

# Pain Knowledge Levels of First Year and Third Year Student Nurses A preliminary analysis

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**Summary :** The findings presented here are part of the preliminary analysis of data obtained from a questionnaire about pain knowledge and attitudes. This survey investigated the knowledge levels of first and third year nurses at the Japanese Red Cross Junior College of Akita. Findings suggest a reasonable level of factual knowledge about pain but some areas of concern are illustrated. These include a lack of understanding of the concept of equianalgesia and chronic pain adaptations. The results point to areas which need to be emphasized in the educational preparation of nurses who deal with patients in pain, a critical part of good nursing care.

**Key words :** pain management, assessment, equianalgesia, learning needs

**要旨：**この論文は日本赤十字秋田短期大学看護学科1年生および3年生を対象とした痛みの知識と対応に関するアンケート調査を分析した初期段階の研究である。その結果、学生は痛みに関してはかなりの知識を持っているが知識の乏しい領域も指摘された。なかでも麻薬と慢性的な痛みへの適応に関する概念が根づいていないことである。従って質の高い看護の実践に欠くことのできない、痛みを持つ患者の看護の教育は重要と言える。

**キーワード：**痛みの管理、評価、麻薬、学習ニーズ

Pain knowledge is an essential component of the working knowledge required by nurses throughout the world. The purpose of this survey was to investigate the knowledge levels of first and third year students at the Japanese Red Cross Junior College of Akita. This information was sought utilizing a questionnaire developed by Hamilton and Edgar in 1992 and modified to suit the groups to which it was administered. The information gained can be used to identify the learning needs of the students and to develop teaching interventions to assist students to develop an accurate and extensive understanding of pain assessment and management. A limited comparison can be made of the results of this survey and those gained from registered nurses in the original study. At a later date, a more comprehensive comparison can be made with results gained from Australian student nurses who will also complete the survey.

Pain is an area in which nursing knowledge is always developing. Much research has been carried out in the area and the findings show a continuing lack of accurate knowledge in the areas of narcotic analgesia and its side effects, and of issues related to the use of placebos. This survey “examines nurses’ knowledge of pain physiology and assessment and the general principles of pharmacologic and nonpharmacologic intervention” (Hamilton and Edgar 1992, p. 18).

## **Results**

The data presented here is in the initial stages of analysis and only the preliminary findings will be discussed here. Much analysis still remains to be performed and comparisons made. A total of 62 first year students and 71 third

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year students completed the survey.

To the first question, which asked about their experience with patients having pain, the first year students indicated that 24% had experience with patients in pain, 73% had not, and 3% did not give an answer. The third year nurses indicated that 90% had experience with people in pain, 7% said they did not and 3% gave no answer. This is surprising as the third year students had done several weeks of clinical in second year and it seems reasonable to assume that they would have had contact with at least a few patients in pain.(See Appendix for the survey tool)

The first group of questions in the survey asked the student to identify which of five medications were narcotics. Table one illustrates the results of this group of questions

**Table 1**

Narcotic medication identification

Medication	Narcotic %		Not a Narcotic Narcotic %		Not sure/ don't know		No given answer	
	Year 1	Year 3	Year 1	Year 3	Year 1	Year 3	Year 1	Year 3
Codeine	<u>7</u>	<u>7</u>	3	6	77	79	13	8
Morphine	<u>74</u>	<u>94</u>	0	0	13	2	13	4
Indomethacin	3	4	<u>16</u>	<u>37</u>	73	47	8	12
Heroin	<u>63</u>	<u>66</u>	0	0	24	24	13	10
Ibuprofen	2	0	<u>27</u>	<u>47</u>	63	46	8	7

\*Correct answers are underlined

The next group of questions examined the students' knowledge of opioid effects. Specifically they were asked to rank the likelihood of developing an addiction to opioids as a result of treating pain with narcotic analgesics. 5% of the first year students and 1% of the third year students circled 1%, which is closest to the correct answer of less than 1%. It is disturbing that over half (51%) of first year students put the risk at 25% or higher and of even greater concern that 86% of third year students evaluated the risk at 25% or higher. In fact 41% of third year students put the risk at one in two people or higher. It contrasts significantly with the percentage of registered nurses in the original survey, 30.5% of who put the risk at 1%.

**Table 2**

Likelihood of Opioid Addiction

Available Responses	Year one % N = 62	Year Three % N= 71	Original study % N =318
<1%	0	0	Not a choice
1%	5	1	30.5
5%	13	1	17.3
10%	10	4	6.3
15%	13	0	4.1
20%	8	8	2.8
25%	8	14	3.1
30%	13	31	5
50%	5	16	9.1
75%	14	20	8.8
100%	5	3	2.8
Unanswered	6	2	10.1

The equianalgesic question was answered poorly with only 9.7% of first year students and 15.5% of third year students aware that the comparable oral dose of morphine 10 mg intramuscularly is morphine 30 mg. (See Table 3) This indicates a lack of understanding of the differences that a change in route of administration make to the available analgesia dose for the patient.

