Comparing Patient Experiences Before and After Re-Organizing Inpatient Pain Care: A Before and After Study

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Abstract

Background: Inadequate pain care is a significant problem for patients during hospitalization, particularly in Ethiopia. Evidence has shown that work process re-organization improves patient-reported outcomes. This study aimed to compare patients' experiences before and after re-organizing inpatient pain care

Method: A quasi-experimental design on a separate sample was conducted between October 1, 2016, and June 15, 2017. Participants of the study were patients admitted to the four inpatient units (medical, surgical, maternity, and gynaecology) of Jimma Medical Centre. Seven hundred eighty-two (Survey 1: $N=256$; Survey 2: $N=259$; Survey 3: $N=267$) patients out of 845 patients invited to participate (92.5%) in three consecutive surveys were included in the analysis. A patient survey questionnaire adapted from a Brief Pain Inventory, the American Pain Society Patient Outcome Questionnaire, and Pain Treatment Satisfaction Scale was used. Data were mainly analysed using ANOVA. A significant difference between samples was declared at a P -value of less than 0.05.

Results: Patients reported experiences with pain care significantly increased after re-organizing in-hospital pain care. More specifically, although there was a growing misfit between information provided and adequacy, staff responsiveness within 30 minutes, and patient satisfaction with pain management significantly increased. These increments were statistically significant with $p < 0.05$.

Conclusion: Re-organizing in-hospital pain care improves patient-reported pain care experiences by changing both nurses' technical capacity and the work process at inpatients' units

1. Introduction

Inadequate pain care is a significant problem for many hospitalized patients (1, 2). For instance, 91.4% of postoperative patients in the Ethiopian University Hospital (3) suffered from inadequate pain care. Patients receiving improper pain care may stay longer in the hospital and have impaired physical function, delayed healing, depression, escalated pain, and poor quality of life, (4–7). As a result, fast recovery from their illness may be more difficult when compared to patients who have experienced better pain care.

The existing nursing service organizations such as total patient care, primary nurse-dominated, team leader-dominated, and functional nursing models guide the kinds of patient allocation systems (8, 9). These models emphasized the nurses' accountability in the provision of patient care and made nurses more focused on nursing procedures. Specific to pain care, experts in the field of pain management designed additional models like institutionalization, clinical pathways, pain consultation, and acute pain services. Except for acute pain service that focused on postoperative pain, the others target chronic pain mainly in cancer patients. Almost all pain management models highlight the importance of pain assessment, interdisciplinary pain care, cost reductions, and coordination in the continuum of care (1, 10–12). Whether or not these recommendations benefit inpatients regardless of their admission units is

not well established. Thus we used Swanson caring theory (13) and Hutchings caring around the clock model (14) as a framework to re-organize the pain care system at inpatient units.

Swanson's theory of caring consists of five categories of therapeutic caring relationships: "Maintaining belief," a foundation for practical healthcare, refers to "conviction with other's capacity to get through the transition." "Knowing" refers to "striving to understand an event as it has meaning in the life of the other." "Being with" refers to "being emotionally present to the other in the way of sharing meaning, feeling, and living experience of the one cared for. "Doing for" refers to "doing for the other what he/she would do for the self if it were possible." "Enabling" refers to "facilitating the other's passage through life transitions and unfamiliar events" (13). The three categories of Swanson's therapeutic caring relationship (being with, doing for, and enabling) were tailored to the rounding schemes to re-organize pain care at inpatient units. Caring around the clock model comprises three types of rounding (senior-leader rounding, leadership rounding, and hourly rounding. It is an approach to intentional hourly rounding in which staff nurses and nurses leaders make meaningful and goal-directed interactions with the patient (14). Though rounding is not a new concept, it re-emerged as a clinical and administrative tool initially in the United State following the work of Meade, then was later transferred to United Kingdom NHS practices (14). Because it is performed every one or two hours, it is known as hourly rounding. Although the process and purpose of rounding vary by its types (collaborative rounding, scripted rounding, leader rounding, targeted rounding, multi-disciplinary rounds) (15), the ultimate goal is to deliver proactive patient-centered care regularly rather than at random or at the will of nurses (16–18)

