ISSN: **2518-8631**

Knowledge of the WHO Analgesic Ladder on Cancer-Related Pain Management among Nurses at a Kenyan Hospital

Alice Kemunto Maranga-Ondieki[1*]& Stella Jepkoech Kulei[1]

Institutional affiliations

1. Egerton University

*Corresponding author: alice.ondieki@ymail.com

Abstract

Background: More than 70% of cancer patients will experience cancer-related pain in the course of the disease. Nurses have a key role in cancer pain management by accurate assessment, prompt intervention, and adequate evaluation of pain relief measures for better cancer-related pain control. To enhance this, World Health Organization (WHO) developed a 3-step analgesic ladder in 1986 to guide cancer-related pain management worldwide. The objective if the study was to assess nurses' knowledge of the WHO guideline on cancer-related pain management at the Nakuru County Referral Hospital.

Methods: A descriptive cross-sectional study design was used. The study targeted all nurses working at Nakuru County Referral Hospital; systematic random sampling was used to select the respondents where every 2nd nurse was selected. A pre-test was done at the Naivasha County Referral Hospital on 10 %(23) of the sample. Data was collected using a semi-structured questionnaire for nurses, and a checklist for nurse managers who were the key informants. Qualitative data was analyzed through thematic content analysis and presented in form of text. Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS) version 20; Ethical clearance was obtained from MKU and Nakuru County Referral Hospital Research and ethics Committees and relevant departments.

Results: About 77.4% of the respondents had low scores on knowledge while 22.6% had good knowledge on the WHO guideline for cancer-related pain management.

Conclusion: There was poor knowledge of the WHO guideline on cancer-related pain management among nurses.

Key words: *Pain, WHO, Nurses, Cancer*

Introduction

Pain is an unpleasant sensory and emotional experience associated with tissue damage (International Association for Study of Pain, 2012). It is a subjective experience, modified by genetics, past history, mood, expectation, and culture (British pain society, 2010). Approximately 75% of cancer patients live with chronic pain resulting from nociceptive or neuropathic syndromes which represent direct effects of the cancer (portenoy, 2011).

Most cancer-related pain is due to the underlying cancers (85%), treatment (17%) and co-morbidities unrelated to cancer (9%). Cancer-related pain can be acute or chronic, acute pain syndromes are disease-related while chronic pain syndromes are due to direct effects of malignancy or treatments

(Fornasari, 2012). Unmanaged cancer pain has been identified as a global Health Concern (WHO, 2011) that greatly affects patients' daily living activities, emotions and quality of life (Funk et al 2012).

Nurses have a key role in cancer pain management by accurate assessment, prompt intervention, adequate evaluation of pain relief measures for better cancer-related pain control, and to work effectively in interdisciplinary health care teams (Pasero & McCaffery, 2011).

In 1986, World Health Organization (WHO) developed guidelines for cancer-related pain management worldwide. This was as a result of widespread misconceptions about treatment of chronic pain using opioids and the risk of addiction. WHO recommends a three-step pain relief ladder based on the intensity of pain and emphasizes the principles of "by the clock, by the mouth, by the ladder, and by the individual" as sufficient for cancer-related pain control.

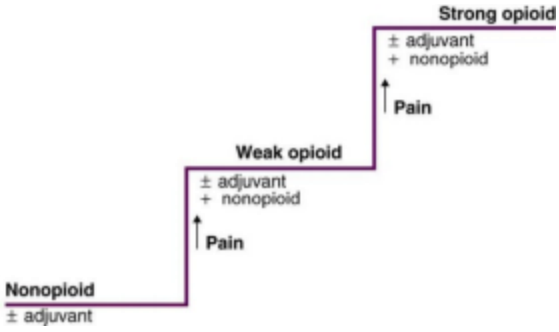

Figure 1: Source: WHO (1996) Cancer Pain Relief. Second Edition

Step 1 is mild pain with intensity of 1–3 on the 0–10 standard; non- steroidal anti-inflammatory drugs and adjuvants are used. If pain persists, step 2 treatments for mild to moderate pain with intensity of 4–6; a combination of medications such as oxycodone, acetaminophen and adjuvants. If pain persists, then step 3 for Moderate to severe pain with intensity of 7–10; potent opioids such as morphine and adjuvants are used.

