Pain management as a key priority of a modern health care

Alketa Dervishi	**Lecturer at the Department of Nursing, Faculty of Technical Medical Sciences, University of Medicine Tirana.**
Artur Hatija	**Anaesthetist, Department of General Surgery, "Mother Teresa" University Hospital Centre, Tirana, Albania.**
Miranda Çela	**Lecturer at the Department of Nursing, Faculty of Technical Medical Sciences, University of Medicine Tirana.**
Alma Imami	**Lecturer at the Department of Nursing, Faculty of Technical Medical Sciences, University of Medicine Tirana.**

Abstract

Background: Pain is a major symptom in many medical conditions and one of the main reasons patients call for health care. Data from the literature for more than 30 years, show an inappropriate pain management. The inadequate treatment of pain is a result of many factors, including patient's unjustifiable fear, worries about the analgesia and the medical staff's inability to assess and at the same time manage the pain in an adequate way. Nursing staff has a unique role in the effective management of pain. Accurate nursing assessment, adequate interventions, and identification of the objectives, are indispensable for the patient's pain treatment. Aim: This transversal quantitative study evaluate the current knowledge and attitude regarding pain of undergraduate nursing students and the factors that influence to adequate pain management. Methodology: The study we conducted is a transversal (Cross-sectional) quantitative study, with two main components, Descriptive (narrative) and Analytical. In this study we included 100 Nursing students of the third grade of Bachelor studies, at the Faculty of Technical Medical Sciences, Medical University of Tirana. Collection of data was made possible through a self-administrated structured questionnaire ('Nurses' Knowledge and Attitudes Survey Regarding Pain' (NKAS)). Results: It was observed that the mean score of correct answer rate 63.15%. Data analysis revealed misconceptions about analgesic administration duration along with an exaggerated about the incidence of addiction among patients. Knowledge of pharmacological items was lower than that of non-pharmacological items. Conclusions: Similar studies have performed are consistent with our study and show educational needs regarding pain management. These lacks persist despite the national focus on pain management and the recognition of adverse effects of unrelieved pain. Our study has been exclusively focused on these matters and it's a reflection of knowledge and attitudes of nursing undergraduate students (Bachelor), of the Faculty of Technical Medical Sciences, Medical University of Tirana, Albania. This institution is a key actor in the nursing and nursing-related programs and findings of our study can serve as reference point of knowledge and attitudes of health care professionals in Albania.

Introduction

Pain is a major symptom in many medical conditions and one of the main reasons patients call for health care (*Turk DC, Dworkin RH 2006*). According to the International Association for Pain Management (*IASP*), "*Pain is an unpleasant sensitive and emotional experience, accompanied by a present or potential tissue impairment, or described by that impairment.*" (*IASP 1994, Merskey and Bogduk*). The unique in the pain experience is underlined by the following definition: "*Pain is whatever the experiencing person says it is, existing whenever the experiencing person say it does*" (*McCaffery M, Beebe 1989*).

Pain is always a subjective sensation. Pain perception may be affected by experiences related to painful instances in childhood that may have been accompanied subsequently by present or potential tissue impairment. Therefore, pain is considered an internal and emotional, naturally unpleasant, sensation (*IASP 1994, Merskey and Bogduk*).

Determining pain definition is very important in understanding clearly the acute or chronic pain. Referring to the literature, both acute and chronic pain caused by injuries, diseases, therapeutic treatment or surgery, are usual experiences for patients in the entire world (*Ersek & Poe 2004*). Nevertheless, patients would not calm down from the pain or the treatment would not be effective (*American Pain Society (APS) 2003*).

Data from the literature for more than 30 years, show an inappropriate pain management (*Bonica, 1978; Marks & Sachar, 1973; Pasero & McCaffery, 2004; World Health Organization, 1986*). Pain treated improperly affects life quality by contributing in suffering, disability, sleep disorders, psycho-social problems and prolonged cure time (*American Geriatrics Society, 1998; Page & Eliyahu, 1997; Pasero, Paice & McCaffery, 1999*).