Regular patient visits by nurses at their beds are related to intentional presence. Pain assessment and giving appropriate pain medication during each visit are pain care activities related to doing for and providing adequate pain information linked to enabling. Additionally, rounding was used as a strategy to apply knowledge and attitude and re-organize nurses' work processes for timely pain management. Available evidence also shows an apparent link between caring and timeliness (19).

Evidence has also pointed out the importance of improving nurses' knowledge and attitude (20, 21) and work process re-organization to produce a better outcome (22). However, to our knowledge, no investigation has been conducted to assess the impact of a nurse-based in-hospital pain care program on patients' experiences with pain care. Thus, this study aimed to compare the patients' experiences with pain care before and after a nurse-based in-hospital pain care program that consists of an in-service educational program for nurses and rounding was introduced.

2. Methods

Study Design

A non-controlled quasi-experimental study was designed to compare patient-reported pain care experiences before and after a nurse-based in-hospital pain care program was introduced. The study was reviewed and approved by the Norwegian Centre for Research Data (project number 48349) and

institutional review board of the former College of Health Sciences (now the Jimma University Institute of Health)

2.1. Setting

The study was conducted in the four inpatient units (medical, surgical, gynaecology, and maternity) of Jimma Medical Centre (JMC). JMC is a large university teaching hospital in Oromia, southwest of Ethiopia, which provides services for 15 million people. All the selected units have the same nurse assignment system but have different bed capacities and patient categories. The average nurse-patient ratio in each unit per shift ranges from 1:8 to 1:10. The study was conducted between October 1, 2016, and June 15, 2017.

2.2. Data collection

The data were collected using an interviewer-administered questionnaire at three different times from three different patient samples. First, at Survey 1 (baseline), then for the second time at Survey 2 (six weeks after the educational program) and finally for the third time at Survey 3 (immediately after 16 weeks of rounding). We collected information on types of admission units, socio-demographic characteristics (age, sex, dwelling area), socioeconomic variables (educational level, occupation). Initial contact with the patient was made through the ward head nurse or shift team-leader.

2.3. Participants

Patients who stayed in the selected hospital units for at least 24 hrs before the day of data collection, age ≥ 18 years, not critically ill or had no known hearing impairment, and who had not been interviewed for the same survey before were involved in the survey. A total of 782 patients (Survey 1: $N = 256$; Survey 2: $N = 259$; Survey 3: $N = 267$) who met inclusion criteria participated in the study.

2.4. Intervention (Nurse-based in-hospital pain care program)

The intervention was based on the assumption that patients had better pain care experiences when the nurse responded to their needs proactively rather than randomly, given that nurses have adequate knowledge and attitude and an organized care delivery process. It consists of an in-service education program and rounding that were introduced into the existing system in two phases.

In Phase I, all staff and head nurses in the selected units, nurse supervisors, and nursing service director participated for a total of 24 hours in an in-service educational program. The educational program was arranged 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 that lasted for 16 hours. They were followed by facilitated self-learning (distributing reading materials in hard copy, soft copies on compact discs and memory sticks which contained the training manual, presentation materials, selected research articles, and reference manuals). Lastly, eight hours of follow-up refresher training was

conducted after one month. The content of the education program was developed based on the Federal Ministry of Health pain management guideline (4), WHO guidelines (23, 24), and relevant literature (25). It was tailored to the four domains of pain management competency (multidimensional nature of pain, pain assessment and measurement, management of pain, and clinical condition) (25). Also, the principal investigator was accessible by phone to clarify issues related to pain management when necessary during the entire study time.