Despite the publication of the WHO evidence-based guidelines, cancer-related pain is still under treated throughout the world (Caraceni, 2012) driving the need for health professionals' education about best practices (Breuer, 2011).

A study to assess the level of knowledge of cancer pain management by nurses working at the University College Hospital in Nigeria (Theresa et al.2014), only 2% could give a good account on the management for cancer-related pain.

The WHO three-step pain relief ladder has evolved as an international standard of care for cancer-related pain (Koyyalagunta, 2012). It is estimated to achieve adequate pain relief in up to 90%of cancer patients (WHO, 2011).

A study to assess the Knowledge of Nurses on the WHO guidelines on cancer-related pain management at Selected Health Institutions offering Cancer treatment in Addis Ababa, Ethiopia found out that 35.4% of the nurses had good knowledge on WHO

guidelines on cancer-related pain management (Nega et al.2013).

Hospital daily reports at the Nakuru County Referral Hospital indicated that 20 patients are admitted with different types of cancer at one given time (Hospital daily reports) and 80 cancer patients are attended per month on average at the Nakuru Hospice (Annual data analysis report, 2014).The report also shows a 6.3% increase in new cancer patients and a 96% increase in Hospital visits from the year 2013.

The WHO guideline on cancer-related pain management is available in some wards and no study has been done at the Nakuru County Referral Hospital to ascertain knowledge on the WHO guideline among nurses.

Methods

A cross-sectional descriptive study design was used to determine knowledge on WHO guideline for cancer-related pain management among nurses at the Nakuru County Referral Hospital.

The study was carried out at the Nakuru County Referral Hospital. Nakuru County Referral Hospital is situated in Milimani area of Nakuru County, with a catchment population of about 500,000, bed capacity of 588 and 60 cots, and average monthly bed occupancy of 110%.

Nakuru County has a total Population of 1,603,325; 409,836 Households and covers an area of 7,496.5sq.km. The Population density is 213.9 persq.km and 43% of the population live below the poverty line. The County borders Baringo Central to the North, Kericho to the West, Laikipia to the North East, Nyandarua to the East, Narok to the South West, Kajiado to the South and Kiambu Counties. The county is the main economic and agricultural centre of the Kenyan Rift Valley region.

The study targeted all nurses at all levels working at the Nakuru County Referral Hospital since their deployment to units is rotational with a total Nursing workforce of 466 Nurses, 3 Nurses have acquired Masters Degrees, BSc in Nursing-23, Diploma in Nursing-212 and 228 Enrolled Nurses.

Nakuru County Referral Hospital was purposively selected as a case study. A sample of 232 respondents was determined using Fishers formula as cited by Mugenda and Mugenda (2003). From the anticipated population of 466, systematic random sampling was employed to identify the study respondents whereby every 2nd client qualified to be a respondent in this study was chosen subject to their informed consent. Eight nurse managers took part in the study as key informants.

A semi-structured questionnaire adopted from W.H.O guideline on cancer-related pain management and a checklist for nurse managers were used to collect data. The questionnaire was mainly self-administered while the interview schedule was researcher-administered. Four nurses were recruited and trained as research assistants.

The dependent variable was knowledge of WHO guidelines, the independent variables

were; Nurses' social-demographic characteristics and nurses' knowledge.

Analysis of qualitative data was done through content analysis; the findings are presented in form of text. Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS) version 20, with sample weights applied prior to analysis. The demographic and general characteristics were identified using descriptive statistics. Chi-square test was used to determine the prevalence of statistically significant association between the dependent variable and independent variables. The results are presented in narrative, tables, pie charts and bar graphs. Chi square was used to check the levels of relationships between variables and level of significance in the interactions. Measures of central tendencies were used to show the mean and mode.