The irrelevant pain management has also a significant financial impact contributing in the increase of morbidity, prolonged in-patient periods, re-admissions in the hospital, and augmentation of health care visits (*Ersek & Poe 2004; Grant, Ferrell, Rivera & Lee, 1995*).

Literature review
One of the most frequent problems patients report is pain (*Lewthwaite et al. 2011*). Nursing staff has a unique role in the effective management of pain. Accurate nursing assessment, adequate interventions, and identification of the objectives, are indispensable for the patient's pain treatment (*Ersek & Poe, 2004; Grant, Ferrell, Rivera & Lee, 1995*). However, in many cases the acute and chronic pain are still managed in an irrelevant way, regardless the adhering of the pain management standards presented by the JCAHO (*Joint Commission on Accreditation of Healthcare Organizations, 2000*). The inadequate treatment of pain is a result of many factors, including patient's unjustifiable fear, worries about the analgesia and the medical staff's inability to assess and at the same time manage the pain in an adequate way (*APS, 2003*). Literature review points out that an inadequate treatment of pain, in addition to the other factors mentioned above, may be a consequence of the nursing staff lack of knowledge.

The main method to acquire the necessary information needed for the pain management is exactly the nursery school (*Clark et al., 1996; Cason, Jones, Brock, Maese & Milligan, 1999*).

Although in may studies the nurses knowledge are evaluated as adequate for the matter, their average results obtained via questionnaires, assessing nurses knowledge and attitude, do not reflect the present knowledge of the pain management practices. There are not many studies conducted that evaluate nurses' knowledge in relation to pain management.

The questionnaire about the evaluation of knowledge and attitudes nurses have regarding pain management (*Nurses' Knowledge and Attitudes Survey Regarding Pain – NKASRP*), is compounded of pharmacological and non-pharmacological sections (*Ferrell BR, McCaffery M 2008*). Students' knowledge on pharmacological issues were not in a satisfactory level, which shows an insufficient educational aspect in relation to the pain management.

Literature data show that there are a limited number of studies on evaluation of pain management that focus on nursing staff trained in the physical evaluation and pharmacological issues (*Plaisance & Logan, 2006*).

In a study conducted on nursing students in Australia and Philippines, it was concluded that there were knowledge deficiencies related to pain management.

Regarding their own self-assessment they thought that their education was insufficient (*Chui, Trinca, Lim & Tuazon, 2003*). Literature data show that a qualitative education may significantly improve nurses knowledge on pain management (*Abdalrahim et al. 2011; Keyte and Richardson 2011; Habich et al. 201*), enabling pain evaluation and documentation, and correct administration of medicaments, which factors contribute to an effective treatment of pain (*Finley, Forgeron and Arnaout 2008; Bourbonnais and Bouvette 2014; Rond et al. 1999*).

Generally studies conducted regarding pain management knowledge, we can conclude that the role of education is crucial, regardless the applied methods (le*ctures, random studies, discussions, videos, etc.*), including also evaluation instruments, in the pain management according to the contemporary standards. (*Bauwens et al. 2001; Huth, Gregg and Lin 2010; Borglin, Gustafsson and Krona 2011*). The Faculty of Technical Medical Sciences of the Medical University of Tirana, is a key institution that prepares and certificates nursing and nursing-related professionals. As the basic institution we must study what approaches does these students have regarding pain management and we can project the situation of holistic treatment of pain by nursing staff in Albania. This study is a reference point and an effort to produce data on knowledge, attitudes and approaches in pain management.

Methodology
The study we conducted is a transversal (Cross-sectional) quantitative study, with two main components: *Descriptive,Analytical: this component refers to analysis and interpretation of data.*
Population in study: In this study were involved a representative sample of nursing students of the Faculty of Technical Medical Sciences, of the Medical University of Tirana.

A sample size of 120 was calculated with WIN Pepi 4.0 (Windows Program for Epidemiologists, Version 4.0). Only 100 Nursing students of the third grade of Bachelor studies, at the Faculty of Technical Medical Sciences, Medical University of Tirana, filled out the questionnaire, resulting in a response rate of 83.3%.

