

COMPETENCE AND PAIN MANAGEMENT IN PATIENTS WITH OPIOID ADDICTION: A CROSS-SECTIONAL SURVEY STUDY

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ABSTRACT

Background. There may be up to 21 million opioid abusers in the world. Drug abuse and associated health-related problems are increasing. Opioid addiction can cause serious bacterial infection, injury and trauma, conditions that can trigger pain. Opioid abusers experience pain differently from non-addicts. There is limited research on nurses' competence to provide pain treatment to patients with opioid misuse.

Objective. To report on a Norwegian pilot study examining nurses' knowledge about pain and competence in treating pain in patients who abuse opioids.

Design. A descriptive cross-sectional survey design was employed.

Participants. Nurses at medical (n=64) and orthopaedic (n=34) units at two urban, public Norwegian hospitals.

Methods. Data were collected in January 2010 using a self-administered questionnaire. Sample selection was determined by purposive sampling. The response rate was 54%.

Results. Eighty-eight per cent of nurses did not have sufficient knowledge about pain treatment in patients with opioid addiction. Eight-eight per cent and 77% per cent regarded work-place experience and colleagues as the primary contributors to their knowledge about pain treatment, respectively. Work-place experience contributed most to nurses' competence. Ninety per cent, 70% and 84% of nurses responded that education, literature and information technology, respectively, played a minor role in obtaining knowledge about pain management. Sixty-five per cent of the respondents had basic skills for evaluating pain, although 54% could not evaluate the degree of pain. Almost 62% of nurses did not trust the pain experience self-reported by patients who were opioid abusers.

Conclusion. Our study shows shortcomings in the nurses' competence to evaluate and treat pain, suggesting that patients with opioid addiction may not receive adequate pain

management. Nurses' competence to offer pain treatment to opioid abusers could be characterized as experience-based rather than evidence-based.

KEYWORDS:

Nurses, education, knowledge, competence, use of illicit opioids, pain treatment

INTRODUCTION

Drug abuse causes major social and health-related problems for people and society in many countries. Opioid addiction is one form of drug abuse that poses a challenge to health care services in countries around the world. Main aspects of opioid addiction are craving the psychological drug effects and the continued use of the drug despite its adverse effects (Jan 2010). It is estimated that 15 – 21 million people are opioid abusers (United Nations Office on Drugs and Crime, UNODC 2009). Although the prevalence of use of illegal opioids in the general population is relatively low, the burden to society from illicit opioid use is high because of associated extensive deleterious effects on health (Popova *et al.* 2006). Opioid abusers often develop serious bacterial infection, injuries and trauma (Ford *et al.* 2008), painful conditions that may require hospitalization. Although addiction is a significant public health problem, so is the undertreatment of pain (Oliver *et al.* 2012).

Research on nurses' competence to care for patients with opioid addiction is limited. Few have been published from Europe (Kelleher 2007). There is a need for further research on nurses' competence to offer professional pain treatment to this group of patients.

Background

Pain and pain treatment in patients with opioid addiction

Pain is defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, and is always subjective” (IASP, 2007). Opioid addiction contributes to the development of opioid tolerance (Huxtable 2011). Tolerance is defined as “a loss of analgesic potency that leads to ever-increasing dose requirements and decreasing effectiveness over time” (Ferri 2013), causing patients with opioid misuse to require higher doses of opioid in order to obtain pain relief. Clinical studies suggest that opioid addiction produces heightened pain sensations by lowering the pain threshold (hyperalgesia) and pain elicited by normally innocuous stimulations (allodynia) (Morgan D. *et al.* 2006, Pud *et al.* 2006).

The presence of pain in patients who abuse opioids is described as being more complex than pain in patients in general. Besides having a higher incidence of pain, the pain is also generally untreated or undertreated (Kirsh & Passik 2006, Oliver *et al.* 2012). Unrelieved pain

causes unnecessary suffering and inability for self-care, and reduces quality of life (Grant *et al.* 2007). Evidence show that stress from poorly treated pain may exacerbate an existing addiction (Oliver *et al.* 2012). The complex challenge in management of pain is made more so when dealing with opioid abusers because they are met with negative attitudes or stigmatized by health care professionals (Oliver *et al.* 2012). This population represents a challenge to nurses' professional competence to provide effective pain treatment.