Findings

Respondents' Demographic characteristics

The response rate for both quantitative respondents and qualitative participants was 88% (204 out of 232and 7 out of 8) respectively.
About 17.5% (34) of the respondents were up to 30 years of age; 33.5% (65) were between 31-40 years; 29.4% (57) were between 41-50 years and 19.6% (38) were above 50 years (N=194).
85% (171) of the respondents were female while 15% (30) were male (N=201).

The study also sort to understand the respondents' marital status, 204 respondents gave out their marital status, 66.2% (135) were married; 27.5% (56) were single; 4.4% (9) were widowed and 2% (3) were divorced (N=204).On the religious affiliations of the respondents, about 98 % (199) of the respondents were Christian while 2% (4) were Muslim (N=203)
Pertaining to their level of nursing education; the respondents were asked their highest level of nursing education(N=204); 69.6% (142) of the respondents were Kenya Registered Nurses; 19.6% (40) were Kenya Enrolled Community Health Nurses; 10.3% (21) had obtained Bachelor of Science in nursing degree and 0.5% (1) had obtained a Master of Science in nursing degree.

The study also looked at the respondent's years of clinical experience(N=204); 36.3% (74) of the respondents had more than 15 years of experience; 28.9% (59) had between 11 and 15 years of experience; 19.1% (39) had between five and ten years of experience and 15.7% (32) had less than 5 years of experience.

Respondents' Knowledge on cancer-related pain management

There were ten pre-coded knowledge. These were b10, b11, b12, b13, b14, b15, b16, b17, b18 and b19. In order to compute the knowledge level, each correct response to each of these questions was assigned the value '1' and any other value was assigned '0'. The values from b10 to b19 were then summed up; the highest value was 10 and the least 0. This was then recorded into three groups of; 7 – 10, good, 5 – 6 average, below 5 Poor.
The brief summary shown in Table i indicates that 22.6% (44) had good knowledge, 43.6% (85) had average knowledge while 33.8% (66) had poor knowledge of the WHO guideline on management of cancer-related pain.

Table 1: Additional formal training on cancer related pain management and respondents' knowledge (n=195)

Additional formal training on cancer related pain management		Knowledge			Total
		Poor	Average	Good	
Yes	Count	10	17	19	46
	% of Total	5.1%	8.7%	9.7%	23.6%
No	Count	56	68	25	149
	% of Total	28.7%	34.9%	12.8%	76.4%
Total	Count	66	85	44	195
	% of Total	33.8%	43.6%	22.6%	100.0%

The researcher tested the H_o stating that there is no relationship between additional formal training and knowledge of nurses to WHO guidelines on cancer-related pain management.

Table 2 shows a significant relationship between additional formal training on cancer related pain management and nurses' knowledge r= -0.231 (*P Value = 0.002).*

Based on these findings, the researcher *rejected* the hypothesis.

Table 2: Additional formal training on cancer related pain management and nurse's knowledge (N=195)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.585	2	.002
Likelihood Ratio	11.671	2	.003
Linear-by-Linear Association	10.336	1	.001
N of Valid Cases	195		

***WHO pain ladder suggestion for effective cancer related pain relief*.**

The respondents were asked to state what the World Health Organization (WHO) three-step pain ladder suggests for effective cancer-related pain relief'. Their responses were as shown in Figure 2.

