Knowledge and Practices of Nursing Students towards total Pain Management in Terminally ill Patients in Two Selected Nursing Institutions in Mbarara Municipality. A Cross-Sectional Descriptive Study.

Andrew Natwijuka[a,1], John Baptist Asiimwe[a]

[a] Department of Nursing, Faculty of Nursing and Health Sciences, Bishop Stuart University, P.O. Box 09, Mbarara, Uganda.

Abstract

Background:
Pain is the physical, social, spiritual, and psychological discomfort in a human being. The vast majority of people globally claim to experience body pain 95% at some point in their lives.

Methodology:
A cross-sectional study was conducted using a quantitative approach. A total of one hundred forty-six (146) nursing students participated in the study and they were selected by a simple random sampling method

Results:
One hundred forty-six (146) nursing students were selected to participate in the study. The majority of subjects were aged between 18 and 29 years (89.8%) and there were more females (68.0%) and were pursuing certificate level of Ugandan education 62 (42.2%). The overall findings from the study show that majority of the nursing students had good to excellent knowledge (84.6%). The majority had used the observation method to determine patients" pain (93.9%).

Conclusion:
The study highlighted good knowledge and practices towards the assessment of pain among nursing students.

Recommendation:[a]
The results of the study identified gaps in practices of nursing students in total pain management and thus we recommend that stakeholders for nursing training institutions should give more time to practical lessons under observation to be able to evaluate students and correct errors in practice to be able to train competent nurses.

[a]Email: natwijukaandrew@gmail.com
Date submitted: 16th/01/2022 Date accepted: 29th/01/2022

1 Background

Pain is a highly prevalent condition globally (Vos *et al.,* 2012), it is defined as an "unpleasant sensory and emotional experience associated with actual or potential tissue damage" and has been associated with burden across multiple domains (Green *et al.,* 2011 and McDonald *et al.,* 2011). Total Pain (Saunders, 1976) is the physical, social, spiritual, and psychological discomfort in a human being. Pain poses a serious problem and must be dealt with and expounded in a correct manner (de Carvalho MWA *et al.,* 2013). Nursing students play an essential role in total pain assessment and management (TPAM) (Zhou G *et al.,* 2010). Chronic pain conditions constitute pain persisting beyond normal healing time and can represent complex clinical challenges. Modalities of treatment may vary from classic pharmacologic interventions such as opioid analgesics to more holistic approaches such as relaxation exercise. With opioids, addiction and treatment history have become important considerations and potential sources of under treatment in severe pain management (Fairchild *et al.,* 2010).

The vast majority of people globally claim to experience body pain (95 percent)and head pain (86 percent)at some point in their lives, with over eight in ten (85 percent) claiming to have experienced both (Global Pain Index, 2017). In a study by Goren *et al.,* (2014)**,** the frequency of pain was generally comparable across Europe, Russia, and the United States (18.3% to 23.8%) and slightly lower in Brazil (14.3%). In both China and Japan, however, the prevalence of reported pain was much lower (6.2% and 4.4%, respectively). Across all countries except Russia where only 39.2% of patients reported having been diagnosed with pain condition), two-thirds of patients or more reported having been diagnosed with pain. Treatment rates were highest (40.1% to 50.4%) in Russia, Europe, and the United States and lowest in China (28.3%) and Japan (26.3%). Severe pain was reported by the smallest proportion of respondents in Russia, China, and Japan and by the greatest proportion in the United States.

Also, a study by Abdulmujeeb AB, Olaniyan LT (2017) revealed that the prevalence of low back pain was at a high point prevalence of 84% among the healthcare workers in Kibuli Muslim Hospital. The Ugandan Ministry of Health in 2018 revealed that there were 32,617 new cancer cancers and 21,829 cancer deaths in Uganda, but only 11 percent of those who needed pain control and palliative care accessed it in Uganda. More so the country's health sector development plan 2015/16-2019/2020 showed that palliative care services were being offered in only 4.8 percent of public hospitals in the country. Besides, a survey was conducted by Hospice Africa Uganda (HAU). These results were much similar to the report by the palliative care association Uganda (PCAU) which revealed that 3.4 million Ugandans that required palliative care services did not access it, while many more continued to die in severe pain. In 2010, PCAU showed that 80% of the 16,526 patients who died in Uganda with moderate to severe pain due to cancer, and 50% 0f the 112,065 people who died due to HIV-related causes had moderate to severe pain.