Competence

The literature describes two main approaches to the conceptualization of nursing competence (Murrels *et al.* 2009). The first is referred to as "behaviouristic" as it focuses on tasks and skills (Murrels *et al.* 2009). The second approach is referred to as "holistic" which allows for the incorporation of ethics, attitudes and values as elements of competence, recognizing the need for reflective practice (Cowan *et al.* 2005). There seems to be increasing support for a holistic approach to competence in nursing practice. For instance, the Australian Nursing and Midwifery Council (ANMC) have defined competence as "The combination of skills, knowledge, attitudes, values and abilities that underpin effective and/or superior performance in a profession/occupational area" (ANMC 2006). Professional pain treatment requires continuous reflection on attitudes (Nortvedt F. & Nortvedt P. 2001). The present study uses a broad approach to the term "nursing competence" to comprise knowledge, skills and attitudes.

In Happel *et al.*'s study (2002) most nurses reported that they did not have much knowledge about caring for drug addicts. This finding agrees with those of Ford *et al.* (2008) who found that only 25 % of participating nurses felt they had sufficient knowledge to care for drug addicts. The literature does not identify the sources from where nurses obtain their knowledge in this area. Miller *et al.* (2010) identified the inability of nurses to use technology as a barrier to assessing and using information. Another study of the preferred information sources for clinical decision-making among critical care nurses found a preference for information from colleagues rather than from electronic-based sources (Marshall *et al.* 2011).

A literature review of studies on nurses' attitudes to drug addiction showed that nurses perceive caring for patients with drug-related problems as a difficult and unpleasant experience (Kelleher 2007). Nurses often have negative views about drug addiction and people using drugs (Kelleher 2007). Focus group interviews of nurses working with patients

with opioid addiction showed that nurses described it as being difficult to have a professional relationship with these patients (Morgan B. 2006). A grounded theory study of 18 patients with opioid addiction and a painful medical condition showed that the patients felt nurses did not accept their pain (Morgan B. 2006). Review

Previous studies have found that nurses' lack of professional competence contributes to insufficient pain treatment because nurses commonly disbelieve pain reports from patients using opioids (Grant *et al.* 2007). There is a common fear among nurses that using opioid analgesics will cause addiction or contribute to worsening of an addiction (Morgan B. 2006). Health care professionals' level of competency may influence the pain treatment in patients with opioid addiction (Kelleher 2007). Despite recent developments in the understanding of substance abuse disorders and associated implications, research on nurses' competence to treat patients with opioid addiction is limited. Literature indicates that knowledge, skills, and attitudes are factors that influence the quality of pain management provided to patients with opioid addiction. An incorporation of these elements in competence is relevant when the quality of pain management provided by nurses is investigated.

The aim

The aims of this pilot study were to evaluate nurses' self-perceived competence; 1) their knowledge about pain, 2) their competence to provide pain management to patients who are opioid abusers, and 3) the sources from where nurses obtain knowledge.

METHODS

Design

This article presents findings from a cross-sectional study. A survey method was used to collect the data.

Sampling of participants

Participants were purposively sampled from medical and orthopaedic departments at two urban, public hospitals in Western Norway. The inclusion criteria were registered nurses who, on a regular basis, cared for patients who abused opioids. There were no exclusion criteria.

The nurses received verbal and written information about the study and asked to participate. One hundred and eighty-one questionnaires were distributed and 98 were returned, giving a percentage of return of 54 %. Data were collected during 2 weeks of January 2010.

Measures

A self-administered questionnaire of self-reported competence was developed for the present study, partly derived from a validated questionnaire used in a previous Norwegian study on pain in neonatal pain management (Andersen *et al.* 2007). The questionnaire had four parts covering knowledge, skills and attitudes.

