2013). In addition, the principal investigator was accessible to nurses by phone to clarify pain management issues as required during the implementation of the program.

In component II of the intervention, a nurse support protocol for rounding (see Supplemental Material 1) was implemented, guided by Swanson's five principles of caring. Before implementing the protocol, an engagement orientation that lasted one day (8 h) for staff and one half-day (4 h) for nurse leaders and supervisors was organized. The orientation included information about the rounding process and what staff nurses, head nurses, senior nurses/shift leaders, and the nursing director (Matron) should observe, assess, and do during and after each round.

Staff nurses were expected to visit patients every 2 h during the daytime and every 4 h at night time to show their presence to the patient. During each visit, the nurses ensure that patients are comfortable by employing the principle of knowing, doing for, and enabling; asking the patient to rate his/her pain; administering medication as ordered; documenting observation findings in the rounding log, and informing the patient when the nurse will return. If medicine needs to be changed, the nurse discusses this with the treating physician. Nurses were also instructed not to deviate from the rounding schedule unless the patient was sleeping or there was a risk of skin breakdown, which necessitated repositioning, or it was time for medicine delivery.

The head nurse and the senior nurse/shift leader did rounds daily, whereas the nursing director did round every week. At each visit, the head nurse, the senior nurse/shift leader, and the nursing director check if rounding is being done as scheduled, ask the patient if he/she is in pain, and give positive feedback to staff nurses. The head nurse also leads weekly staff nurse discussions, and the nurse director leads monthly head nurse and supervisor discussions (Supplemental Material 1).

Research Question

Does nurse-led pain management program improve nurses' responsiveness and their satisfaction with pain treatment information, pain care provided by nurses and the medication regimen?

Sample

Patients who were 18 years or older and had stayed in the ward for at least 24 h were asked to participate. The study

Table 1. The Content of the Patient Survey Questionnaire.

Variable	Response alternatives
Part I: Sample characteristics	
I.1 Age in years	
I.2 Gender	1. Male 2. Female
I.3 Residence	1. Urban 2. Rural
I.4 Educational level	1. Had no formal education 2. Had formal education
I.5 Occupation	1. Farmer 2. Government employee 3. Self-employed 4. Unemployed
I.6 Admission unit	1. Surgical 2. Medical 3. Gynaecology 4. Maternity
Part II: Patient perceptions of staff responsiveness	
2.1. Earlier in your care, did a nurse make it clear to you that we consider treatment of pain to be very important and that you should always tell your nurses when you have pain?	1. Yes 2. No
2.2. When you asked for pain medication, what was the longest time you had to wait to get it?	1. 30 minutes or less 2. 31-60 minutes 3. More than one hour 4. Asked but never received it 5. Never asked for pain medication
Part III: Satisfaction with pain care	
I.1. The information that you received about your pain and treatment	The patient was asked to rate his or her level of satisfaction with each question about the pain care he or she received by answering as follows: 5. Strongly satisfied 4. Somewhat satisfied 3. Neither satisfied nor dissatisfied 2. Somewhat dissatisfied 1. Strongly dissatisfied
I.2. The care provided by the nurses for your pain and its treatment	
I.3. The form of medication (pill, capsule, injection...)	
I.4. How often you take your medication	
I.5. The amount of pain medication you take	
I.6. The level or amount of pain relief provided by your pain medication	
I.7. The duration of pain relief provided by your pain medication	

excluded patients who were critically ill and unable to respond to questionnaires.

Data Collection

The researchers collected the data using an interviewer-administered questionnaire from three different patient samples on three separate occasions between October 1, 2016 and June 15, 2017. Survey number 1 (S1) collected baseline measurements, Survey number 2 (S2) was carried out 6 weeks after the in-service education program for nurses was completed, and Survey number 3 (S3) after 16 weeks of practicing rounding. Data was collected by six experienced BSc nurses who received three-day intensive training covering topics such as: how to build a shared

understanding of the contents of the data collecting tool, how to fill out each question, interviewing techniques, and protocols to be followed during the survey to ensure the quality of data collection. The ward head nurse or shift team leader made initial contact with each eligible patient to request participation in the study.