An important responsibility of healthcare professionals is to eliminate pain. As part of the healthcare team, nursing students play a major role in effective pain management. It has been stated that nursing students must be sensitive to pain and have adequate knowledge of it (Brown et al., 2013). The American Pain Society has also stated that pain is not the responsibility of the patient, but that when a patient expresses pain, pain management is the responsibility of the nurse (Portenoy et al., 2017). Studies have shown that nursing students' knowledge of pain, pain assessment, and management is inadequate, that their knowledge generally derives from their university and other institutional education (Duke *et al.,* 2013 and Yorulmaz *et al*., 2012). It has been shown that nursing students' knowledge of the identification, assessment of pain, and pain control is at a medium or inadequate level (Er MR *et al.,* 2013).

Although there are technological advances, extensive research, and evidence-based practice guidelines to manage pain adequately, patients continue to suffer because of inadequate pain management (Gentile DA *et al.,* 2011). Barriers to appropriate total pain management (TPM) include the subjectivity of pain, lack of education; problems converting between opioids, and the stigma of opioid use (Spitz *et al.,* 2011). The knowledge and attitudes about addiction and tolerance of opioids were also identified as additional barriers to effective pain management. A study by Yet (2010) reported that a lack of scientific data is not a barrier to the mismanagement of pain. Features of nursing students such as age, gender, and educational

level have been assessed in comparison with TPAM and practices.

Several studies have reported that participants with more experience had a higher score than those with lesser experience (Tortorella GT.2014) Other reasons behind nursing students' insufficiency of knowledge and poor attitudes toward pain in medical-surgical units might be due to their educational level and inadequate lecture hours on courses about pain management in the nursing curriculum. Nursing students require adequate knowledge and good practices of pain assessment. Hospitals and policymakers need to design policies that foster effective pain assessment and management; this can only be properly achieved if there is evidence to guide policy and decision-making (Blum D *et al.,* 2014).

In sub-Saharan countries, various studies have identified that there is grossly inadequate knowledge among nursing students on TPAM which has increased morbidity, mortality, prolonged stay in hospitals as well as treatment failures among terminally ill patients (Aziato L and Adejumo O, 2014). In Uganda, the ministry of health (MOH) has developed a guideline on pain Management and assessment through the Uganda Clinical Guidelines (Kiwanuka and Masaba, 2018).

The World Health Organization (WHO) pain management protocol has been adopted by the ministry of health; this involves assessment and following the analgesic ladder during pain management. Inadequate pain assessment and the resulting inadequate pain management among terminally ill patients have been found to have serious psychological and physiological sequelae (Ung *et al.,* 2016). Besides, the study by Salameh (2018), the results of the study showed that Palestinian nursing students in critical care units possess inadequate knowledge about pain management. Furthermore, there were inconsistencies in their attitudes and practices which required further research. Therefore, it is important to determine student nursing students' knowledge and practices with regards to pain assessment among patients with terminal illnesses

2 Methodology.

Study Design

A cross-sectional descriptive study and a quantitative method were utilized. This is because there was no intervention to be done and a short period was required for the study (Polit & Beck, 2010).

Study Setting

The study was carried out at Bishop Stuart University, Ruharo Nursing Campus, and Mayanja Memorial Training Institute. Bishop Stuart University, Ruharo Nursing Campus located in Ruharo Ward, Kamukuzi Division, Mbarara Municipality, Mbarara District along Mbarara Bushenyi Road. It has a population of approximately 300 students. It admits students for the following courses in nursing: - Bachelor in Nursing Science, Diploma in Nursing (Directs) Bachelors in nursing completion (BNC), and Diploma in Nursing (Extensors). Mayanja Memorial Training Institute located two miles from Mbarara town in Makenke Kakoba Division, Mbarara Municipality, and Mbarara District along Mbarara-Masaka road. It admits students for the following courses in nursing namely: Diploma in Nursing (direct), Diploma in Nursing (Extensors), and Certificate in Enrolled Nursing. The choice of these study areas is the best because they are easily accessible.