Part 1 included socio-demographic variables such as age (years), sex, department of employment, whether the nurses were working full-time or part-time, had further education or specialization, experience as a nurse (years), and experience working with patients having opioid addiction (years).

Part 2 comprised nurses' sources of knowledge, included eight questions about sources nurses to obtain knowledge about pain and pain treatment for patients with opioid addiction, covering nursing education (undergraduate level), postgraduate education, courses, research literature, work-place experience, colleagues, Internet search engines such as Google, and professional Internet sites. The options for answers were none at all, to some degree, some, a lot and extensively.

Part 3 had 10 statements about nurses' knowledge and skills including their skills at recognizing pain, evaluating the source and degree of pain, administering and evaluating the effect of pain medication, the effect of opioid addiction on pain and knowledge about pain treatment to opioid addicts.

Part 4 was developed for the present study, and included 15 statements about nurses' attitudes relating to the lifestyle of opioid addicts, the pain experience of opioid addicts, patients' perception of pain treatment, and attitudes about working with patients with opioid addiction. For part 3 and 4, responses were made on a Likert-type scale with five categories; agree completely, agree, disagree, disagree completely, and do not know.

Ethical considerations

The study was approved by the appropriate ethics and research governance authority licensing research projects in Norway. The questionnaire was designed to facilitate anonymity.

Data analysis

The methods of data analysis were frequency analysis, sum-scores, and Spearman rank correlation. To determine which factor, if any, contributed most to competence, a multiple regression analysis was performed.

For the purpose of analysing and interpreting the data, questions and answers were grouped into the following three categories: Nurses' self-evaluation of competence, nurses' competence and nurses' sources of knowledge.

For analysis purposes, the five-category scales used to score the nurses' sources of knowledge were transformed to the following three-category Likert scale: none at all/to some degree, some, and a lot/extensively. Similarly, the five-category scales used to score the nurses' self-evaluation of competence and nurses' competence were transformed into the following two-category Likert scale: agree and disagree/uncertain, and agree and disagree/do not know, respectively.

The competence sum-scores of nurses' self-evaluation of competence (part 3) and nurses' competence (part 4) were calculated as follows: the five-category scales were transformed into the following two-category Likert scale: Agree and Disagree. The questionnaire was constructed so that Agree and Disagree would interchangeably be the accurate answer to the statements. Nurses who responded using Uncertain and Do not know was added to the category that expressed the incorrect answer. It was assumed that participants who failed to have an opinion did not have sufficient knowledge about the topic in question. Correct answers were given a score of 1 and incorrect answers were given a score of 0. Answers deemed to be correct or incorrect are evidence-based. Lowest score was 0 indicating no competence, best score was 15 indicating highest level of competence.

The data were analysed using the statistical program SPSS Statistics 19.

Validity and reliability

A pre-test of the questionnaire was conducted in a reference group of 10 people who included nurses, specialized nurses, advanced nurse practitioners and an educationalist. The face validity of the questionnaire was reported individually. They responded that the statements aimed at disclosing the nurses' attitudes were too personal and provocative, making it difficult to respond. These statements were reformulated from "I" statements (e.g. "I believe that patients with opioid addiction exaggerate their pain in order to obtain more pain medication")

to an impersonal form (e.g. “Patients with opioid addiction exaggerate their pain in order to obtain more pain medication”) or to statements about nurses as a group (e.g. “Nurses administer less pain medication than prescribed”). The reference group gave a favourable response to the changes made to the questionnaire.

The competence scores is a formative index where the indicators form a construct without any assumptions to the patterns of inter-correlation between the items. Thus, internal consistency is not implied.

RESULTS

The participants

The participating nurses ranged in age from 22 to 54 years; their mean age was 30.5 years (SD 7.8 years). The distribution between medical and orthopaedic units was 37.7% and 65.3% respectively (Table 1). The number of years of employment as a registered nurse ranged from 0 to 27 years, with a mean of 5 years (SD 5.4). Almost 64% of the respondents had five years or less work experience as a nurse, while 69% had five years or less experience working with patients with opioid addiction (Table 1).