The Instrument

After an extensive review of the available literature, the researchers adopted relevant items from various questionnaires (Comley & DeMeyer, 2001; Evans et al., 2004; Gordon et al., 2010), as shown in Table 1. The final questionnaire consists of 15 items divided into three sections. The first section covers data related to the patient characteristics, such

as age, gender, address, educational level, occupation, and unit of admission. The second and third sections were used to assess patient perceptions of staff nurse responsiveness and the patient's satisfaction with pain management. This section also contains questions adapted from the American Pain Society Patient Outcome Questionnaire-Revised (APS-POQ-R) (Gordon et al., 2010) and related literature (Comley & DeMeyer, 2001), for the assessment of patients' perceptions and considerations given to pain management and nurses' responsiveness. The last part of the questionnaire contains seven items that were adapted from the Pain Treatment Satisfaction Scale (PTSS) (Evans et al., 2004) to measure satisfaction with pain treatment.

Health care professionals, English language experts, and non-healthcare personnel (faculty in Jimma University) initially translated the questionnaire into the two commonly spoken local languages (Afaan Oromo and Amharic), and it was translated back to English by other language experts. Then the translators were brought together to discuss the translated items and to reach a consensus. Finally, to check how the patients understood each item, the researchers conducted a cognitive interview of five people with diverse backgrounds, such as young, middle age, and elderly adults and nurses, based on the principle of cognitive interviewing (Beatty & Willis, 2007) and the questionnaire was pre-tested on 35 patients from various units.

Data Analysis

SPSS version 20.1 (IBM SPSS Statistics for Windows, Armonk, NY) and Stata ver. 17 were used to analyze the data. Continuous data (age) were described using mean and standard deviation (SD). Categorical data were presented as counts and percentages. Crude comparisons of baseline characteristics between S1, S2, and S3 were conducted using chi-square tests for categorical variables and *t*-tests for continuous variables.

As the outcome was not normally distributed, and to adjust for unit of admission, the researchers fitted robust regression adjusted for the unit of admission to determine the effect of the program on patient satisfaction. Possible differences among surveys are presented as regression coefficients (*B*) with 95% confidence intervals (CI). All the analyses were considered exploratory, so no correction for multiple testing was done. *p*-values < .05 were considered statistically significant.

Result

Sample Characteristics

Out of the 845 eligible patients who were invited to participate, 785 (92.5%) gave their consent and responded to the three surveys distributed at S1: *N* = 282; S2: *N* = 283; and S3: *N* = 280. The participant sample for S1 (mean age = 38.1 (*SD* 16.2) years) had comparable mean age with those

for S2 (mean age = 37.4 (*SD* 15.2) years) and S3 (mean age = 37.9 (*SD* 15.4) years). Except for the unit of admission, there were no differences in the distribution of sample characteristics by survey period (Table 2).

Patient Perception of Staff Responsiveness

As shown in Table 1, Part II, two items were used to assess the patients' perception of timely staff responsiveness with pain care. First, the proportion of patients who answered "yes" to the question asking, "Earlier in your care, did a nurse make it clear to you that we consider treatment of pain to be very important and that you should always tell your nurses when you have pain?" was significantly increased from 68.8% at S1 to 82.7% at S2 and then to 89.5% at S3. As shown in Table 3, item two regarding the proportion of patients who requested and received pain medication within 30 min increased from 77.9% in S1 to 78.1% in S2 and 80.5% in S3, but this did not reach statistical significance.

Patient Satisfaction With Pain Care

On a 1–5-point scale, the crude means overall patient sample satisfaction scores increased by 0.2 at S2 and 0.5 at S3 compared to S1, and the mean sample satisfaction level with pain care varies by item (Table 4).