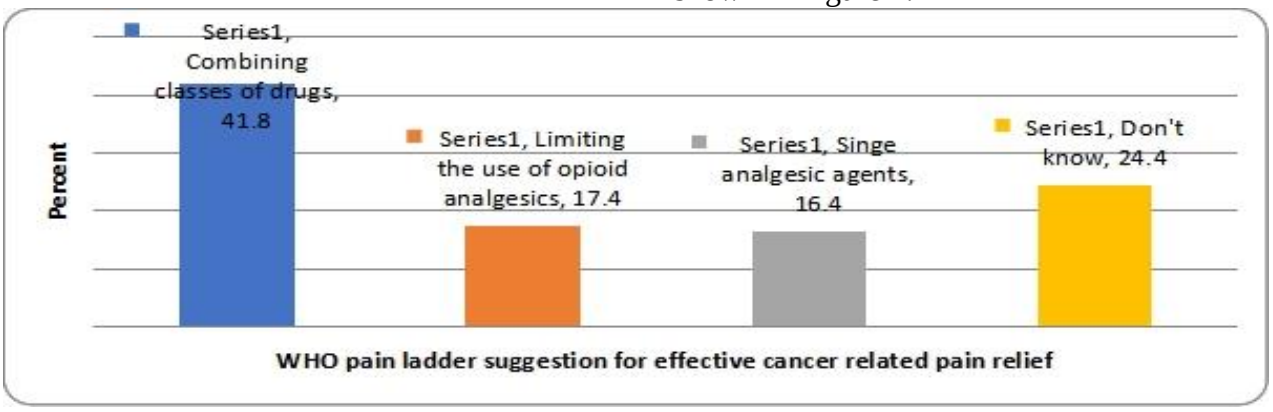

Figure 2: WHO pain ladder suggestion for effective cancer related pain relief (N=201).

Figure 1 shows that 41.8% (84) of the respondents suggested combining classes of drugs in line with WHO guideline; 17.4% (35) suggested limiting the use of opioid analgesics; 16.4% (33) stated the use of single analgesic agents; 24.4% (49) did not know.

Drug of choice for the treatment of prolonged, moderate to severe cancer-related pain

The respondents were asked to state the drug of choice for the treatment of prolonged, moderate to severe cancer-related pain. Their responses were collated as shown in Figure iii.

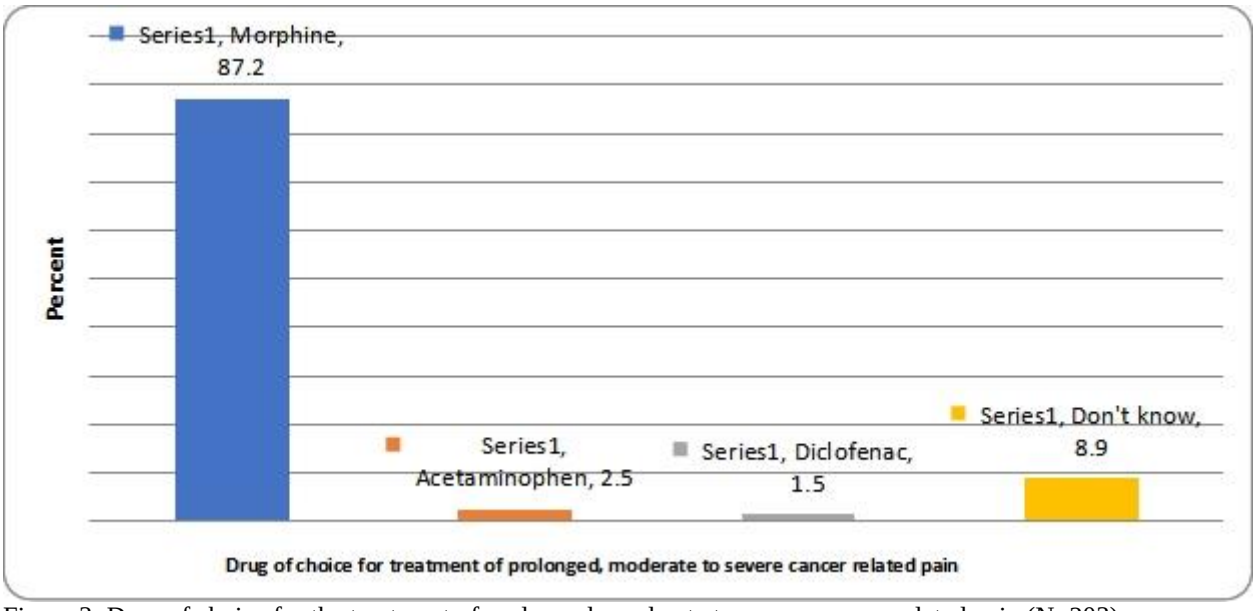

Figure 3: Drug of choice for the treatment of prolonged, moderate to severe cancer-related pain (N=203).