Study Population

The study population included nursing students at Bishop Stuart University (Ruharo Nursing Campus) and Mayanja Memorial Training Institute**.** The choice of this group was because they are taught theory and skills concurrently at their training institutions and were easily accessible

Selection Criteria

Inclusion Criteria

The study included only nursing students who have ever practiced on the ward at the time of data collection and who were willing to participate in the study.

Exclusion Criteria

All nursing students that have ever practiced on the ward but were not available at the time of data collection were excluded from the study.

Sample Size Determination

The sample size was estimated by Kish and Leslie's standard formula (1965), N= Z2PQ/E2. Where N is the sample size, Z is the score responding 95% of the confident interval which is 1.96, P is the percentage of students who have ever managed pain in a study that was done by Kiiza et al (2016) was estimated to be 0.694. Q=1-P=1-0.694=0.306

E=Level of error expected which is 0.05 N= (1.96)2 x 0.05 (0.5)/0.052, N=326

The study was adjusted for finite population as follow; Fisher's et al. (1998)

nf=n/(1+(n/N)Where; nf = desired sample for population < 10 000 n = desired sample size for population > 10 000. N = estimate of the population size (282)

nf =326/ (1+(326/282)) and nf =151.2 respondents but, 152 were considered.

Sampling Technique

The study used two sampling methods. In the beginning, the researcher used a representative stratified random sampling method, where the researcher after dividing the study population into appropriate strata according to the courses; BNS, BNC, DNS, DNE, and ENC calculated a representative sample from each stratum about the total. After this, the study used simple random sampling to select the study sample. This method was chosen because there was no need to divide the population into subpopulations or take any additional steps before selecting members of the population at random and it is considered (Polit& Beck,2010).

Recruitment and Enrollment

Due to the country's lockdown, the study opted to use WhatsApp Messenger (Face book, Inc., California, and USA) for enrolling potential participants. Main existing WhatsApp groups of students in the two institutions were identified.

Data Collection

The study used a standardized structured questionnaire originally developed by Ferrell and McCaffrey in 1987 that was later revised in 2008 which had been modified by the researcher to collect data. This questionnaire contained questions on knowledge and practices on total pain management. The questions were closed questions that produce data that could be analyzed quantitatively for patterns and trends (Polit & Beck, 2010). Part "A" provided information about the demographics of the students. Part"B"&"C" provided information about the respondent's level of knowledge and practices. All questions were to be answered by either choosing "YES" or "NO", other Questions the participants are given several alternatives and are asked to "Tick" (√) their choices.

Data Collection Method

The researcher conducted research using a modified questionnaire adapted from (Ferrell and McCaffrey 2008) which was answered by putting a "Tick"(√) for the chosen answers. The questionnaire has 8 questions on knowledge and 7 questions on practice. The questionnaire was chosen because it offered the possibility of anonymity; the absence of an interviewer ensured the independence of the interviewee and produced data that was analyzed quantitatively for pattern and trend (Polit & Beck, 2010)

Study Procedures

The study's procedures only involved assessment of knowledge and practices of nursing students towards total pain management among terminally ill patients. An online data collection tool was designed and executed using Google Forms (via docs.google.com/forms). The Google Form link to the questionnaire was sent to the enrolled participants via the identified WhatsApp groups.

Validity

Validity is a measure of how well a test measures what it is supposed to measure McClung (1978). Any validity errors in this research were eliminated by the supervisor reviewing the work before approving it. Furthermore, it was achieved by pre-testing the questionnaire with at least 10 subjects. The errors in phrases and sentences were corrected to make it precise before collecting data. Additionally, the questionnaire was maintained in English to avoid translation errors. An online questionnaire was set in a way whereby the participant filled the questionnaire only once.

Reliability

The reliability of any given measurement refers to the extent to which it is a consistent measure of a concept and Cronbach's alpha is one way of measuring the strength of that consistency. Cronbach's alpha of >70 from previous studies was used (Suparna, 2010) Cronbach's alpha was used to assess the reliability or internal consistency, of a scale that will be used to assess knowledge and practices.

Measurements of Variable

Independent Variables

Demographics: Age, gender, and year of study were the independent variables

Dependent Variable

Knowledge and practice level were the dependent variable. Knowledge and practice will be measured as a percentage (<50%) = Poor, (50%-75%) = Good and (>75%) = Excellent

Data Management

The data collected was carefully checked for completeness before safety storage, and attempts were made to ensure the complete filling of the questionnaires. The data collected from the respondents

were directly entered into Microsoft excel where it was cleaned and transferred into SPSS for analysis. Only the researcher and the assistants had to access them.