**Table 3**

## Equianalgesic Results

Available Responses	Year One	Year Three
10mg	11 %	4%
15mg	33.3%	17%
20mg	27%	58%
30mg	9.7%	15.5%
No answer given	19%	5.5%

Students were asked whether the following statement was true or false. "There is a ceiling on the analgesia of morphine i.e. beyond a certain point, increasing the dose does **NOT** increase pain relief. The correct answer is that the statement is false, since there is not upper limit to the dose of morphine. 60% of first year students believed that the statement was correct as did 55% of third year students. 14.5% of first year students did not answer the question and 24% of third year students did not respond.

A series of true/false questions made up the next section of the survey. The responses for the first year students and third year students are listed in Table 4

**Table 4**

## Responses to True/False statements

Question	Correct Response	Answered correctly %		Answered incorrectly %		Unanswered %	
		Year 1	Year 3	Year 1	Year 3	Year 1	Year 3
1	F	73	91.5	21	8.5	6	0
2	F	14.5	3	84	97	1.5	0
3	F	93.5	97	3.2	3	3.2	0
4	F	50	69	48	30	2	1
5	T	40	52	58	48	2	0
6	T	8	3	90	97	2	0
7	F	79	90	21	10	0	0
8	T	93.5	97	6.5	3	0	0
9	F	60	70	35	30	5	0
10	F	74	70	23	30	3	0
11	T	37	27	55	72	8	1
12	T	9.7	0	87	99	3.3	1
13	T	31	32.5	64	66.5	5	1
14	T	80.5	79	13	21	6.5	0
15	F	32	30	64.5	70	3.5	0
16	F	24	21	72.5	79	3.5	0
17	F	82	89	14.5	11	3.5	0
18	F	95	99	3	1	2	0
19	F	71	87	27	13	2	0
20	F	14	17	84	83	2	0

The remaining questions on the survey related to knowledge about placebos, physiological changes occurring with chronic pain and the students' perceptions of problems that occur in the assessment and management of a patient in pain. These answers have yet to be analyzed and will be the subject of a future article.

### **Results**

The results as shown in table one indicate that the majority of first and third year nurses can correctly identify morphine and heroin as a narcotic medication, with the third year students significantly more sure of the status of morphine. There were no significant differences between the two groups when it came to heroin. Neither group was confident in identifying the non-narcotic status of indomethacin and ibuprofen but the third year students were more accurate in this area than the first year students.

The fact that student nurses are still convinced that opioid addiction is a clear and present danger, as indicated by the responses shown in table 2, is of great concern. It is consistent with the findings of several previous studies involving registered nurses (McCaffery, Ferrell, O'Neill-Page and Lester, 1990; Hamilton and Edgar, 1992 ; Watt-Watson, 1987 and Weis, Sriwatanakul, Alloza, Weintraub and Lasanga, 1883) all of which showed that significant numbers of registered nurses placed the risk of addiction at greater than 25%. These studies were undertaken between ten and twenty years ago and it is disappointing to find that such misconceptions are still prevalent. It is particularly worrisome as anecdotal evidence suggests that this belief impacts on decision making about dose and frequency of analgesic administration to the detriment of the patient. Research has shown the risk to be significantly less than 1% (McCaffery et.al. 1990). By withholding analgesia out of a misplaced fear of addiction we are denying our patients adequate pain control which impacts on their emotional and mental wellbeing and on the speed of their recovery. The fact that the third year students are more likely to hold this belief may be related to the influence of registered nurses working on the wards with whom they come in contact. These registered nurses may also subscribe to this misconception and therefore reinforce it in the minds of the third year student nurses. This is clearly an area where education of nurses needs to be focused.

The lack of understanding of equianalgesic doses as shown in Table 3 is of concern. It has implications for the pain management of those being transferred to the oral route of administration from the intramuscular or intravenous prior to discharge. Nurses need to understand that differences in absorption and metabolism by the liver can greatly alter the analgesia available to the patient and can result in failure of pain management and unnecessary complications. Lack of understanding of the concept of a ceiling for morphine was also evident with over half of both student groups indicating that a ceiling did exist. This may result in adequate analgesic doses being withheld and increase the pain and discomfort of a terminal patient quite unnecessarily.

A number of concepts were explored in more than one question and this allowed testing of the survey for internal consistency. The two questions addressing the concept of equivalent dosing received low scores (9.7% of first years gave the correct answer to the third question and 15.5% of third years). Question 16 of the True/False statements asked the same question and 24% of first years and 21% of third years answered correctly. Responses to questions 2, 4, 6,12,15 and 20 indicate suggest that the students do not understand the physiological and behavioral adaptations that occur when a person experiences pain over time. Answers to question 5 suggest only a lukewarm belief in the idea of around the clock analgesia administration, which is now seen as one of the best ways to deal with continuous pain.