As the distribution of patients at the various hospital units was different between S1, S2, and S3, all analyses were adjusted for the type of admission unit. The level of patient satisfaction was statistically significantly higher for all the assessed items in S3 compared to S1, and for a majority of items in S2 compared to S1. For item 1, the scores were 0.74 points higher at S3 than S1. For item 2, the scores were 0.72 points higher at S3 than S1, more than threefold increase compared to the difference between S1 and S2 (*B* = 0.19). For item 3, there was no statistically significant difference in patients' satisfaction between S2 and S1; however, at S3, the patients were on average 0.24 points more satisfied than at S1. For item 4, the scores were significantly higher at S2 and S3 than at S1, with two times increase between S3 and S1 compared to S2 and S1. A similar trend was observed for items 5 and 6, and 7, with a significant increase at S2 and S3 compared to S1. The increase from S1 to S3 was about twice as large as the increase from S1 to S2 for all the above items. Regarding the overall patient satisfaction, the scores were 0.27 points higher at S2 and 0.49 points higher at S3 than S1 of the included wards, the highest point increase was achieved in the surgical units and the lowest in the maternity ward for all the analyzed items (Table 5).

Discussion

The findings of this study show that the scores for perceptions of staff responsiveness and patient satisfaction with

Table 2. Sample Characteristics.

Sample characteristics	S1 (%)	S2 (%)	S3 (%)	p-value		
				S1 vs. S2	S1 vs. S3	S2 vs. S3
Gender	(N = 256)	(N = 259)	(N = 267)	.27	.75	.42
Male	125(48.8)	139(53.7)	134(50.2)			
Female	131(51.2)	120(46.3)	133(49.1)			
Residence	(N = 247)	(N = 237)	(N = 263)	.85	.52	.41
Urban	169(68.4)	164(69.2)	173(65.8)			
Rural	78(31.6)	73(30.8)	90(34.2)			
Educational level	(N = 253)	(N = 253)	(N = 266)	.90	.28	.24
Had no formal education	151(59.7)	150(59.3)	171(64.3)			
Had formal education	102(40.3)	103(40.7)	95(35.7)			
Occupation	(N = 253)	(N = 253)	(N = 266)	.17	.35	.08
Farmer	151(59.9)	133(51.8)	148(55.4)			
Government employee	28(11.1)	44(17.1)	29(10.9)			
Self-employed	36(14.3)	41(16.0)	35(13.1)			
Unemployed	37(14.7)	39(15.2)	55(20.6)			
Unit of admission	(N = 256)	(N = 259)	(N = 267)	.01	<.01	.83
Surgical	133(52.0)	104(40.2)	98(36.7)			
Medical	86(33.6)	89(34.4)	101(37.8)			
Gynecology	20(7.8)	34(13.1)	34(12.7)			
Maternity	17(6.6)	32(12.4)	34(12.7)			

Table 3. The Longest Waiting Time for Pain Medication.

Staff response	S1 (n = 217) Percentage (95% CI)	S2 (n = 237) Percentage (95% CI)	S3 (n = 246) Percentage (95% CI)	p-value
0 minutes or less	77.9 (72.4–84.4)	78.1 (72.8–83.4)	80.5 (75.5–85.5)	.21
31–60 minutes	12.0 (7.7–16.3)	11.8 (7.7–15.9)	15.0 (10.5–19.5)	
More than one hour	12 (4.8–6.2)	5.9 (2.9–8.9)	3.3 (1.1–5.5)	
Never received	4.6 (1.2–7.4)	4.2 (1.6–6.8)	1.2 (0.2–2.6)	

Table 4. Mean Patient Satisfaction With Pain Care.