3 Data Analysis Technique

Data was entered into excel then transferred to Statistical Program Statistical Package for Social Sciences version 20 (SPSS) for analysis.

Univariate Level

This involves an examination of one variable at a time. Categorical data were described and summarized using frequency, distribution, and percentages.

Bivariate Level

This involves the examination of two variables simultaneously. Independent variables were cross-tabulated with the dependent variable. Data were analyzed mainly with Chi-square distribution.

Ethical Consideration

The researcher obtained an introductory letter from the Head of Nursing Department at Bishop Stuart University. Permission was obtained from Mayanja Memorial Medical training institute and Bishop Stuart University Ruharo Nursing campus. Informed consent was always sought from respondents and our questionnaire did not capture participants' initials. This assured confidentiality of the information. Data collected was kept under the locked box and only authorized persons accessed it and this assured privacy.

Dissemination of Results

The study findings will be compiled into a report. Three copies will be made. One for the researcher and the two were disseminated to the Libraries at Bishop Stuart University and Mayanja Memorial Training Institute and then the publication of the research report into relevant journals will be followed up.

4 Results:

Participant Characteristics

One hundred forty-six (146) nursing students were selected to participate in the study, and they all fully completed the study, yielding a response rate of 100%. The majority of subjects were aged between 18 and 29 years (89.8%) and there were more females (68.0%). The majority of the nursing students were pursuing certificate level of Ugandan education 62 (42.2%) and most of them had two years of studying (57.9%) (Table1).

Demographic characteristics of the nursing students in two selected nursing institutions in Mbarara municipality.

The association of knowledge of nursing students towards total pain management in terminally ill patients:

The overall findings from the study show that majority of the nursing students had good to excellent knowledge (84.6%). Students in the age groups of 18-29 years (56.9%) had good to excellent knowledge as compared to others. In terms of gender, the proportion of female students with good to excellent knowledge (51.7%) was higher than those of male students. On courses of study, BNC (22.1%) had good- excellent knowledge as compared to the rest of the courses. In addition, students in the fourth year (25.2%) had the highest percentage of nursing students with good to excellent knowledge as compared to the rest. When we compared the association between the two, Characters of gender $X2(df=3)=0.658$, P value=0.047, course of study $X2(df=7)=0.842$, P value=0.018 and year of study $X2(df=6)=0.942$, P value=0.031 were found significant as shown in table two below.

The association demographic characteristics and knowledge of nursing students towards total pain management in terminally ill patients in two selected nursing institutions in Mbarara municipality.

The practice of nursing students towards total pain management in terminally ill patients

The majority of participants used the observation method to determine patients" pain (93.9%) and most of the nursing students asked patients to determine their (91.8%). In addition, most nursing students asked patients to describe the intensity of pain using a scale (93.9%), and the majority used a facial rating scale (52.4%). The majority of nursing students asked patients about the side effects of pain medication (97.3%) and most did it sometimes (53.1%). Most of the nursing students gave prescribed pain medication to patients on a fixed schedule (89.1%) and they did it sometimes (42.2%). The majority of nursing students provided some alternative things to alleviate patients' pain when they still felt pain (76.9%)

The practice of nursing students towards total pain management in terminally ill patients

Table 1. Demographiccharacteristics of the nursing students in two selected nursing institutions inMbarara municipality.

Variable	Category	n (%)
Gender	1.Male	46 (31.3%)
	2.Female	100 (68.0%)
Age	1. 18-23	65 (44.2%)
	2. 24-29	67 (45.6%)
	3. 30-35	3 (2.0%)
	4. 36-49	12 (8.2%)
	5. 50 and above	0 (0.0%)
Course of study	1.Bachelor of Nursing Science	48 (32.7%)
	2.Diploma in Nursing (Direct)	6 (4.1%)
	3.Bachelor in nursing completion (BNC)	21 (14.3%)
	4.Diploma in Nursing (Extensor)	9 (6.1%)
	5.Certificate in Nursing	62 (42.2%)
Year of study	1.Year One	29 (19.7%)
	2.Year Two	85 (57.9%)
	3.Year Three	22 (15.0%)
	4.Year Four	11 (7.5%)

Table 2. The association demographic characteristics and knowledge of nursing students towards total pain management in terminally ill patients in two selected nursing institutions in Mbarara municipality.