Data Collection: Collection of data was made possible through a self-administered structured questionnaire ('Nurses' Knowledge and Attitudes Survey Regarding Pain' (NKAS)). *All quantitative statistical analysis was made with SPSS (Statistical Package for Social Sciences, version 15.0, Chicago, IL).* All the statistical tests in this study were considered significant at $P < 0.05$.

Results

In this study we included 100 Nursing students of the third grade of Bachelor studies, at the Faculty of Technical Medical Sciences, Medical University of Tirana. Socio-demographic data, such as age and sex were collected and processed. The average age of students was 21.13 ± 0.13.

		Age	Std. Dev.	Std. Error Mean
	Males	21.23	0.12	0.012
	Females	21.04	0.14	0.045
	Total	21.13	0.13	0.028

Distribution of subjects by sex
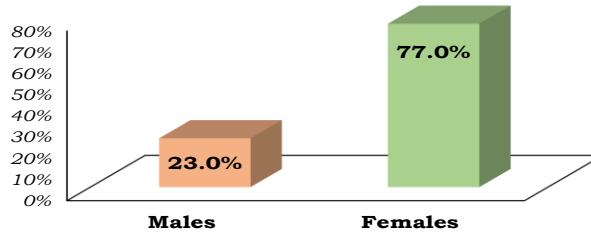
Distribution of subjects by sex					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Males	23	23.0	23.0	23.0
	Females	77	77.0	77.0	100.0
	Total	100	100.0	100.0	

The proportion of females in this study is higher than those of males as a result of high professional preferability among females for Nursing. We can notice a percentage of 77% for females and only 23% males.

Respondents self-evaluation of knowledge regarding pain management					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	7	7.0	7.0	7.0
	Good	68	68.0	68.0	75.0
	Average	25	25.0	25.0	100.0
	Total	100	100.0	100.0	

Respondents self-evaluation of knowledge regarding pain management
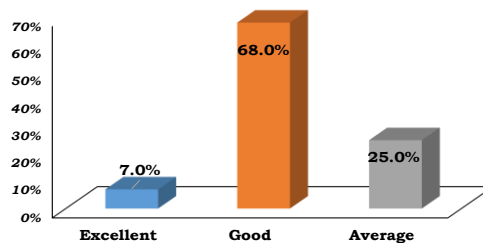
We could have asked students about training workshops, sessions, etc., but as far as we have confirmed that the only source of their knowledge are school lessons and practice, we didn't include this question in our study. Respondents' distribution of perceived level of knowledge in management of pain is given in the table and chart above. It was found that the vast majority of subjects in this study (68.8%) assessed their level of knowledge as being good, with 25.0% rating their knowledge as average. None of the respondents rated their level of knowledge as being either fair or poor and 25.0% self-perceived their knowledge as excellent. On the other hand there is a high conformity between self-evaluation of knowledge and their average correct answer rate.

Item	Mean	Standart deviation	Minimum	Maximum
Correct Answer Rate	63.15%	4.32%	6.5%	98%

Mean correct answer rate score was 63,15% ± 4,32%.

The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is:

|	
E. Rectal	0.0%
D. Oral	6.0%
C. Subcutaneous	2.0%
B. Intramuscular	4.0%
A. Intravenous	86.0%
N/A	2.0%
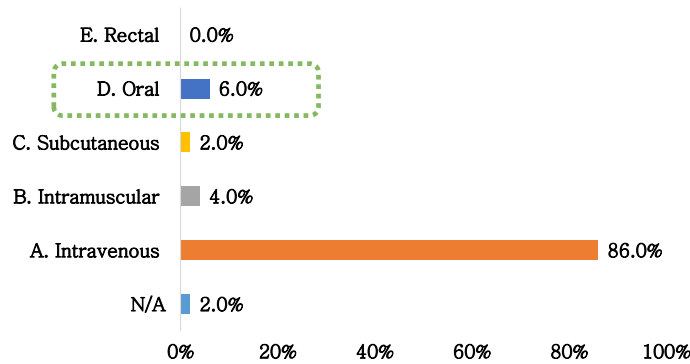
Subjects when asked for the recommended route of administration of opioid analgesics for patients with persistent cancer-related, responded correctly only in 6.0% of cases. This indicates that there must be an emergent intervention on knowledge about routes of administration of opioid analgesics for patients with persistent cancer-related. The surprising finding is that 86.0% answered intravenous route is the most recommended, while this is not correct.