Insert Table 1 about here

Self-evaluation of competence versus incompetence

Table 2 presents nurses’ perception of their competence with focus on knowledge and skills about various aspects of pain management. As shown, 80.3% of the nurses responded positively that they could recognize pain, and 65.3% responded that they could evaluate the cause of pain. Almost 80% of the participants responded that they could use opioids as pain medication, and 84.7% responded that they were able to evaluate the effect of pain medication. The table also reveal that 54.1% of the nurses considered that they could not evaluate the degree of pain, and 87.8% responded that they did not have sufficient knowledge about pain treatment.

Insert Table 2 about here

Table 3 presents the response on competence where attitudes are included based on evidence-based practice from literature. As shown, 38.7% of the nurses responded negatively to the statement that opioid addiction cause increased pain. Almost 30% of the participants responded positively that the use of opioids as pain medication worsened opioid addiction in patients. Sixty-two per cent of the nurses believed that patients with opioid addiction exaggerated their pain in order to obtain more pain medication, and 56.1% of the participants were of the opinion that patients did not describe the effect of administered pain medication in an honest manner.

Insert Table 3 about here

Sources of knowledge

The nurses regarded their work-place experience and colleagues as primary contributors to their knowledge (Table 4). Sources such as education, courses, research literature, and information technology were considered as minor contributors. More than 50% of the nurses replied that search engines such as Google and professional Internet sites did not represent significant sources of knowledge.

Insert Table 4 about here

The following factors correlated with nurses' competence; age ($R_s = 0.22$, $p=0.034$), work-place experience in nursing ($R_s = 0.44$, $p < 0.001$), work-place experience with patients with opioid addiction ($R_s = 0.32$, $p = 0.001$), self-evaluation of competence ($R_s = 0.24$, $p = 0.019$), courses ($R_s = 0.28$, $p = 0.006$), colleagues ($R_s = 0.09$, $p = 0.360$), Internet (Google) ($R_s = 0.179$, $p = 0.084$), and professional Internet sites ($R_s = 0.06$, $p = 0.090$). Correlation analysis was used to identify any correlation between the nurses' work-place experience and experience with patients having opioid addiction correlated to find out which factor(s)

contributed most to competence. There was a strong correlation between work-place experience and experience with opioid addicts (Spearman rank correlation = 0.87). Work-place experience had the strongest influence on competence (Spearman rank correlation = 0.44). Experience with patients having an opioid addiction correlated with competence showed Spearman rank correlation = 0.32 ($p = 0.001$). Thus, experience with patients having an opioid addiction was omitted from further analysis.

Multiple regression analysis with competence as the dependent variable and work-place experience, self-evaluation of competence and courses as independent variables was performed, and showed that the only significant outcome was work-place experience (standardized coefficient 0.26, $p = 0.25$), indicating that work-place experience was the factor that contributed most to nurses' competence. The analysis indicates that the model used explains 19.4% of the variation.

In this analysis, we dichotomized work-place experience into ≤ 5 or > 5 years of experience. The reason for this is illustrated in Figure 1, which shows that the association between the years of work-place experience and competence was not linear.

Insert Figure 1 about here

DISCUSSION

At first glance, it may seem odd to adopt a neonatal pain questionnaire to investigate pain treatment in opioid addicts. It may, however, be argued that there are similarities between neonates and opioid addicts. Literature indicates that neonatal infant pain is unrecognized and undertreated (Cong *et al.*, 2013). There is inadequate pain management when patients have a problem with substance abuse (Morgan B. 2006, Kelleher 2007). Various studies suggest that factors such as attitudes, lack of knowledge, lack of competence to evaluate pain, and insufficient pain treatment influence pain management to neonatal infants as well as opioid abusers (Andersen *et al.* 2007, Morgan B. 2006, Kelleher 2007). Nurses seem to face similar challenges when providing pain management. The similarities of factors make it relevant to

use a questionnaire developed for researching neonatal pain for this study, although some amendments were made to the original questionnaire to take into account the differences that do exist between the two groups of patients. The modifications of the original questionnaire involved demographic questions about nurses' experience and frequency working with patients who are opioid abusers as well as some questions about nurses' attitudes about patients with opioid addiction.