Though the Ethiopian nursing system is not clear, it seems to be shift-based total patient care or primary nursing. Theoretically, they provide holistic care during their time on duty. But the existing practice shows that nurses responded to patient pain complaints either at random or reactively. Thus, a protocol for rounding was introduced in the second phase of the intervention after an engagement orientation that lasted one day (8 hrs) for staff, and one half-day (4 hrs) for nurse leaders and supervisors, using a short presentation and practical exercises. The content of the orientation was: the rounding process, expectation during rounding, scripted communication (7), use of rounding logs, documentation, and consultations. The rounding scheme consists of staff nurse, head nurse, senior nurse/shift leader, and nursing director (Matron) rounds on a patient at regular intervals. Staff nurses perform rounds on patients every 2 hours during the daytime and every 4 hours at night-time. During each visit, the nurse checks whether the patient is comfortable or not, asks the patient to rate her/his pain, administers medication as ordered, documents observation findings on the rounding log, and informs the patient when the nurse will return for the next visit. If a medication change is required, the nurse consults the treating physician. Nurses were also told not to interrupt the rounding schedule unless the patient is sleeping or when there is a risk for skin breakdown, which requires repositioning, or it is time for medication administration. Besides, nurses were taught to participate in a multi-disciplinary team round where they can share patient pain information to the rest of the health care team.

The head nurse and the senior nurse/shift leader did rounds daily at an alternative time with the head nurse, whereas the nursing director did round every week. At the time of each visit, the head nurse, the senior nurse/shift leader, and the nursing director check if rounding was done as per schedule, asks the patient if he/she is in pain, and encourages, engages, and gives positive feedback for staff nurses. Also, the head nurse leads weekly staff nurse discussions, and the nurse director leads monthly head nurses' and supervisors' discussions. See **additional file 1** for the detailed description of the protocol for staff nurse rounding and leadership support for rounding.

2.5. Measurement

A patient survey questionnaire adapted from a Brief Pain Inventory (BPI) (26), the American Pain Society Patient Outcome Questionnaire-Revised (APS-POQ-R) (27), and Pain Treatment Satisfaction Scale (PTSS) (28) was used to measure patients' experiences with pain care. Patient experiences refer to patient perception of all interactions in an organization across the continuum of care (29, 30). In the hospital context, it is an umbrella term for patient satisfaction (how the patient felt the service) and participation (commitment to the care interactions and effort the patient exerts during care delivery) (29). In this study, as indicated in **Table 1**, patients' experience with pain care was measured in terms of patient perceptions

of involvement in their pain care, information adequacy, staff responsiveness, and patient satisfaction with pain care. The test-retest reliability coefficient ranges from 0.68 to 0.80 for APS-POQ-R (27), 0.67 to 0.81 for PTSS (28) and 0.80-0.92 for BPI (26).

Health care professionals, English language experts, and non-healthcare professionals initially translated the questionnaire to the two commonly spoken local languages (Afaan Oromo and Amharic), and it was re-translated back to English by other language experts. Then all the translators were brought together to discuss the translated items and reach a consensus. To check on how the patients understood each item, we conducted a cognitive interview of five people with different backgrounds (31). Finally, the questionnaire was pre-tested on 35 patients from different units to sequence the items and detect potential wording problems (32).

2.6. Data analysis

Data were analysed using SPSS version 20.1 (IBM SPSS Statistics for Windows, Armonk, NY). Descriptive statistics (mean, standard deviations, and frequency) were computed for patient characteristics (age, income), patient perceptions of involvement, information adequacy, patient perceptions of staff responsiveness (pain medication waiting time), and patient satisfaction with pain care. The mean differences between surveys on patient-reported pain care experiences were analysed using independent ANOVA with post-hoc Bonferroni test; the proportion of patient characteristics between survey was compared using WINPEPI with the comparison of two independent samples. A *P* value less than 0.05 was used to declare the statistically significant differences between the surveys.