THE RECOMMENDED ROUTE ADMINISTRATION OF OPIOID ANALGESICS FOR PATIENTS WITH BRIEF, SEVERE PAIN OF SUDDEN ONSET

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**A**	**69**	**69.0**	**69.0**	**69.0**
	B	31	31.0	31.0	100.0
	C	0	0	0	0
	D	0	0	0	0
	E	0	0	0	0
	Total	100	100.0	100.0	100.0
A. Intravenous B. Intramuscular C. Subcutaneous D. Oral E. Rectal					

The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset:

E. Rectal	0.0%
D. Oral	0.0%
C. Subcutaneous	0.0%
B. Intramuscular	31.0%
A. Intravenous	69.0%
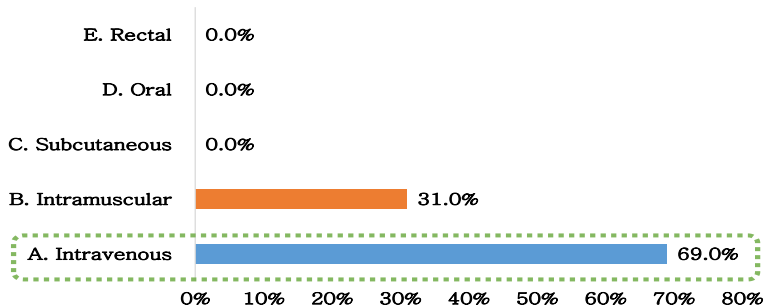
Distribution of subjects by their response for the recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset is illustrated in the above chart and table. We see that the majority (69.0%) of the subjects answered correctly, but there is also a critical proportion of 31.0% which has an incorrect insight of the matter. But on the other hand this suggests that students have a better insight on the approach of patient with acute pain than with persistent cancer-related pain.

Page | 22

| WHICH OF THE FOLLOWING ANALGESIC MEDICATIONS IS CONSIDERED THE DRUG OF CHOICE FOR THE TREATMENT OF PROLONGED PAIN					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A	5	5.0	5.0	5.0
	B	**95**	**95.0**	**95.0**	**100.0**
	C	0	0	0	0
	D	0	0	0	0
	Total	100	100.0	100.0	100.00
A. Codeine **B. Morphine** C. Meperidine D. Tramadol					

When asked which of the analgesic medications is considered the drug of choice for the treatment of prolonged pain subjects responded correctly in almost all the cases (95.0%) and their answers were wrong on only 5.0% of cases. This implies that students do have a good knowledge for prolonged pain.

WHICH OF THE FOLLOWING IV DOSES OF MORPHINE ADMINISTERED OVER A 4 HOUR PERIOD WOULD BE EQUIVALENT TO 30 MG					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-	2	2.0	2.0	2.0
	A	31	31.0	31.0	33.0
	B	**63**	**63.0**	**63.0**	**96.0**
	C	4	4.0	4.0	0
	D	0	0	0	0
	Total	100	100.0	100.0	100.0
A. Morphine 5 MG IV **B. Morphine 10 MG IV** C. Morphine 30 MG IV D. Morphine 60 MG IV					