There seems to be sufficient evidence supporting that not only knowledge and skills play a role in competence when caring for patients with opioid addiction. Attitudes and values are factors that must be included as well. Negative attitudes are barriers to caring for this group of patients (Kelleher 2007, Oliver *et al.* 2012). A holistic view on competence, where competence includes knowledge, skills, attitudes, and values seem to be appropriate when examining nurses' competence to provide pain management to patients with opioid addiction.

Our results show that most nurses felt they had inadequate competence to care for patients with opioid addiction. This is in accordance to a study by Morgan B. (2006). The literature review by Kelleher (2007) established that health care professionals' knowledge and attitudes regarding opioid abusers might negatively influence the care these patients receive. Pain treatment to patients with opioid addiction may be characterized as a complex task requiring a high level of competence.

The findings of our study suggest that there are some shortcomings in the nurses' competence to evaluate and treat pain. Previous studies on drug abuse have also shown insufficient knowledge among nurses to care for patients with drug addiction (Happel *et al.* 2002, Morgan B. 2006). Skills related to evaluate various aspects of pain may be perceived as a necessity when evaluating pain in patients with opioid addiction.

The majority of our participants held the opinion that patients with opioid addiction exaggerate their pain, are dishonest when describing the effect of pain medication and misrepresent their pain experience, indicating that the nurses' attitudes towards these patients tend to be negative. One-third of the nurses believed that opioids used as pain medication contributed to the patients' addiction. These findings are consistent with those of previous studies showing that one barrier to pain-treatment is nurses' belief that opioids cause addiction (McCaffery & Robinson 2002). This fear may prevent nurses from administering

opioids as pain medication, despite the fact that there is no scientific evidence indicating that opioids used as pain medication contribute to addiction or worsen a current addiction problem (Compton & McCaffery 2001). Previous studies have also shown that nurses have a tendency of evaluating pain as less intense in opioid abusers compared with pain reported by patients with other medical conditions (Grossman *et al.* 1991, Drayer *et al.* 1999). Many nurses may be unaware of the fact that increased opioid tolerance and pain sensitivity are consequences of opioid addiction (Bourne 2008). According to Kelleher (2007), nurses' views about drug addiction and people with drug addiction are often moralistic and stereotypical, and may negatively influence the care that these patients receive. The American Society for Pain Management states that personal beliefs can negatively affect the ability to provide care for patients with substance abuse and pain (Oliver *et al.* 2012). Thus, health care professionals' attitudes are an important variable when evaluating the care provided.

The findings of our study show that work-place experience was the single most important influence on competence. However, this effect seemed to decline after 5 years of professional experience. Previous research has shown that health care personnel are loyal to their colleagues' attitudes (Coulling 2005), and that work-place experience is an important factor that contributes to competence (Estabrooks *et al.* 2005). The implications of this association may be that the quality of work-place experience, specifically in the first years after graduation, may determine the level of competence. The above-mentioned study among Canadian nurses in surgical units showed that, in some units, nurses were socialized to maintain the status quo (Estabrooks *et al.* 2005). If the status quo includes competence that does not meet acceptable standards, there is a risk that work-place experience may reproduce competence of unacceptable standards. To avoid that to happen, work-place experience should provide relevant knowledge and skills as well as a reflection of attitudes and beliefs that will enable nurses to offer care of professional standards.

Our results show a statistical significant correlation between courses and competence, indicating that attending specialist courses is another factor contributing to competence. The majority of the respondents had not participated in courses about pain treatment and addiction. Estabrooks *et al.* (2005) also finds that conferences, workshops and short courses are sources largely underused by staff nurses, and nurses explained that their unit was not supportive of the nurses' effort to seek evidence-based knowledge. Financial restraints may also be factors preventing nurses from attending courses.