3. Result

3.1. Sample characteristics

Participants' sample at Survey 1 (mean age = 38.1 (*SD* ± 16.2) years) had comparable mean age with those at Survey 2 (mean age = 37.4 (*SD* ± 15.2) years) and Survey 3 (mean age = 37.9 (*SD* ± 15.4) years). Except for the unit of admission between Survey 1 vs. Survey 2 and Survey 1 vs. Survey 3, there was no statistical difference in the distribution of sample characteristics by survey period (Table 2).

Table 2
Sample characteristics

Sample characteristics	Survey 1	Survey 2	Survey 3	<i>p</i> -value ^a		
	Number (%)	Number (%)	Number (%)	Survey 1 vs survey 2	Survey 1 vs survey 3	Survey 2 vs survey 3
Gender	(<i>N</i> = 256)	(<i>N</i> = 259)	(<i>N</i> = 267)	0.27	0.75	0.42
Male	125(48.8)	139(53.7)	134(50.2)			
Female	131(51.2)	120(46.3)	133(49.1)			
Address	(<i>N</i> = 247)	(<i>N</i> = 237)	(<i>N</i> = 263)	0.85	0.52	0.41
Urban	169(68.4)	164(69.2)	173(65.8)			
Rural	78(31.6)	73(30.8)	90(34.2)			
Educational level	(<i>N</i> = 253)	(<i>N</i> = 253)	(<i>N</i> = 266)	0.9	0.28	0.24
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	(<i>N</i> = 253)	(<i>N</i> = 253)	(<i>N</i> = 266)	0.17	0.35	0.08
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	(<i>N</i> = 256)	(<i>N</i> = 259)	(<i>N</i> = 267)	0.01	0.00	0.83
Surgical	133(52.0)	104(40.2)	98(36.7)			
Medical	86(33.6)	89(34.4)	101(37.8)			
Gynaecology	20(7.8)	34(13.1)	34(12.7)			
Maternity	17(6.6)	32(12.4)	34(12.7)			
^a critical value when proportions compared using WIN PEPI using a comparison of two independent samples						

3.2. Patients' perception of involvement and information adequacy

The mean level of patients' perception of involvement in their pain care significantly increased from 4.5 at Survey 1 to 4.7 in Survey 2 and then to 5.3 at Survey 3 on a 0 to 10-point scale (*P-value*; 0.003). The proportion of patients who answered "yes" to the question stating "Earlier in your care, did a nurse make it clear to you that we consider treatment of pain very important and that you should be sure to tell them when you have pain?" was significantly increased from 68.8% at Survey 1 to 82.7% at Survey 2 and then to 89.5% at Survey 3. As described in Table 3, there was a growing misfit between information provided and adequacy. In the subsequent surveys compared to the baseline, the majority of the patients remained underinformed or their expectations had been raised because of the nurses making it clear that we consider treatment of pain very important (Table 3)

Table 3
Patients' perception of information adequacy (percent).

Information items	Survey 1 (<i>n</i> = 256)			Survey 2 (<i>n</i> = 259)			Survey 3 (<i>n</i> = 267)		
	Under a	Optimal b	Over c	Under a	Optimal b	Over c	Under a	Optimal b	Over c
My illness or injury	68.8	21.6	8.6	74.1	20.8	5.0	75.5	18.0	6.7
The cause of my pain	57.7	16.1	16.1	70.9	20.5	8.5	79.4	15.0	5.6
Treatment option for my pain	61.1	25.9	13.1	72.6	21.2	6.2	77.2	17.6	5.2
Pain medication in general	66.1	23	10.9	69.5	22.4	8.1	77.1	16.2	6.8
Possible side effects of pain medication	71.1	13.3	15.6	71.4	20.8	7.7	79.4	12.7	7.9
a under informing, b optimal information, c over informing									

3.3. Experience of timely staff responsiveness

Though the proportion of patients who responded that they got their pain medication within 10 minutes was lower than before the intervention, patients who asked for pain medication and received it within 30 minutes increased: 67% of the patient at Survey 1, 72% at Survey 2, and 75% at Survey 3. However, after

the intervention, more patients waited for their medication longer than 30 minutes compared with the baseline survey (Fig. 1).