The distribution of answers about the correct answer on the question: "*Which of the following IV doses of morphine administered over a 4 hour period would be equivalent to 30 mg?*" responded well generally. It was observed that 63.0% of the subjects correctly answered the right answer which was '*Morphine 10 MG IV*'.
However, a proportion of 31.0% of subjects didn't succeed to identify what dose of Morphine medication is useful in the treatment of cancer pain which points out knowledge deficiencies and misconceptions in this dimension of pain management.
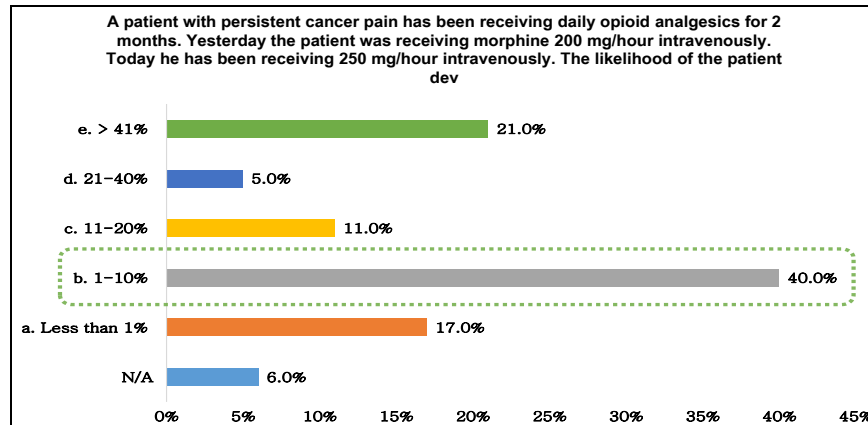

Which of the following iv doses of morphine administered over a 4 hour period would be equivalent to 30 mg:
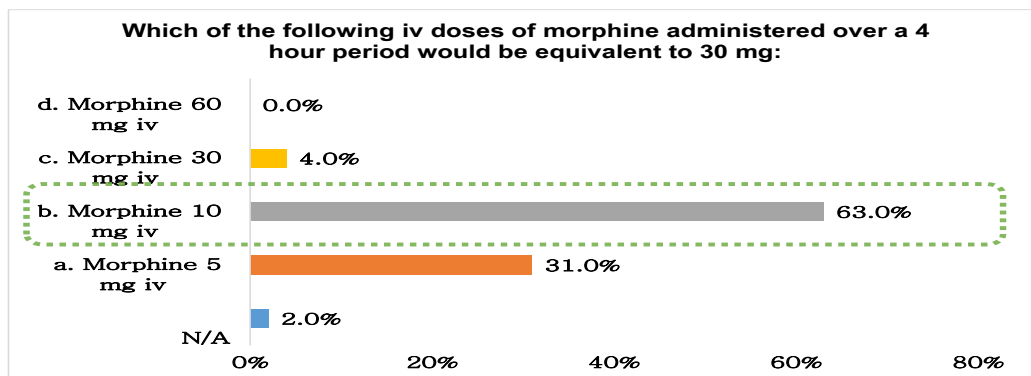
ANALGESICS FOR POST-OPERATIVE PAIN SHOULD INITIALLY BE GIVEN					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**A**	**42**	**42.0**	**42.0**	**42.0**
	B	2	2.0	2.0	44.0
	C	56	56.0	56.0	100.0
	Total	100	100.0	100.0	
A. Around the clock on a fixed schedule					
B. Only when the patient asks for the medication					
C. Only when the nurse determines that the patient has moderate or greater discomfort					

Data on the above table represent the distribution of subjects' responses to the question when should analgesics for post-operative pain should initially be given. The correct answer was the first choice '*Around the clock on a fixed schedule*'. It was shown that 56.0% of subjects incorrectly answered "*Only when the nurse determines that the patient has moderate or greater discomfort*". Surprisingly, only 42.0% of students chose the correct answer which was '*around the clock on a fixed schedule*' as presented in the above table.