About 87.2% (177) of the respondents correctly identified morphine as the drug of choice in line with the WHO guideline; 2.5% (5) were for Acetaminophen; 1.5% (3) Diclofenac; 8.9% (18) of the respondents did not know the drug of choice for the treatment of prolonged, moderate to severe cancer-related pain as shown in Figure 2.

The recommended route of administration of opioid analgesics to patients with prolonged cancer-related pain

The respondents were asked to state the recommended route of administration of opioid analgesics to patients with prolonged cancer-related pain; the responses are shown in Figure 3.

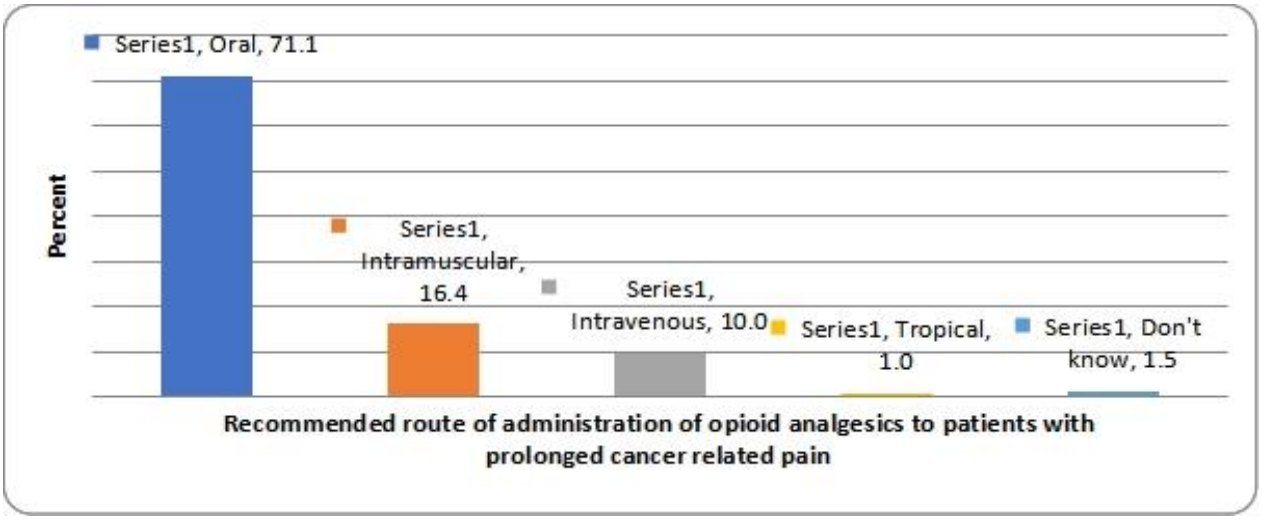

Figure 4: Recommended route of administration of opioid analgesics to patients with prolonged cancer-related pain (N=201).

Figure 4 shows that 71.1 % (143) of the respondents identified the oral route; 16.4% (33) identified the intramuscular; 10% (20) for intravenous and 1% (2) for topical route; 1.5% (3) did not know.

Initial administration of analgesics for Cancer-related pain

In response to the question ' Analgesics for Cancer-related pain should initially be given? The responses are shown in figure 5.