Satisfaction I.	Survey 1 Mean(SD)	Survey 2 Mean(SD)	Survey 3 Mean(SD)
The information that you received about your pain and treatment	3.5(1.2)	3.9(1.0)	4.3(0.7)
The care provided by the nurses for your pain and its treatment	3.8(1.1)	4.0(1.0)	4.5(0.6)
The form of medication (pill, capsule, injection)	3.7(1.1)	3.8(1.0)	3.9(0.9)
How often you take your medication	3.5(1.1)	3.7 (1.1)	4.0(0.9)
The amount of pain medication you take	3.5(1.1)	3.7(1.0)	4.0(1.0)
The level or amount of pain relief provided by your pain medication	3.6(1.0)	3.8(1.1)	4.0(0.9)
The duration of pain relief provided by your pain medication	3.6(1.1)	3.8(1.1)	4.0(0.9)
Overall patient satisfaction	3.6(0.8)	3.8(0.9)	4.1(0.6)

pain management significantly increased across the surveys following the nurse-led pain management program. The level of patient satisfaction was statistically significantly higher for all the assessed items in S3 compared to S1 (baseline), and for a majority of items in S2 compared to S1. However, the size of the increase from the baseline to S2 and S3 differs by all satisfaction items and units of admission. Compared to the baseline value, a minor increase was

observed on the item assessing satisfaction with type of pain medicine (pill, capsule, injection), and the highest increase was observed on the item assessing the information a patient received regarding his/her pain and treatment at both S2 and S3.

Given the characteristics of the patients assessed at S1, S2, and S3 are similar except for the admission unit, which adjusted for in the analyses, the result revealed significant changes in

Table 5. Robust Regression Analysis Results Showing the Effect of the Nurse-Based Inpatient Pain Care Program.

Satisfaction items	Variables	B	95% CI	p-value	
1. The information that you received about your pain and treatment	Survey number	S1	ref		
		S2	0.41	0.23–0.58	<0.01
		S3	0.74	0.57–0.91	<0.01
	Admission unit	Surgical	ref		
		Medical	0.12	–0.01–0.31	0.06
		Gynecology	–0.17	–0.41–0.06	0.15
	Maternity	–0.22	–0.47–0.02	0.08	
2. The care provided by the nurses for your pain and its treatment	Survey number	S1	ref		
		S2	0.19	0.04–0.34	0.01
		S3	0.72	0.57–0.87	<0.01
	Admission unit	Surgical	ref		
		Medical	0.04	–0.09–0.18	0.55
		Gynecology	–0.37	–0.57–0.17	<0.01
	Maternity	–0.38	–0.58–0.18	<0.01	
3. The form of medication (pill, capsule, injection)	Survey number	S1	ref		
		S2	0.12	–0.006–0.28	0.22
		S3	0.24	0.06–0.41	<0.01
	Admission unit	Surgical	ref		
		Medical	0.10	–0.06–0.25	0.24
		Gynecology	–0.05	–0.28–0.19	0.69
	Maternity	–0.10	–0.34–0.14	0.41	
4. How often you take your medication	Survey number	S1	ref		
		S2	0.22	0.04–0.40	0.02
		S3	0.43	0.25–0.61	<0.01
	Admission unit	Surgical	ref		
		Medical	0.09	0–0.07–0.26	0.27
		Gynecology	0.07	–0.18–0.32	0.57
	Maternity	–0.12	–0.42–0.09	0.19	
5. The amount of pain medication you take	Survey number	S1	ref		
		S2	0.23	0.05–0.413	0.01
		S3	0.45	0.27–0.63	<0.01
	Admission unit	Surgical	ref		
		Medical	0.06	–0.11–0.22	0.51
		Gynecology	0.07	–0.16–0.33	0.49
	Maternity	–0.19	–0.44–0.06	0.14	
6. The level or amount of pain relief provided by your pain medication	Survey number	S1	ref		
		S2	0.25	0.08–0.43	<0.01
		S3	0.43	0.23–0.61	<0.01
	Admission unit	Surgical	ref		
		Medical	0.15	–0.01–0.31	0.07
		Gynecology	0.02	–0.22–0.26	0.89
	Maternity	–0.12	–0.37–0.12	0.33	
7. The duration of pain relief provided by our pain medication	Survey number	S1	ref		
		S2	0.20	0.06–0.41	<0.01
		S3	0.43	0.25–0.60	<0.01
	Admission unit	Surgical	ref		
		Medical	0.13	–0.03–0.29	0.11
		Gynecology	–0.04	–0.28–0.19	0.72
	Maternity	–0.09	–0.34–0.18	0.44	

(continued)

Table 5. Continued.