When students were presented with the case study: "*a patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient dev*." They couldn't clearly identify the correct answer. The above table and chart shows the diversity of answers in this item of our questionnaire. We see that the correct answer was identified by only 40.0% of the subjects. Nevertheless, 17.0% of respondents believed that the correct answer was "less than 1%" and 11.0% went for '*11-20%*'

A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient dev

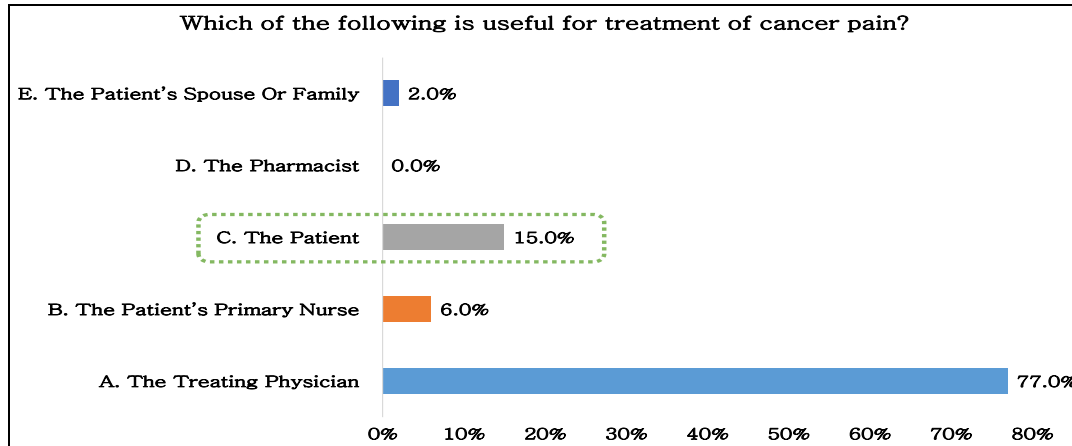| THE MOST LIKELY REASON A PATIENT WITH PAIN WOULD REQUEST INCREASED DOSES OF PAIN MEDICATION IS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**A**	**64**	**64.0**	**64.0**	**64.0**
	B	8	8.0	8.0	72.0
	D	28	28.0	28.0	100.0
	Total	100	100.0	100.0	
A. The Patient Is Experiencing Increased Pain.					
B. The Patient Is Experiencing Increased Anxiety Or Depression.					
C. The Patient Is Requesting More Staff Attention.					
D. The Patient's Requests Are Related To Addiction.					

Data on the above table and pie chart represents the distribution of subjects' responses to the question of which is the most likely reason a patient with pain would request increased doses of pain medication. The correct answer was the first choice '*The Patient Is Experiencing Increased Pain'*. It was shown that 64.0% of subjects answered correctly. On the other hand 28.0% of students chose incorrectly that "*the patient's requests are related to addiction*".

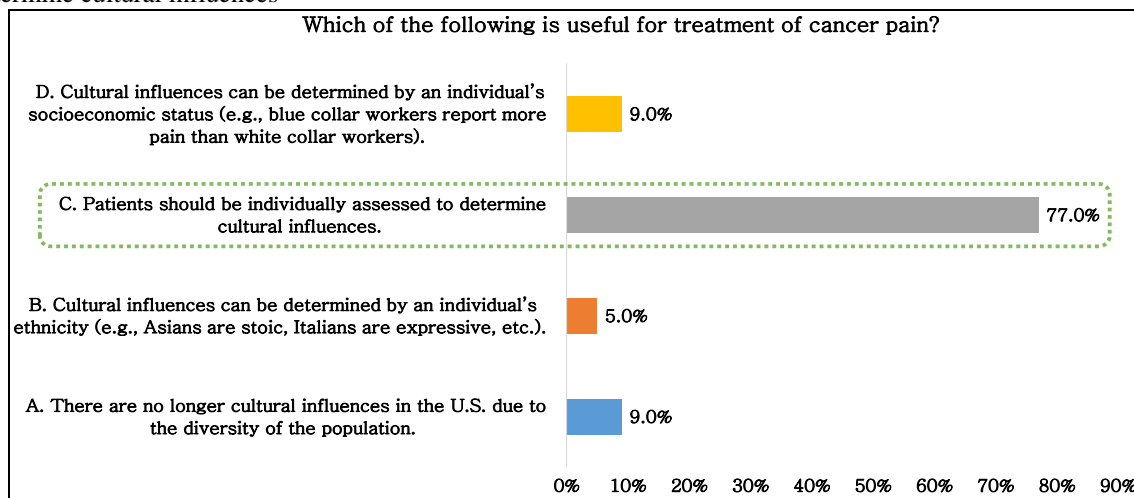| WHICH OF THE FOLLOWING IS USEFUL FOR TREATMENT OF CANCER PAIN?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-	2	2.0	2.0	2.0
	A	26	26.0	26.0	28.0
	B	40	40.0	40.0	68.0
	C	2	2.0	2.0	70.0
	D	**30**	**30.0**	**30.0**	**100.0**
	Total	100	100.0	100.0	
A. Ibuprofen (Motrin) B. Hydromorphone (Dilaudid) C. Gabapentin (Neurontin)**D. All Of The Above**					