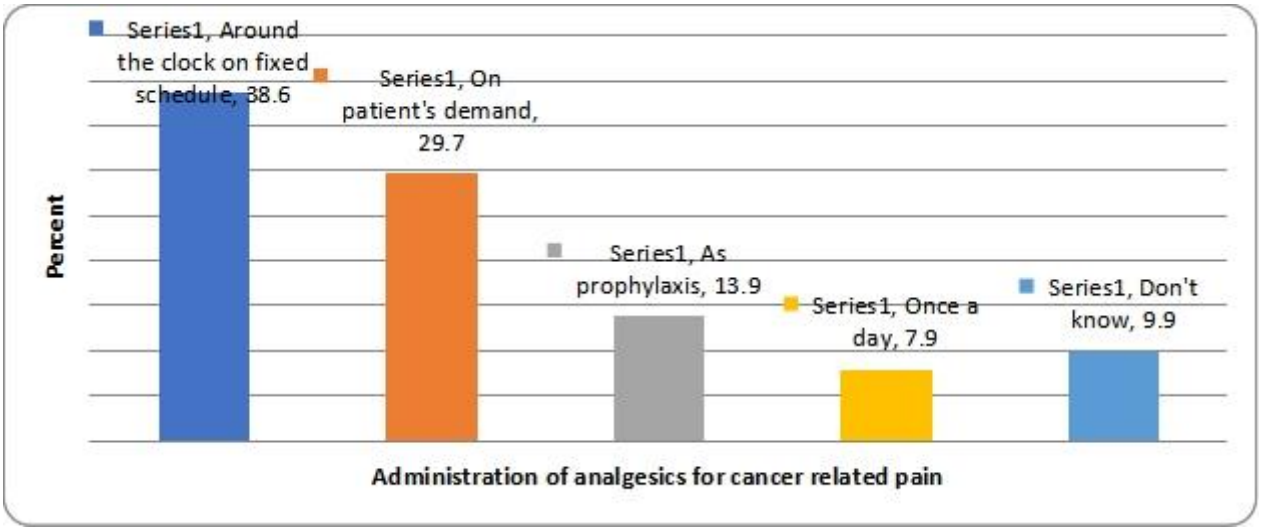

Figure 5: Initial administration of analgesics for cancer related pain (N=202).

Figure 5 shows that 38.6% (78) of the respondents suggested that analgesics for cancer related pain should initially be given around the clock on a fixed schedule; 29.7% (60) suggested giving on patient's demand; 13.9% (28) could give as prophylaxis 7.9% (16) stated that they could give once a day; 9.9% (20) did not know