Variables	Categories of knowledge on TPM (%)			X^2	Df	P.Value
	POOR (0-50%)	GOOD (51-75%)	EXCELLENT (76-100%)			
Overall	15.4	30.4	54.2			
Gender						
1.Male (46)	2.3	8.6	25.7	0.658	3	0.047*
2.Female (100)	11.7	10.0	41.7			
Age						
1. 18-23 (65)	5.0	2.3	23.5	0.624	6	0.460
2. 24-29 (67)	3.0	7.0	24.1			
3. 30-3 (53)	1.0	4.0	18.1			
4. 36-49 (12)	0.0	2.0	10.0			
Course of study						
1.BNS (48)	3.7	5.0	14.2	0.842	7	0.018*
2. DNS(6)	2.0	1.0	8.1			
3.BNC (21)	1.0	4.0	18.1			
4.DNE (9)	4.0	2.0	17.0			
5.ECN (62)	14.3	2.3	4.3			
Year of study						
1.Year One (29)	16.7	5.0	4.2	0.942	6	0.031*
2.Year Two (85)	8.3	2.0	17.0			
3.Year Three (22)	1.0	2.3	19.3			
4.Year Four (11)	0.0	5.0	20.2			

P< 0.05 was considered to be statistically significant.

in two selected nursing institutions in Mbarara municipality.

5 Discussion.

The knowledge of nursing students towards total pain management in terminally ill patients Pain is a major health care concern in terminally ill patients and an integral part of nursing care. Nursing students contribute to the largest health workforce in Uganda and spend more time with the patients. Therefore, they need adequate knowledge of pain assessment and management. Knowledge deficits regarding pain assessment principles have been cited as one of the barriers to total pain management among terminally ill patients and nursing students' recognition of lacking adequate pain assessment knowledge has been considered a key step towards the improvement of pain management (Kituyi *et al.,* 2011). It is, therefore, recommended that nursing students as future nurses engage in continuous professional development programs on pain assessment and the use of pain assessment tools.

In this study majority of the nursing students had good to excellent knowledge (86.0%) on pain assessment and management. This conquers with results from a study by Laurah, (2019) where the majority of final year nursing students (78.0%) reported good knowledge regarding the use of analgesics in the terminally ill patient. This could be attributed to experience and training on pain management students acquire during their practicum. The findings of this study differ from those in a study by Kassa *et al.,* (2014) in Addis Ababa which indicated that most of the nursing students had inadequate knowledge and underestimated pain. Above all, in this study, female nursing students had good to excellent knowledge as compared to males. This is also in line with a study by Kiwanuka and Masaba, (2018) at Mulago hospital in Uganda which indicated that females were the majority of the nursing workforce in Uganda. However, we recommend also males to join the nursing practice to avoid gender bias and inequalities that may come along the practice.

The findings of our study found significant associations between knowledge and gender, course of study, and year of study. This is similar to the results of a study by Kituyi *et al., (*2011), the Central African Republic which revealed that students on degree level had good knowledge compared to students on junior courses such as certificate level on pain management. However, this study's findings differ from the results of a study conducted by Al Qadire and Al Khalaileh, (2014) in India where significant observations between the course of study and years of study with knowledge were found. This could be attributed to the study setting since the above were experimental studies and yet this was a cross-sectional study.

Overall baccalaureate degree programs scored significantly higher compared to the rest of the programs. In this study there was a significant association between the course of study and knowledge on TPM, this could be attributed to the bigger content they cover at degree level compared to diploma and certificate levels, however, we could not find any literature supporting this and thus this is unique to our study. This study's results differ from those of Salameh, (2018), in Palestine which found generally inadequate knowledge among nurses on pain management which was attributed to insufficient information about the subject in undergraduate nursing programs. It is, therefore, recommended that nursing students engage in continuous professional development programs on pain assessment and management.