3.4. Patient satisfaction with pain care

Patient satisfaction with pain treatment and the care they received was significantly increased (all measured on a 1 to 5-point scale with 1 = dissatisfied and 5 = strongly satisfied). The degree of increment in the satisfaction with pain management was statistically significant ($P < 0.05$) in both Survey 2 and Survey 3 compared to the baseline survey. However, no difference was observed between Survey 2 and Survey 3 except for items measuring the amount of time that doctors devoted during their visit/consultation, and the care provided by the nurses for patient pain and its treatment (Table 4).

Table 4
Patient satisfaction with pain care

Satisfaction	Survey 1	Survey 2	Survey 3	<i>p</i> -value ^a		
	Mean (SD)	Mean (SD)	Mean (SD)	Survey 1 vs Survey 2	Survey 1 vs Survey 3	Survey 2 vs Survey 3
The information that you received about your pain and treatment	3.5(1.2)	3.9(1.0)	4.3(0.7)	0.00	0.00	0.00
The amount of time that doctors devoted to you during their visit/consultation	3.7(1.1)	3.9(1.0)	4.1(0.8)	0.03	0.00	0.04
The care provided by the nurses for your pain and its treatment	3.8(1.1)	4.0(1.0)	4.5(0.6)	0.19	0.00	0.00
The form of medication (pill, capsule, injection.)	3.7(1.1)	3.8(1.0)	3.9(0.9)	0.62	0.01	0.31
How often you take your medication	3.5(1.1)	3.7 (1.1)	4.0(0.9)	0.06	0.00	0.05
The amount of pain medication you take	3.5(1.1)	3.7(1.0)	4.0(1.0)	0.03	0.00	0.06
The time that it takes your pain medication to work	3.6(1.0)	3.8(1.0)	3.9(0.9)	0.04	0.00	0.22
The level or amount of pain relief provided by your pain medication	3.6(1.0)	3.8(1.1)	4.0(0.9)	0.09	0.00	0.05
The duration of pain relief provided by your pain medication	3.6(1.1)	3.8(1.1)	4.0(0.9)	0.07	0.00	0.05
^a a critical value when means compared using one-way ANOVA with post hoc testing (Bonferroni) for multiple comparisons						

4. Discussion

The findings of this study show that patients' scores of experiences with pain care are significantly improved after the introduction of a nurse-based in-hospital pain care program. Except for levels of information adequacy, the score in patients' perceptions of involvement, staff responsiveness, and satisfaction with pain care is significantly increased.

Although improvements were seen across the survey periods, patients in Survey 3 (post rounding) had a better experience of pain care than those in Survey 2 (after an in-service educational program). Changes

observed in Survey 2 can be related to the influence of the in-service educational program on individual nurses' technical capacity regarding pain care; whereas further changes at Survey 3 could be attributed to rounding, which signifies the importance of the work process re-organization.

Improving nurses' knowledge and attitude not only helps to perform essential pain care practices (pain assessment, medication administration, and using the WHO pain ladder) but also gives them the confidence to discuss issues related to pain with patients and physicians, which is congruent with other studies that reported the beneficial effects of an education program on nurses' knowledge and attitude regarding pain management practices (21, 33–35).

In this study, rounding was used as both a clinical and administrative tool to enhance the organizational effort of systematizing nurses' work processes in pain care at inpatient units. In addition to ensuring accountability, intentional presence, and therapeutic interaction, the system can help nurses to respond to the patients' needs proactively rather than randomly during their time on duty (13, 14). Even though staff nurse compliance with rounding reports (**see additional file 2**) varies by admission unit and periods of intervention, on average, eight out of ten patients were visited in a timely way. The amount of time spent by a nurse with a patient may indicate a therapeutic presence. The more nurses visit the patient, the better they may interact with them, and the less the patient suffers from pain left untreated, thus patient report better experiences with the pain care. The visit of nurse leaders (head nurses, nurse directors, and shift leaders) was not simply to say hello but also to identify patients in pain, missed rounding schedule, the mismatch between pain level and medication category in addition to providing a supportive environment for staff nurses. Such practice of nurse leaders can enhance the patient's meeting expectations of pain relief and improve the overall patient perception of care (14).