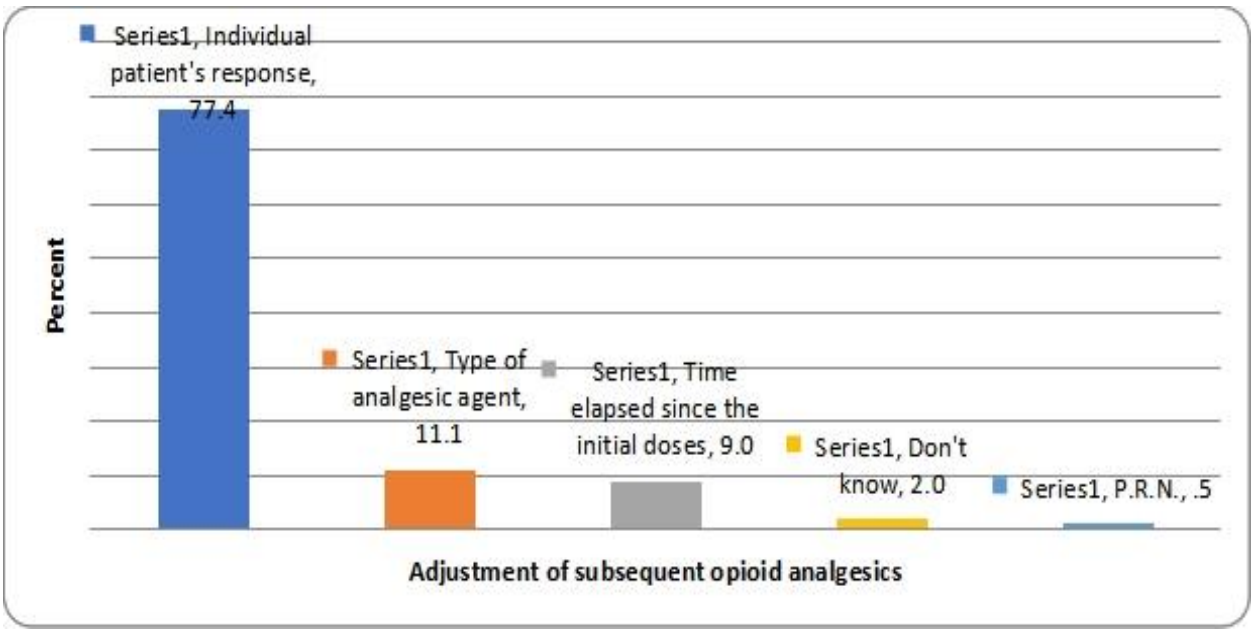

Figure 6: Adjustment of subsequent doses of opioid analgesics (N=199).

Adjustment of subsequent doses of opioid analgesic

In an attempt to understand respondent's understanding of adjustment of subsequent doses of opioid analgesic, the researcher asked how subsequent doses should be adjusted after initial administration of opioid analgesics. The responses were as shown in Figure 5.

Figure 6 shows that 77.4 % (154) of the respondents correctly stated that adjustment of subsequent doses should be done according to individual patient's response; 11.1% (22) as per type of analgesic agent; 9% (18) time elapsed since the initial doses; 2% (4) did not know. In addition 59% (117) of the respondents stated that beyond a certain dosage of morphine, increase in dosage will not increase cancer-related pain relief.

Effectiveness of non-pharmacological interventions (n=194)

About 32% (62) of the respondents stated that non pharmacological interventions are effective only in mild-moderate cancer-related pain; 29.4% (57) that non pharmacological interventions are not effective for severe cancer-related pain ; 15.5% (30) that non pharmacological interventions are effective against all forms of cancer-related pain; 23.2% (45) did not know.

About 59% (117) of the respondents also stated that non pharmacological interventions should be used concurrently with pain medications; 20% (40) suggested using them alternately with pain medications while 6%(12) stated that they should be used alone; 15% (30) did not kno

Recommended WHO cancer-related pain management strategy for children with cancer-related pain

Respondents were asked the recommended WHO cancer-related pain management strategy for children with Cancer-related pain (N=199); 20% (39) correctly identified the two-step ladder; 29% (58) were for the three-step ladder; majority 51% (102) of the respondents did not know

The Common GI side-effect associated with opioid analgesics (n=203).

The common gastro-intestinal side effect associated with opioid analgesics as identified by respondents included constipation 50% (101); Nausea 28% (57); and depression 7% (15), 15%(30) of the respondents did not know.

In the qualitative interviews conducted; seven out of eight participants said that there was an ongoing educational component on cancer-related pain management for nurses in the hospital's Continuous Medical Education program (CME). However all the 8 participants overwhelmingly agreed that the WHO guideline was not available in all the wards, they pointed out two wards where the WHO guideline was available as paediatric surgical/orthopaedic which doubles as a female ward for burns and Hospice.

Discussion

Respondents' Socio-demographic characteristics

About 85% of the respondents were female while15% were male. Kenya Population and Housing Census (2009) indicate that 52% of Kenyan population are Female. This also depicts the way society views nursing as being a female profession based on the caring role of women in society.

Respondents' knowledge on WHO guideline for cancer-related pain management

Previous studies showed gaps in nurses' knowledge in regard to pain management for cancer related pain. In this study only 22.6% had good knowledge on WHO guideline for cancer-related pain management. Similar findings were realized in a study done in Addis Ababa, Ethiopia where only 35.4% of the nurses had good knowledge (Nega et al.2013) and in a study to assess the level of knowledge of cancer pain management by nurses working at the University College Hospital in Nigeria (Theresa et al.2014), where only 2% could give a good account on the management for cancer-related pain.

The key informants consistently mentioned that there is an ongoing educational component on cancer –related pain management for nurses in the hospital's Continuous Medical Education programme to enable the nurses attain the knowledge required to manage cancer-related pain, the results of this are yet to be seen since 77.4% of the nurses had low scores on knowledge about the WHO guideline despite ongoing trainings.