The distribution of answers about the correct answer on the question: "*Which of the following is useful for treatment of cancer pain?"* responded incorrectly generally. It was observed that 40.0% of the subjects incorrectly answered '*Hydromorphone (Dilaudid)'*. However, only 30.0% of subjects succeeded to identify what medication is useful in the treatment of cancer pain which shows us that there are misleading knowledge and conceptions in this aspect of pain management.

THE MOST ACCURATE JUDGE OF THE INTENSITY OF THE PATIENT'S PAIN IS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A	77	77.0	77.0	77.0
	B	6	6.0	6.0	83.0
	C	**15**	**15.0**	**15.0**	**98.0**
	E	2	2.0	2.0	100.0
	Total	100	100.0	100.0	
A. The Treating Physician B. The Patient's Primary Nurse **C. The Patient** D. The Pharmacist E. The Patient's Spouse Or Family					

Page | 24

The chart and table of the distribution of respondents' answers to which is the most accurate judge of the intensity of the patient's pain were surprisingly very deficient. The correct answer was the first choice 'the patient. We found that 77.0% of students incorrectly answered 'the treating physician'. What is most noticeable, is the low percentage of correct answers, only 15.0% of the subjects chose the correct answer which was 'the patient' as displayed above. It was noticed that the other 8.0% answered 'the pharmacist' or the 'patient's spouse or family'. We can say that students don't know yet who the real judge is or maybe they cannot conceptualize this.

Which of the following is useful for treatment of cancer pain?

Answer	Percentage
E. The Patient's Spouse Or Family	2.0%
D. The Pharmacist	0.0%
C. The Patient	15.0%
B. The Patient's Primary Nurse	6.0%
A. The Treating Physician	77.0%

Students had good knowledge of which is the best approach for cultural considerations in caring for patients in pain. They answered correctly in 77.0% of cases. So they know the significance of individual assessment of patient in order to determine cultural influences

Which of the following is useful for treatment of cancer pain?

Answer	Percentage
D. Cultural influences can be determined by an individual's socioeconomic status (e.g., blue collar workers report more pain than white collar workers).	9.0%
C. Patients should be individually assessed to determine cultural influences.	77.0%
B. Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic, Italians are expressive, etc.).	5.0%
A. There are no longer cultural influences in the U.S. due to the diversity of the population.	9.0%

In this study which we used the NKAS questionnaire, there was a section containing twenty-one true or false claims in which each subject had to choose the answer that they believed was the correct response for each claim. After analyzing and ranking questions from this section we got the above table and chart. From the table, you can see that only four of the 21 claims received a correct answer rate above 90%. As shown above, you can notice that three out of the twenty-one items had a mean correct percentage score of 80% or more. On the other hand nine items out of 21 received a score of60% to less than 76%. Eventually, the lowest correct answer rate (below 57%) was noticed in four items. Extrapolating from the above table we found that, 98.0% of respondents answered correctly to NKAS item number (15) which stated 'After an initial dose of an opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response'. This item was the highest correctly answered question of the complete NKAS tool in this present study.