Our respondents also perceived colleagues as a primary and major source of competence. These findings are consistent with Estabrooks *et al.* (2005). Moreover, an Australian study of critical care nurses showed that nurses preferred information from colleagues to support clinical decisions (Marshall *et al.* 2011). One possible interpretation is that nurses rely on social interactions because they consider their colleagues to have relevant experience (Estabrooks *et al.* 2005). However, our analysis suggests there is no statistical significance of the correlation between the competence score and colleagues as a source of knowledge. Thus, information from colleagues does not contribute to competence. Our findings suggest that relying heavily on colleagues for building competence seems to be an incorrect strategy if it is not properly organized. On the other hand, colleagues may contribute positively to competence through peer coaching, which is a planned and systematic approach to building competence and practice (Ladyshevsky 2010).

Nursing education was not a major contributor to competence in our participants. This finding is in accordance with Estabrooks *et al.*'s study (2005), where nursing school was identified as a valuable knowledge source. The basic knowledge taught by nursing schools was, however, not sufficient in practice (Estabrooks *et al.* 2005). It is questionable whether basic nursing education provides students with the skills necessary to give appropriate care and pain management to a group of patients they probably will meet frequently when working in hospitals.

We also found that the use of Internet, books and journals had a more limited role as sources of knowledge. The limited use of the Internet in our study may be characterized as surprising. The average age of the participating nurses was 30.5 years, and would be expected to have good Internet skills because information technology has been a part of their everyday life as well as of their nursing education. However, a Finnish study also found that nurses' information technology skills do not support the application of evidence-based practice in hospitals (Koivunen *et al.* 2010). According to Estabrooks *et al.* (2005), nurses want research findings presented in an understandable form. Further, the majority of the nurses in our study did not use professional Internet sites. In addition to the lack of information technology skills, they may not find professional Internet sites easily accessible. Our findings are congruent with previous studies among nurses working with other groups of patients showing that

nurses have poor competence in many evidence-based practice skills (Waters *et al.* 2009, Koivunen *et al.* 2010).

Study limitations

This study has some limitations. First is that the questionnaire used for data collection was not validated or tested using a test-retest method. Another study limitation is that a purposive sample of nurses in one geographical area was included, and may therefore not be representative of nurses in somatic hospitals in Norway in general. Furthermore, the number of participants is low and the study was carried out with a specific group of nurses with a background in medical or orthopaedic units. Competence is difficult to measure properly so misclassification may be present as a result from misreporting by study subjects or from random error. The possible threats to validity and reliability factors make generalization difficult. Despite these limitations, the findings give important information about pain management in patients with opioid addiction.

Recommendations for practice

Evidence-based healthcare results in improved patient outcomes (Melnik & Fineout-Overholt 2012). The responsibility for designing and supporting clinical environments that support best practices for optimal patient outcomes lay in the hands of the nursing leaders (Melnik & Fineout-Overholt 2012). An understanding of the importance of evidence-based knowledge is therefore important for nursing managers. The role of attitudes related to patients with an opioid addiction poses an additional challenge. Work-place experience complemented with courses could be a first step to build competence. Continuous peer coaching implemented alongside evidence-based practice may help to avoid a discrepancy between the level of competency and nurses' preference, and influencing positive attitudes. Furthermore, nurses should be encouraged to engage in discussions to openly explore attitudes regarding opioid abusers (Oliver *et al.* 2012).

CONCLUSION

The present study suggests that there are shortcomings in nurses' competence to evaluate and treat pain in patients with opioid addiction. The majority of nurses held the opinion that patients with opioid addiction exaggerate their pain, misrepresent their pain, and are dishonest

when describing the effect of pain medication. Our study indicates a degree of mistrust and negative attitudes towards patients with opioid addiction. A substantial number of the participating nurses believed that opioids used as pain medication contributed to the patient's addiction. The majority of nurses admitted they had inadequate competence to care for this group of patients.