Furthermore, in our study there was a significant association between year of study and knowledge on TPM, the majority of final year students displayed good to excellent knowledge. This is in line with a study by Deborah and Laura, (2019) who carried a study on final year nursing students' knowledge on terminal pain management in Finland where it was revealed that the majority of them had good knowledge on terminal pain management and this was attributed to enough time students get to learn and take part in caring for patients.

The practice of nursing students towards total pain management in terminally ill patients

Effective pain management begins with proper pain assessment and the use of standardized tools; this helps in the evaluation of the efficiency of the intercessions directed towards individualized needs of patients concerning relief from pain. If the tools are not used, nursing students depend solely on their clinical judgment and this is possibly prejudiced by several notions and attitudes about the pain that the patients are in and this affects the outcomes of the patients as almost all the managements are centered on the nurses' pain ratings.

Table 3. The practice of nursing students towards total pain management in terminally ill patients in two selected nursing institutions in Mbarara municipality.

Variable	Category	n(%)
You used observation to determine patients“ pain	Yes	138 (93.9%)
	No	9 (6.1%)
You asked your patients to determine patients“ pain	Yes	135 (91.8%)
	No	12 (8.2)
You asked your patients to describe the intensity of pain using a scale, IF YES answer question four	Yes	138 (93.9%)
	No	9 (6.1%)
Have you used any of the scales below to assess patient's pain;, ,	Description of pain severity using a categorical verbal rating scale (no pain, little pain, moderate pain, severe pain),	6 (4.1%)
	Description of pain intensity using a numerical scale from 0-10	50 (34.0%)
	Description of pain intensity using visual analog scale 0-10 or 0-100	9 (6.2%)
	Description of pain intensity using the face rating scale.	77 (52.4%)
You asked patients about the side effects of pain medication they experienced such as drowsiness, nausea, and vomiting, respiratory problems.	Yes	143 (97.3%)
	No	4 (2.7%)
How did you ask the patient about the side effects in C05 above in a shift	All the time	9 (6.4%)
	Frequently	54 (36.7%)
	Sometimes	78 (53.1%)
You gave prescribed pain medication to patients on a fixed schedule, such as every 4 hours or every 6 hours during 24-48 hours after surgery	Yes	131 (89.1%)
	No	16 (10.9%)
How often did you do it in a shift?	All the time	14 (9.5%)
	Frequently	56 (38.1%)
	Sometimes	62 (42.2%)
You provided some alternative things/ activities to alleviate patients pain when they still felt pain	Yes	113 (76.9)
	No	34 (23.1)

The findings of this present study indicated that the majority of the respondents used pain assessment tools for the evaluation of patients' pain levels. This is in line with a study by Kassa *et al.,* (2014) in Addis Ababa which revealed that effective total pain management begins with proper pain assessment and use of standardized tools; this helps in the evaluation of the efficiency of the intercessions directed towards individualized needs of patients to relief from pain. If the tools are not used, nursing students depend solely on their clinical judgment and this is possibly prejudiced by several notions and attitudes about the pain that the patients are in. In sequence, this affects the outcomes of the patients as almost all the managements are centered on the nursing students' pain ratings. The choice of pain assessment tools could be explained by the difference in knowledge on the tool, availability, and patient factors (Kiwanuka and Masaba, 2018).

In addition, the majority of nursing students in this study indicated that observing their patients and asking patients can help to determine the pain intensity. This is in line with a study by Ung *et al.,* (2016) in China which indicated that behavioral signs can be used in conjunction with other methods and should not be substituted for a self-report as long as the patient can communicate in any

way. Pain is indeed considered as another vital sign, and pain assessment with other routinely documented vital signs may help to ensure that pain is assessed and controlled for in all patients regularly. However, pain assessment findings are rarely discussed during nursing students reports as reported by the majority of the respondents (Kiwanuka and Masaba, 2018). However, the findings of our study differ from those of (Bucknall *et al.,* 2018) which revealed that assessment tools were only used in less than 9% of the cases by nurses due to a lack of adequate knowledge on how to score various pain assessment tools. We, therefore, recommend training institution stakeholders to employ more clinical instructors who will help in training students hands-on in practicum times.