The low scores exploring knowledge of addiction and respiratory depression indicate a continuing belief that these are major complications of narcotic administration, a belief still prevalent in some of the literature but which has been proven to be of minor importance after the first 24-48 hours of narcotic use.

It was reassuring to see that most respondents felt that the patient was the authority on his/her own pain (in Q3, 93.5% of first years and 97% of third years), but it is of concern that 84% of first years and 97% of third years felt that the patient's report of pain should be verified by observable changes in vital signs (Q 2). This is of course impossible once adaptation has occurred in the presence of chronic pain. This finding has also been found in previous studies (Watt-Watson, 1987 and Hamilton and Edgar 1992) and indicates that our understanding of physiological adaptation and belief in the patient's report of pain are areas which still need to be emphasized in educational programs about pain. This belief in a connection between pain and physiological change is contradicted to some extent by the responses to Q17, in which 82% of first year students and 89% of third year students disagreed with the statement that the potency of analgesia should be determined on the basis of physiological responses. Both groups displayed positive attitudes towards believing the patient's report of pain as indicated by answers to question 19 and both groups indicated a strong belief that patients should not endure pain unnecessarily as shown by their responses to Q 18.

Findings from this study will provide educators with information about the areas of content which need to be included and emphasized when planning an educational program about pain and pain management. Factual information about physiology, pharmacology and adaptation to pain need to be emphasized. Attitudes towards patients in pain seem to be supportive but misinformation needs to be minimized by education of both student and registered nurses about the current state of knowledge on pain and its management if a maximum level of good pain management is to be achieved.

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Appendix 1

# Pain Questionnaire

## 痛みについてのアンケート調査

**PLEASE DO NOT PUT YOUR NAME ON THIS FORM**

無記名でお願いします。

AGE (Please indicate) \_\_\_\_\_

年齢

PLEASE INDICATE YOUR YEAR LEVEL \_\_\_\_\_

学年

**EXPERIENCE WITH PATIENTS HAVING PAIN**

痛みを持つ患者さんを担当した経験の有無について

Yes ある  No ない

**NARCOTIC/OPIOID CLASSIFICATION**

麻薬・催眠剤の分類

Please indicate what you know about the following medications

以下の薬剤について知っているものを囲んでください。

**Medication**

**CIRCLE ONE of these answers**

薬剤

答えの中から1つ○で囲んでください。

Codeine	Narcotic	Not a narcotic	Not sure/Don't know
コデイン	麻薬	非麻薬剤	確実でない・わからない
Morphine	Narcotic	Not a narcotic	Not sure/Don't know
モルヒネ	麻薬	非麻薬剤	確実でない・わからない
Indomethacin	Narcotic	Not a narcotic	Not sure/Don't know
インドメサシン	麻薬	非麻薬剤	確実でない・わからない
Heroin	Narcotic	Not a narcotic	Not sure/Don't know
ヘロイン	麻薬	非麻薬剤	確実でない・わからない
Ibuprofen	Narcotic	Not a narcotic	Not sure/Don't know
イブプロヘン	麻薬	非麻薬剤	確実でない・わからない

**NARCOTIC/OPIOID EFFECTS**

麻薬・催眠剤の効果

**A.** Using the definition below, how likely is it that narcotic/opioid addiction will occur as a result of treating pain with narcotic analgesics? Circle one answer closest to what you consider the correct answer:

以下の麻薬使用中の事についてよく考え、該当するものを一つだけ選び○で囲みなさい。鎮痛目的で使用する麻薬鎮静剤によって発生する常用癮はどれくらいか。

<1%   1%   5%   10%   15%   20%   25%   30%   50%   75%   100%

**NARCOTIC ADDICTION** is defined as psychological dependence accompanied by overwhelming concern with obtaining and using narcotics for psychic affect, not for medical reasons. It may occur with or without the physiological changes of tolerance to analgesia and physical dependence (withdrawal).