No.	Question Content For True/False Statements	Correct Answer Rate %
1	Vital signs are always reliable indicators of the intensity of a patient's pain.	94.0%
2	Patients who can be distracted from pain usually do not have severe pain.	60.0%
3	Patients may sleep in spite of severe pain.	76.0%
4	Aspirin and other non-steroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.	57.0%
5	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.	63.0%
6	Combining analgesics that work by different mechanisms may result in better pain control with fewer side effects than using a single analgesic agent.	90.0%
7	The usual duration of analgesia of 1-2mg of morphine intravenous IV is 4-5 hourly.	68.0%
8	Studies suggest that promethazine and hydroxyzine are the most effective opioids	66.0%
9	Opioids should not be used in patients with a history of substance abuse.	63.0%
10	Morphine has a dose ceiling.	60.0%
11	Elderly patients cannot tolerate opioids for pain relief.	81.0%
12	Patients should be encouraged to endure as much pain as possible before using an opioid.	87.0%
13	Children less than 11 years old cannot reliably report pain so nurses should rely solely on the parent's assessment of the child's pain intensity.	60.0%
14	Patient's spiritual beliefs may lead them to think pain and suffering are necessary.	87.0%
15	After an initial dose of an opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response.	98.0%
16	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.	63.0%
17	If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to diagnose the cause of pain.	51.0%
18	Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.	54.0%
19	Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm.	55.0%
20	Narcotic/Opioid addiction is defined as chronic neurobiological disease, characterized by behaviors that include one or more of the following: impaired control over drug use, continued use despite harm and craving.	90.0%

Top 8 correct answers		
No.	Question Content For True/False Statements	Correct Answer Rate %
15	After an initial dose of an opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response.	98.0%
23	Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged pain	95.0%
1	Vital signs are always reliable indicators of the intensity of a patient's pain.	94.0%
6	Combining analgesics that work by different mechanisms may result in better pain control with fewer side effects than using a single analgesic agent.	90.0%
20	Narcotic/Opioid addiction is defined as chronic neurobiological disease, characterized by behaviors that include one or more of the following: impaired control over drug use, continued use despite harm and craving.	90.0%
12	Patients should be encouraged to endure as much pain as possible before using an opioid.	87.0%
14	Patient's spiritual beliefs may lead them to think pain and suffering are necessary.	87.0%
11	Elderly patients cannot tolerate opioids for pain relief.	81.0%

Discussion

Patients' pain is a complex and subjective phenomenon. Evaluation of patient's pain is an on-going interactive process that frequently results in inadequate pain management. Nursing education should address this knowledge deficit but the clinical environment is thought to be more influential in the acquisition of nursing pain management skills.

Similar studies have performed are consistent with our study and show educational needs regarding pain management. These lacks persist despite the national focus on pain management and the recognition of adverse effects of unrelieved pain.

Acknowledging and aggressively treating patient's complaints of pain, the importance of pain reassessment, and the incorporation of alterative pain management modalities needs to be the focus of continued professional education of nurses. There is very little research evidence to indicate the efficacy of educational preparation of nurses undertaking pain management in Albania.The study indicated that nurses had good knowledge of pharmacological pain management, but scored less in administration routes of these medications and clinical decision making for pain management. There is a gap in the literature that identifies a need for a detailed assessment of nursing knowledge related to pain management in order to identify the exact knowledge deficits. Pain in patients can be under recognized and unrelieved.

Currently the literature does not identify how nurses actively contribute to the assessment and control of postoperative pain in older people for example, or why they have been unsuccessful in translating the information and advances in pain management available in clinical practice. Since post-surgical pain can be under recognized and unrelieved it is important to identify factors that enhance or inhibit effective pain management.

Conclusion

Pain management is a continuous, difficult process and one of the top challenges of health care professionals. Theoretical and practical knowledge, are a crucial element for effective pain management. Our study has been exclusively focused on these matters and it's a reflection of knowledge and attitudes of nursing undergraduate students (*Bachelor*), of the Faculty of Technical Medical Sciences, Medical University of Tirana, Albania. This institution is a key actor in the nursing and nursing-related programs and findings of our study can serve as reference point of knowledge and attitudes of health care professionals in Albania. Our findings may be considered satisfactory, however, based on literature data, these results must be improved.

 Future studies should focus on inclusion of medical and nursing staff. The conduction of such studies helps coordinating theoretical and practical knowledge in more consolidated level, thus contributing in improvement of life quality among patients.

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