Our study shows that work-place experience was the single most important influence on competence. Information technology, books and journals had a limited role in contributing to competence. Nurses' competence in this area could be characterized as being experience-based rather than evidence-based. Our results show a statistical significant correlation between courses and competence. Courses were not a source of competence that was used by nurses.

The present study indicates that nurses did not have the necessary competence to care for patients with opioid addiction. The consequence might be that these patients are provided inadequate pain management.

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Table 1Socio-demographic characteristics of study participants ($n = 98$)

		<i>n (%)</i>
Sex	Female	89 (90·8)
	Male	9 (9·2)
Place of employment	Medical department	64 (65·3)
	Orthopaedic department	34 (34·7)
Position	< 50 %	19 (2·0)
	50 – 74 %	11 (13·4)
	> 75 %	85 (86·7)
Educational level	Undergraduate	83 (84·7)
	Post-undergraduate	15 (15·3)
Work experience in nursing	≤ 2 years	37 (38·1)
	> 2 - ≤ 5 years	25 (25·8)
	>5 – ≤ 7 years	13 (13·4)
	> 7 - ≤ 10 years	9 (9·4)
	> 10 years	13 (13·3)
Work-place experience with patients with opioid addiction	≤ 2 years	44 (45·3)
	> 2 - ≤ 5 years	23 (23·7)
	>5 – ≤ 7 years	9 (9·3)
	> 7 - ≤ 10 years	11 (11·4)
	> 10 years	10 (10·1)

Table 2

Nurses' self- evaluation of competence (*n*=98)

Self- evaluation of competence	Agree <i>n</i> (%)	Disagree/ Uncertain <i>n</i> (%)
I can recognize pain	79 (80.3)	18 (18.3)
I can evaluate cause of pain	64 (65.3)	34 (34.7)
I can evaluate degree of pain	44 (44.9)	54 (54.1)
I can use non-opioid pain medication	90 (91.9)	8 (8.1)
I can combine opioid and non-opioid pain medication	90 (91.8)	8 (8.2)
I can use opioids as pain medication	78 (79.7)	18 (18.4)
I can evaluate the effect of pain medication	83 (84.7)	15 (15.3)
I have sufficient knowledge about pain treatment	12 (12.2)	69 (87.8)

Table 3Statements on nurses' competence (*n*=98)

Nurses' competence	Agree <i>n</i> (%)	Disagree / Do not know <i>n</i> (%)
Abuse of opioids cause increased pain	58 (60.2)	39 (38.7)
Use of opioids as pain medication in patients who abuse opioids worsen the addiction	30 (29.6)	67 (68.4)
The pain experienced by patients with opioid addiction is not treated sufficiently	54 (54.6)	45 (44.4)
Opioid addicts need more pain medication compared with non-addicts to achieve pain relief	90 (91.8)	8 (8.2)
Opioid addicts exaggerate their pain in order to obtain more pain medication	61 (61.7)	35 (35.3)
Opioid addicts demand additional pain medication	86 (87.8)	11 (11.2)
Opioid addicts do not describe the effect of pain medication in an honest manner	55 (56.1)	42 (42.8)

Table 4Nurses' sources of knowledge ($n = 98$)

Source of knowledge	None at all/ In some degree	Some	A lot/extensively
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Nursing education (undergraduate)	88 (89.8)	10 (10.2)	0
Work-place experience	16 (16.3)	33 (33.7)	49 (50.0)
Courses addressing addiction	70 (71.4)	20 (20.4)	4 (4.2)
Colleagues	21 (21.4)	42 (42.6)	34 (34.7)
Literature (books, journals etc.)	69 (70.4)	22 (22.4)	6 (5.1)
Internet (e.g., Google)	79 (80.0)	13 (13.3)	2 (2.0)
Internet (professional sites)	83 (84.7)	9 (9.2)	2 (2.0)

Figure 1: Scatter plot of the association between work-place experience and competence