In this study, nursing students reported that they find it important to assess pain before initiating management this is in line with a study by Kassa *et al.,* (2014) which found out that it was necessary to assess and manage pain before applying the procedures. Also, the findings of this study are similar to those of some other studies that have indicated that in some settings nursing students have got adequate knowledge on assessing and managing pain (Kituyi *et al.,* 2011). This was attributed to practicum work where students are involved in hands-on work that boosts their practices in clinical areas. In addition, this study found out that the majority of nursing students reported giving analgesics on a fixed schedule and asking about their side effects. This could be related to the training nature of nurses in two institutions being trained in regional referral hospitals that expose them to high care standards. However, we could not access any literature supporting this and this is unique to our study. Also, this study finding differs from the results of a study by Al-Khawaldeh, Al-Hussami, and Darawad, (2013) in India which revealed that students had inadequate knowledge about actions of analgesics, their side effects, tolerance, and dependence to the clinical use of analgesics. In addition, a study by Laprise, (2016) in Canada differs from the above result and indicated that the majority of nursing students had difficulty in answering questions on duration and side effects of the analgesics. Thus, we recommend more training on the use of analgesics in TPM for nursing students since they spend more time with these patients than any other health worker.

In this study, we also found out that the majority of nursing students could give alternative things like prayers, counseling, and massage to relieve pain other than medications. This could be related to the nature of the hospital and health centers they practice which are resource-limited where there is a lot of use on non-pharmacological measures to care since medications are less adequate. Also, this could be attached to the updated syllabus for nurses in Uganda which emphasizes holistic care that does not entirely rely on medications (UNMEB, 2019) This result differs from the results of a study conducted by Karaman, Vural-Dogru, and Yildirim, (2019) where the vast majority of nursing students had the belief that nonpharmacological methods are not effective in severe pain. However, it is recommended to use various non-pharmacological pain management methods regardless of pain level.

Strength and Limitations

This study had some strengths which were that the Google form was entirely restricted to one attempt by the participant and this eliminated multiple attempts by a single participant. However it also had some limitations whereby the survey was conducted online, thus the survey was not controlled and there was no way to ensure that survey was done without any form of consultation, this limits the possibility to ask if any of the questions were unclear to the respondent.

6 Conclusion

Drawing from the results about this study's objectives; the study highlighted good knowledge towards assessment of pain among nursing students. This is a good indicator that nursing students who are future nursing students will have the capacity to assess pain among terminally ill patients receiving care. The study also revealed good practices on total pain management. This is a good foundation for future nursing care to reduce the global pain burden

Recommendations.

To nursing research

This study used cross-sectional study design and employed quantitative measures. We, therefore, recommend other studies using different study designs on nursing students to reveal the level of their knowledge and practices on total pain management.

To nursing education

The results of this study revealed gaps in knowledge and practice of nursing students towards total pain management, we, therefore, recommend that independent topics on pain management at different levels be put in the curriculum for nursing at different levels to improve the competence of nursing students in pain management.

To nursing practice

The results of the study identified gaps in practices of nursing students in total pain management and thus we recommend that stakeholders for nursing training institutions should give more time to practical lessons under observation to be able to evaluate students and correct errors in practice to be able to train competent nurses.

Acknowledgment

The completion of this study could not be possible without the guidance of God.

Special thanks to Ms Tumwebaze Ameria for helping me with a laptop for the entire study

The administration of Bishop Stuart University Ruharo Nursing Campus and Mayanja Memorial Medical Training Institute for permitting me to conduct my study.

Last but not least, am grateful to my lecturers and colleagues, especially the BNS class of 2016 who generously contributed their time and effort to help me while undertaking this course your support and contributions were a blessing.

A References:

1) Abdulmujeeb, A. B., &Olaniyan, L. T. (2017) Prevalence and Factors Associated with Low Back Pain among Healthcare Workers in Kibuli Muslim Hospital Kampala, Uganda. Epidemiology (Sunnyvale) 7: 287. doi:10.4172/2161-1165.1000287

2) Al Khalaileh, M., & Al Qadire, M., (2013). Pain management in Jordan: Nursing students' knowledge and attitude. Br J Nurs. 22:1234-40.https://doi.org/10.12968/bjon.2013.22.21.1234PMid:24280924

3) Aziato, L., &Adejumo, O. (2014). Determinants of nursing students' knowledge gap on pain management in Ghana. Nurse EducPract. 14(2): 195-9. DOI: 10.1016/j.nepr.2013.08.004https://doi.org/10.1016/j.nepr.2013.08.004PMid:24011564