Moreover, the rounding schemes ensure intentional presence, which is coherent with the action part of caring, as described by Swanson (1993), being with, doing for, and enabling or informing (13). By making a scheduled visit, the nurse ensured being with the patient. All the nurse's actions during visits were related to doing for the patients what they would do for themselves if it were possible. The script communication was for enabling and informing patients to involve them in pain treatment. These nurses' actions can have contributed to the overall improvements in the patients' experiences with their pain care. Though it is not specific to pain care, other studies also confirmed the benefit of rounding on patient outcomes such as improving the patient perception of care, increasing satisfaction, reducing call bell use, preventing falls and pressure ulcers (14, 16–18, 36).

Nevertheless, the improved patient experiences of pain care at Survey 3 is not only due to the rounding alone but also due to the combined effect of an educational program with rounding. This is in line with the study reports on "the truth about patient experiences" (37). According to this study, patient experience builds on an organization's ability that capitalizes its employees, relationship, and service it offers.

Specific to the typical patient-reported pain care experiences, the mean level of overall patient satisfaction and items related to nursing care generally increased from survey to survey. This implies that patients received care that met their expectations, had meaningful pain control, and had been given the necessary

attention. The possible reasons for improved satisfaction could be due to timely staff responsiveness and consideration of pain treatment as very important. For example, our study revealed that nurse's response within 30 minutes to patients' pain medication needs was improved in the subsequent survey. However, the intervention was not effective in giving quicker medication (within 10 minutes) and avoiding delayed (after 30 minutes) responses to patient needs. Other studies have also reported that patients can be satisfied if they know when help will be available to them or feel reassured that the nurse would return for other rounds so that confusion due to uncertainty of help will be avoided (38). Moreover, the proportion of patients who answered "yes" to the question stating, "Earlier in your care, did a nurse make it clear to you that we consider treatment of pain very important and that you should be sure to tell them when you have pain?" significantly increased. This shows the level of attention given to patients on a regular basis. This is consistent with reports from other studies that patients were more satisfied when they felt reassured, knowing that nurses respond proactively (39). Other related studies have also reported a similar effect on patient satisfaction in one hospital implementing rounding (40). According to Blakley et al., patients may be more satisfied when nurses communicate effectively with the patients, manage pain adequately, and provide treatment information that meets their needs.

Apart from the level of the information preference, self-rated patient involvement in pain treatment, and considerations given by nurses to patient pain significantly increased. The paradox between reports on increased attention given to their pain and growing misfit, i.e., lower scores (under-informing) on the level of information adequacy may show that the nurse instilled a higher level of expectations about the hospital priority for treating pain or made such demands more legitimate for their patients at the time of admission, or because the nurse didn't provide the information that fitted the patient's expectation. The positive relationship between staff-patient interaction, information provision, patient involvement in their care, staff responsiveness, and patient experience measures was also reported in the other studies (41–43).

In an intervention that consists of more than one component, it is difficult to attribute the contribution of each specific element of interventions in the final results (44). The knowledge of pain management gained from an in-service educational program not only improved the nurses' knowledge and attitude but also made them more confident in conducting rounding. Thus, the results on patient experiences were not only because of rounding but also due to the change in knowledge and attitude regarding pain. Other limitations could be due to the study design. Our study measured the impact of rounding that followed the educational program on separate samples using a quasi-experimental design. This design does not ensure equivalence between groups. Though we had planned to conduct a quasi-experimental study with a control site, our freedom of movement was restricted due to public unrest that resulted in the declaration of a state of emergency. This made it difficult to move between the intervention and control sites, and our plan to use a control group had to be abandoned. The other limitation could arise from factors influencing patient response to their experiences of care. Patient experiences of care can be affected positively or negatively by the care environment, everyone in the organization from gatekeepers to chief executive officer and as well as the more recent interaction than the past (43). For instance, it is evidenced that factors related to a supportive environment, and psychological precursors, as well as