Satisfaction items	Variables	B	95% CI	p-value	
Overall patient satisfaction score	Survey number	S1	ref		
		S2	0.27	0.14–0.40	<0.01
		S3	0.49	0.34–0.63	<0.01
	Admission unit	Surgical	ref		
		Medical	0.12	–0.00–0.24	0.06
		Gynecology	0.00	–0.18–0.18	0.96
	Maternity	–0.15	–0.33–0.03	0.99	

Note. Survey 1 (S1) indicates the baseline values; Survey 2 (S2) refers to values after in-service education, and Survey 3 (S3) shows values after rounding.

scores for patients' satisfaction after the introduction of the in-service educational program. This indicates that improving nurses' knowledge and attitudes allows them to provide essential pain care (pain assessment, medication administration, and use of the WHO pain ladder) and helps them discuss pain issues with patients and other healthcare professionals. This is consistent with other studies that have found that an education program improves nurses' knowledge and attitude toward pain management practices (Al Qadire & Al Khalailah, 2014; Germossa et al., 2018).

In addition to the changes associated with the introduction of the in-service educational program, further changes in the patients' satisfaction with pain management in S3 may show the significance of rounding. In the present study, the rounding program was used to reorganize nurses' work processes to better use the existing nursing system and increase the frequency of contact for appropriate inpatient pain management. According to Hutchings (2012), in addition to ensuring accountability, intentional presence, and therapeutic engagement, rounding can also help nurses assess patient needs proactively, rather than randomly, during their time on duty (Hutchings, 2012).

Despite the fact that staff nurse compliance with rounding reports varies (see Supplemental Material 2) by admission unit and intervention time, eight out of ten patients were visited promptly. However, the patients in the maternity unit were those who were visited the least frequently. Therefore, nurses' attention may be focused more on admissions, discharges, and transfers than on the rounding schedule at the hospital's maternity unit. In addition, the mother should stay in the hospital for 24 h after normal delivery and 72 h after Caesarean section. Thus, due to a high caseload and turnover, a mother may be discharged sooner than expected or transferred to a neonatal intensive care unit if the baby is in poor condition and, hence, she is visited less often.

The more frequently the nurses visit the patient, the better they can interact with them and assess their pain. The patient suffers less from pain left untreated and hence reports higher satisfaction scores with the pain care. The purpose of the visit by nurse leaders (head nurses, nurse directors, and shift leaders) was to identify missed rounding schedules and to provide a supportive environment for staff nurses. Evidence

shows that rounding can improve patient outcomes and improve patient perception of care (Hutchings, 2012).

Making a scheduled visit for each patient is consistent with Swanson's (1993) caring principles, such as being with, doing for, and enabling or informing (Swanson, 1993). When patients are informed and enabled to participate in pain treatment through scripted communication, it may positively impact how they evaluate their pain care. According to various studies, rounding improves patient satisfaction, reduces call bell usage, and prevents falls and pressure ulcers (Harris et al., 2017; Hutchings, 2012; Olrich et al., 2012; Rondinelli et al., 2012). A replication study on hourly rounding shows that intentional hourly rounding improves healthcare quality, reduces potential harm, raises fundamental standards of care, and empowers patients to ask for what they need to maintain their comfort and well-being (Langley, 2015).

The increased mean patient satisfaction score at S2 and S3 may suggest that patients received better attention and care required to treat their pain compared to those at baseline. Staff responsiveness, pain treatment consideration, and patient reassurance that the nurse will return for additional rounds, are potential reasons for an increased mean satisfaction score. Other studies have found that if patients know when they will receive assistance, they are more likely to be satisfied (Langley, 2015). Moreover, the current study's findings are supported by Patterson (2014) on a general surgical unit, claiming that patients are more satisfied when they are reassured, and nurses respond to their needs proactively (Patterson, 2014). According to a study by Blakley et al., patients may be more satisfied when nurses communicate effectively with them, manage pain appropriately, and provide treatment information that meets their needs (Blakley et al., 2011). Several other studies have found a link between staff-patient interaction and patient involvement in their care, staff responsiveness, and patient satisfaction (Bowling et al., 2012; Hewitson et al., 2014; Staniszewska et al., 2014).