4) Blum, D., Selman, L. E., Agupio, G., Mashao, T., Mmoledi, K &Moll, T. (2014). Self-report measurement of pain & symptoms in palliative care patients: A comparison of verbal, visual and hand scoring methods in Sub-Saharan Africa. Health Qual Life Outcomes.12: 118. https://doi.org/10.1186/s12955-014-0118-zPMid:25085579 PMCid:PMC4243734

5) Brown, M. A. (2013).The role of nursing students in pain and palliative care.J Pain Palliat Care Pharmacother. 27(3):300-2.https://doi.org/10.1007/978-1-4419-1651-8_5

6) deCarvalho, M. W. A., da Nobrega, M. M. L., & Garcia, T. R. (2013). Process and results of the development of an ICNP® Catalogue for Cancer Pain.Rev Esc Enferm USP. 47(5): 1060-7. DOI: https://doi.org/10.1590/S0080-62342013000500008PMid:24346444

7) Duke, G., Haas, B. K., Yarbrough, S., &Northam S. (2013) Pain management knowledge and attitudes of baccalaureate nursing students and faculty.Pain ManagNurs. 14(1):11-9.https://doi.org/10.1016/j.pmn.2010.03.006PMid:23452522

8) Er, M. R., Eroğlu, M., Altınel, E. C., &Altınel, L. (2013).Hemodialysis and pain.Turk Neph Dial Transpl. 22:167-170.https://doi.org/10.5262/tndt.2013.1002.06

9) Fairchild, A. (2010).Under-treatment of cancer pain.CurrOpin Support Palliat Care. 4:11-5.https://doi.org/10.1097/SPC.0b013e328336289cPMid:20040878

10) Goren, A., Quevedo, J. M.&DiBonaventura, D. C. (2014). Prevalence of Pain Reporting and Associated Health Outcomes Across Emerging Markets and Developed Countries. Pain Medicine Wiley Periodicals.15: 1880-1891.https://doi.org/10.1111/pme.12542PMid:25220263

11) GSK Global Pain Index 2017 Global Research Report (GPI 2017 Global Report Findings). www.global-pain-index.com.

12) Kiwanuka, F., &Masaba, R. (2018).Nursing students' knowledge, attitude, and practices regarding pain assessment among patients with cancer at Uganda Cancer Institute, J Anal Res Clin Med. 6(2), 72-9. doi: 10.15171/jarcm.2018.011, http://journals.tbzmed.ac.ir/JARCM

13) Kituyi WP, Imbaya KK, Wambani JO, Sisenda TM &Kuremu RT.Postoperative pain management: Clinicians' knowledge and practices on assessment and measurement at Moi Teaching and Referral Hospital. East Cent Afr J Surg 2011; 16(2): 21-4.

14) Portenoy, R. K., Mehta, Z., & Ahmed, E. (2017) Cancer pain management: General principles and risk management for patients receiving opioids. Up-to-date.1-12.

15) Salameh, B. (2018).Nursing students' knowledge regarding pain management in high acuity care units: A case study of Palestine.ijhs.org.sa 1658-3639 Qassim University

16) Tortorella, G. T. (2014). Evaluating Medical-Surgical Nursing students Knowledge and Attitudes Regarding Pain: A Descriptive Comparative Analysis (Doctoral Dissertation, The William Paterson University of New Jersey), UMI Number: 3617158, 96.

17) Ung, A., Salamonson, Y., Hu, W., &Gallego, G. (2016).Assessing knowledge, perceptions, and attitudes to pain management among medical and nursing students: a review of the literature.Br J Pain. 10(1): 8-21.https://doi.org/10.1177/2049463715583142PMid:27551407 PMCid:PMC4977961

18) Yorulmaz, G., &Aygun, M. (2012) Nursing students evaluation of pain-related knowledge, [Master Thesis]. Istanbul: Istanbul Science of University.

19) Zhou, G., Stoltzfus, J.C., Houldin, A. D., Parks, S. M., & Swan, B. A. (2010). Knowledge, attitudes, and practice behaviors of oncology advanced practice nursing students regarding advanced care planning for patients with cancer. OncolNurs Forum. 37(6): E400-E410. https://doi.org/10.1188/10.ONF.E400-E410PMid:21059573