Conclusions

Based on the study findings in regard to knowledge of nurses on WHO guideline on cancer-related pain management; there is a gap in nurses' knowledge in regard to cancer-related pain management, the statistical tests showed a significant relationship between knowledge and additional formal training, hence low scores on knowledge have been attributed to lack of adequate additional formal training and awareness of WHO practice guideline on cancer-related pain management.

Recommendations

There is need for the county ministry of Health to ensure nurses have the knowledge and that they are more aware of the existence of WHO guidelines on cancer related pain management. This can be done by encouraging information flow, facilitating

education/seminars/exchange programmes among the nurses.

This study has helped to determine the nurses' knowledge on WHO guideline for cancer-related pain management, there is still a gap in understanding the underlying reasons for involvement of only a few training institutions and supporting organizations in the area of cancer-related pain management. There is also need to evaluate knowledge of this guideline among other health professionals since they all work as an inter-disciplinary team.

Acknowledgement

The researchers acknowledge the support of Mount Kenya University School of nursing and school of postgraduate studies, the medical superintendent, Chairperson research committee, nursing officer in-charge, research assistants and all the nurses at Nakuru County Referral Hospital who participated in this study.

References

Breuer B, Fleishman SB, Cruciani RA, Portenoy RK (2011*) Medical oncologists' attitudes and practice in cancer pain management:* A national survey. Journal of Clinical Oncology 29: 4769–4775.

British Pain Society's Cancer Pain Management(2010) Pathophysiology of cancer pain and opioid tolerance .

Caraceni A, Hanks G, Kaasa S, et al.*(2012) Use of opioid analgesics in the treatment of cancer pain: Evidence-based recommendations from the EAPC.* Lancet Oncol *13*:*58–68*.

Funk GF, Karnell LH, Christensen AJ(2012*).Long-term Health-Related Quality of Life in Survivors of Head and Neck Cance*r. Arch Otolaryngol Head Neck Surg

Fornasari D. (2012)*Pain mechanisms in patients with chronic pain*. Clin Drug Investig ; 32(suppl 1):45–52.

International Association for the Study of Pain. (2012). IASP taxonomy: painterms. Accessed 23/11/2014 at:-11a.m

http://www.iasppain.org/Content/NavigationMenu/GeneralResourceLinks/PainDefinitions/default.htm.

Koyyalagunta D, Bruera E, Solanki DR, *(*2012*) A systematic review of randomized trials on the effectiveness of opioids for cancer pain.* Pain Physician *15*:*ES39–ES58*

Mugenda, O.M & Mugenda. A.G (2003). Research methods. *quantitative and qualitative*

Approaches. Nairobi, Kenya: ACTS Press.

Nakuru County Referral Hospital, Annual data analysis Hospice report 2014.

National Guidelines for Cancer Management Kenya, 2013

Nega R, Tachbele E, Kassa GM (2013) Cancer Pain and its Management: Knowledge of Nurses at Selected Health Institutions, Offering Cancer Treatment in Addis Ababa, Ethiopia, Journal of Pain Relief 3:137

Pasero, C., & McCaffery, M. (2011). *Pain assessment and pharmacologic management.* St. Louis, MO: Mosby Elsevier. Evidence Level VI..

Portenoy RK*(2011) Treatment of cancer pain. Lancet 377*:*2236–2247.*

Orem, D. (1995). Nursing concepts of practice. (5th ed). St. Louis: Mosby.

Theresa N. Elumelu, Adeniyi A. Adenipekun, Lucy O. Eriba, Bidemi I.Akinlade(2014)*Knowledge of cancer pain management among nurses in a Nigerian tertiary health institution*; Journal of nursing Education and practice;Vol 4, No 4

World Health Organization(1996).WHO guidelines on cancer pain relief, 2nd ed. Geneva: World Health Organization.

World Health Organization(2011) *Cancer pain relief.* Geneva.

World Health Organization (2013). WHO's pain ladder. Accessed 25/11/2014 from http://www.who.int/cancer/palliative/painladder/en/.