Strengths and Limitations

The current study is relatively extensive and the first of its type in nursing pain management in Ethiopia. The samples are representative for the chosen patient population, and

response rates were very high. However, several factors should be considered when interpreting the results. It is difficult to attribute each specific element of intervention to the final intervention results that consist of more than one component (Hallberg & Richards, 2015). For example, the group-level scores for patients' satisfaction with pain management at S3 can be attributed to both rounding and an in-service educational program, rather than to one or the other. Study design is considered to be another limitation. This study measured the impact of rounding that followed the educational program on three different samples from different admission units, using a quasi-experimental design which does not ensure equivalence between groups. Initially, the study was planned to be conducted using a quasi-experimental design with a control site located 625 km from Jimma on the other side of southwest Ethiopia. However, unanticipated public unrest made it impossible to enroll patients from this unstable area. Following the public unrest, the government declared a state of emergency. This made it impossible to move between the intervention and control sites, and the researchers' plan to use a control group was abandoned. The study was conducted on patients with different medical conditions, but the same socio-economic backgrounds and from the same geographic areas. Due to differences in medical diagnoses, their pain experiences and pain relief expectations may differ. Hence their evaluation of pain care may vary. Thus, a further study considering such variability is important. However, despite these limitations, the observed changes in the satisfaction score of patients' assessment of their pain care and their perception of staff responsiveness indicate the usefulness of the new nurse-led pain management program, which may be applied in settings where patient-centered care is essential. However, further research with a control site is required to validate the effect of the new care model on increased nurses' time spent with patients, optimized use of the existing system, and care experiences.

Implications for Practice

Adequate pain treatment has become increasingly recognized as a human right (Brennan et al., 2019). Despite progress in pain care modalities, the most successful pharmacological and non-pharmacological therapies are not widely used. Hence, the solution to inadequate pain care does not lie so much in developing new analgesics or techniques, but in establishing a new pain care system to enhance the use of existing approaches (Colvin & Rice, 2019; Stamer et al., 2019). Nurse-led in-hospital pain management thus has a significant practical implication since it considers the nurses' competency and anticipation of patients' needs ahead of time through rounding. Patients benefit from rounding because they receive regular visits and feel cared for, and at the same time, rounding reduces the uncertainty that might emerge from feeling unattended or alone. Rounding embodied with Swanson caring principles may have increased

regular interaction between nurses and patients and thereby enhanced standards of pain management practice in facilities that previously offered substandard care. This implies that the program optimizes the use of the existing system. Furthermore, the rounding program seems to be a suitable framework for enabling the caregiving process, which is likely to have far-reaching consequences to relevant operations for JUMC and similar hospitals. The combination of an in-service educational program and rounding can also be applied in any nursing practices that need re-organization.

Conclusion

This study demonstrates that the nurse-led pain management program appears to positively impact patients' satisfaction with pain care and their perceptions of staff responsiveness. In addition, the program might improve nurses' knowledge and attitudes about pain and the delivery of the pain management process through meaningful patient–nurse interactions.

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Availability of Data Material

As per NSD (Norwegian Centre for Research Data) policy, data from this research will not be shared, to ensure data confidentiality, but can be made available from the corresponding author on reasonable request.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval and Consent to Participate

Data Protection Officer for Research, NSD—Norwegian Centre for Research Data—has notified the study (project number 48349). Before data collection, ethical approval was sought from the Jimma University Institute of Health Sciences' institutional review board. During data collection, written informed consent was obtained from each participant.

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Supplemental Material

Supplemental material for this article is available online.

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