team-building, have a direct relation to patient experiences of care (45). Another limitation of this study could be related to the course of acute pain. Acute pain might subside with the treatment of underlying clinical conditions with or without pain medication, but the patient can have positive experiences that might not be related to our intervention.

5. Conclusion

The findings of this study have direct implications for in-hospital nursing care. The nurse-based in-hospital pain care program in Ethiopian Hospital ensured intentional presence and proactive responses, which resulted in improved patient experiences with pain care. The combined approach of both an in-service educational program and rounding can also be applied in other nursing practices that need improvement

Abbreviations

ANOVA

Analysis of variance

APS-POQ-R

American Pain Society Patient Outcome Questionnaire-Revised

BPI

Brief Pain Inventory

JMC

Jimma Medical Centre

NHS

National Health Service

NORHED

The Norwegian Programme for Capacity Building in Higher Education and Research for Development

PTSS

Pain Treatment Satisfaction Scale

SPSS

Statistical Package for the Social Sciences

SACCADE

Strategic And Collaborative Capacity Development in Ethiopia

WHO

World Health Organization

Declarations

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Author contribution

All authors have significantly contributed to this work and approved the submitted version. All authors confirm that the article is our original work. GG wrote the first draft of the manuscript. IS and RH critically revised the manuscript and wrote sections of the paper. All the authors equally contributed to statistical analysis, fieldwork design, manuscript revision, and read and approved the submitted version

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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.

Ethical approval and consent to participate

The study has been notified by the Norwegian Centre for Research Data officers - project number 48349. Before data collection, ethical approval was sought from the institutional review board of the Jimma University Institute of Health sciences. During data collection, written informed consent was obtained from each participant

. Consent for publication

All authors approved the submitted version of this article.

Competing interest

The author declare that they have no competing interests.

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Tables

Table 1. Variables used to collect patient-reported pain care experience

Patient experiences	Item source	Number of items	Scale/response
Patient perceptions of involvement in their pain care	BPI a	1 item	The patient asked to score their participation on a scale where the endpoints were 0= not involved at all to 10= maximal involvement
Patient perception information adequacy	PTSS b	5 items*)	The patient rated the information adequacy as 1=I would have liked much more information, 2= I would have liked a little more information, 3= the amount of information, was right for me, 4=I would have liked less information, and 5= I would have wanted no information. The score “3” represents “optimal” information, and the rating “1 and 2 “ represents “under-informing,” whereas scores “4 and 5” represent “overinforming.”
Patient perceptions of staff responsiveness	APS-POQ-R c	1 item	<p>The patient was asked to select one out of the six possible responses on the longest time waited to get pain medication during their hospital stay:</p> <ol style="list-style-type: none"> 1. < 10 minutes 2. 11–20 minutes 3. 21–30 minutes 4. 31–60 minutes 5. >60 minutes 6. Asked for pain medication but never received it
Patient satisfaction with pain care	PTSS	9 items**)	The patient rated their satisfaction with pain care on each item as 5= strongly satisfied, 4= somewhat satisfied, 3= neither satisfied nor dissatisfied, 2=somewhat dissatisfied and 1= dissatisfied

^a Brief Pain Inventory (Keller et al., 2004), ^b Pain Treatment Satisfaction Scale (Evans et al., 2004), ^c American Pain Society Patient Outcome Questionnaire-revised (Gordon et al., 2010). *) the items are shown in Table 3, **) the items are indicated in Table 4.

Figures

Figure 1

Patient experiences of waiting time for pain medication (%) in the surveys

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