麻薬常用癖は麻薬を常用していることによる精神の圧倒的な心配事による心理的依存といわれており、医学的理由ではない。それは麻薬の耐性と身体的依存（使用中止）あるなしに関わらず起こる。

**B. Which of the following is most likely to provide the same analgesia as morphine 10mg Intramuscularly (IM).**

**Circle one answer:**

モルヒネ10ミリグラムの筋肉注射と同様の鎮痛効果をもたらすのを以下のどれか一つだけ○をつけなさい。

(Per oral = PO, by mouth) 経口与薬

Morphine 10mg PO      Morphine 15mg PO      Morphine 20mg PO      Morphine 30mg PO

**C. There is a ceiling on the analgesia of morphine i.e., beyond a certain dose, increasing the dose does NOT increase pain relief. Circle your answer.**

モルヒネによる鎮痛作用には最高限度があり、すなわち、痛みの緩和のために一回分の服用量を越えると服用量を増やしても痛みを押さえることが出来ない。あなたの考えに○を付けなさい。

TRUE

FALSE

正しい

誤り

**TRUE / FALSE QUESTIONS CIRCLE EITHER "T" FOR TRUE OR "F" FOR FALSE. 正誤問題 正**

(T) または誤り (F) どちらかに○をつけなさい。

T F **1. Heroin controls pain better than morphine. ヘロインはモルヒネより痛みを押さえる。**

T F **2. Observable changes in vital signs must be relied upon to verify a patient's statement that he has severe pain.**

激しい痛みを持つ人の場合、バイタルサイン（生命徴候）の変化と患者さんの言葉（声明）を確認しなければならない。

T F **3. Pain intensity should be rated by the nurse, not the patient.**

痛みの強さは患者さんの評価ではなく、看護婦の評価による。

T F **4. If the patient can be distracted from his pain this usually means he does NOT have as high an intensity of pain as he indicates.**

もし患者さんが通常の方法で痛みから注意をそらすことが出来るとしたら、これは通常痛みが表現されているよりひどくはないという意味である。

T F **5. A patient who has continuous pain due to cancer should receive analgesia regularly and around the clock.**

癌による持続する痛みがある場合、鎮痛剤を四六時中、また規則正しく服用しなければならない。

T F **6. Patients may sleep in spite of severe pain.**

患者さんは激しい痛みがあるにもかかわらず眠れる。

- T F **7. Comparable stimuli in different people produce the same intensity of pain.**  
同じ様な強さの痛みをもたらす刺激を異なる人々の間で比較することが出来る。
- T F **8. Skin stimulation techniques that may reduce the intensity of pain include the application of hot or cold compresses.**  
温めたり冷やしたりという方法を含めた皮膚刺激の技術は痛みを減らすことが出来る。
- T F **9. Aspirin and other nonsteroidal anti-inflammatory drugs are not effective analgesics for bone pain caused by cancer metastases.**  
アスピリンや他の非ステロイド剤、抗炎症剤は癌転移による骨の痛みの鎮痛には効果がない。
- T F **10. When skin stimulation such as cold or massage is used for pain relief, it must be used in the area of pain.**  
痛みを緩和するための冷やしたり、マッサージするなどをする際には痛みのあるところの範囲で行われるべきである。
- T F **11. Yawning frequently results in some skeletal muscle relaxation.**  
欠伸を頻繁にすると頭蓋骨の筋肉拡大につながる。
- T F **12. Respiratory depression rarely occurs in patients who have been receiving narcotics over a period of time.**  
麻薬の服用期間が一定の期間を過ぎた患者は呼吸低下を発生することはない。
- T F **13. Giving aspirin along with other narcotics is a logical method of increasing pain relief.**  
他の麻薬と一緒に長い間アスピリンを与えることは、痛みの軽減に効果的な論理的方法である。
- T F **14. The usual duration of action of morphine is 5-6 hours.**  
通常モルヒネの持続時間は5 - 6時間である。
- T F **15. Sleep or sedation can be equated with pain relief.**  
睡眠又は浅い眠りは痛みの軽減につながる。
- T F **16. Beyond a certain dosage of strong narcotic (eg. Morphine), increases in dosage will NOT increase pain relief.**  
強い麻薬（例えばモルヒネ）投与が一定の量を越えると、一回の量を増やしても痛みを軽減することが出来ない。
- T F **17. The potency of the pain relief measure selected for the patient should be determined on the basis of his/her physical responses to pain rather than on the basis of the patient's report of pain.**  
痛みの軽減の評価については患者の報告に基づくよりはむしろ身体的評価に基づいて行うほうがよい。
- T F **18. The patient with pain should be encouraged to endure as much pain as possible before resorting to a pain relief measure.**  
痛みのある患者さんには痛みの軽減をする前に我慢するように奨励すべきである。



T F **19.** Assessment of pain by the doctor/nurse is more valid than the patient's assessment.  
痛みのアセスメントは患者さんによるアセスメントよりは医師、看護婦が行うほうが妥当である。

T F **20.** How severe the pain is and how long it lasts are directly related to the cause of the pain.  
激しく長時間に渡る痛みは痛みの原因と直接関係する。

**21.** Placebos are helpful in the treatment of pain problems including:

プラセボは痛みの問題を含めて、以下を含めた点で治療の助けになる。

T F a) acute pain 急性痛

T F b) chronic pain 慢性痛

T F c) terminal pain 終末期の痛み