Analysis of Commonly Used Pain Assessment and Management Tools in Palliative Care: *A Cross-Sectional Study in Embu and Machakos County Referral Hospitals - Kenya*

*Jostine Ndunge Mutinda1, Dr. Albanus Kyalo Mutisya2, Dr. Sherry Oluchina3

1. *Department of Medical - Surgical Nursing, Jomo Kenyatta University of Agriculture and Technology- Kenya*

2. *Department of General Nursing Jomo Kenyatta University of Agriculture and Technology- Kenya*
   Tel: +254 721484869 Email:amutisya@jkuat.ac.ke

3. *Department of Nursing education, Leadership, Management and Research.*
   Jomo Kenyatta University of Agriculture and Technology Tel: +254 724668425 Email:soluchina@jkuat.ac.ke

Corresponding Author: Jostine Ndunge Mutinda, Lecturer Department of Medical- Surgical Nursing
Jomo Kenyatta University of Agriculture and Technology - Kenya Contacts: +254 722214819
Email: jostinem2013@gmail.com

Summary

ABSTRACT

Pain is the main concern in palliative care. Palliative care involves assessment and management of physical, emotional and spiritual pain including other distressing symptoms in a life of patients facing serious life - limiting illnesses with their families. To measure the impact of palliative care interventions, you require reliable, valid assessment tools for different conditions in evaluation. Pain can be malignant or benign and may accompany a disease process such as cancer, arthritis, HIV and others. Unfortunately most pain management tools were ineffective for assessing pain in special populations.

OBJECTIVE

While pain assessment was a prerequisite for appropriate management of acute and chronic pain, there were some concerns about the use of pain intensity scoring systems. To analyze the commonly used pain assessment and management tools in palliative care, a cross-section study was conducted in Embu and Machakosi County Referral Hospitals in Kenya,

METHODOLOGY

From April to July 2019, a two- phase cross sectional study conducted among 258 healthcare workers aged above 20 years was used to establish and analyze the commonly used pain assessment and management tools in those referral hospitals and hospices. In phase one, a pretested questionnaire modified from the Nurses' Knowledge and Attitudes Survey Regarding Pain (NKASRP) tool was administered to 238 nurses. Systematic random sampling was performed using Slovin's formula to get the 238 participants from 600 nurses working in the clinical areas based on convenience, availability and Kenyan citizenship.

In phase two, 20 key informant interviewees were recruited from the Ministry of Health headquarters, County health offices, Teaching institutions, Hospices and Kenya Hospice and Palliative care Association (KEHPCA). Purposive sampling was done based on qualifications, position (nurse managers, oncologist & experts working in KEHPCA) and their availability. A key informant's interview guide was used to collect information regarding policies, gaps etc.

To test the validity of the data collection tools, pretesting was conducted at Thika Level Five Hospital. Data entry was done in *epidata 3.1*. Quantitative data was analyzed in *Stata Version 14* and in Excel while Qualitative data was analyzed using Thematic analysis.

RESULTS

Commonly utilized pain assessment tools were; the numerical rating scales, history taking and physical examination, Faces and PQRST methods. Gaps identified in the tools included inability to assess pain in special populations, monitor or manage treatment outcomes, use of pain intensity scoring systems could be classified as single-dimensional or multidimensional.

CONCLUSION

Successful Pain assessment and management interventions depend on the choice of method used. Inadequately managed pain can lead to adverse physical and psychological patient outcomes for individuals with their families. To increase the number of Professionals in pain management, policy makers need to change legislation to allow nurses trained in Palliative Care to prescribe opioid analgesics to their patients (P17). Nursing care, unrelieved pain reduces patient mobility, resulting in complications such as deep vein thrombosis, pulmonary embolus, and pneumonia.

RECOMMENDATIONS

The WHO ladder for pain management should be adhered to without forgetting utilization of other assessment tools like FLACC for pediatric patients, PAINAD scale for those with *dementia* and BPS for those with impaired consciousness by Nurses. It is time for clear guidelines and empowerment of the palliative care givers. Embrace Home Based Care to improve Patient monitoring. Review new approaches such as neuromodulation, nerve blocks, intrathecal drug administration, and non-pharmaceutical protocols.

Introduction

World Health Organization (WHO) had defined 'palliative care' as an approach that aims at improving the quality of life in patients with their families facing serious problems associated with life-threatening illnesses; through prevention, relief of pain and suffering by means of early identification, impeccable assessment of pain and other problems include physical, psychological and spiritual issues [1].

WHO's definition that, palliative care was concerned with assessment and management of pain including other distressing symptoms among those suffering from life limiting illnesses, embraces physical, emotional and spiritual pain.

Although, Palliative care required a multi-disciplinary approach with varied care teams depending on patient needs and available resources. The presence of a nurse was paramount and constituted the first link between the team, patient and family. Thus, nurses play a central role in palliative care, providing services on a continuous basis [2]. In some European countries pain was used as an indicator for the quality of medical and nursing care. It is/was the main concern in medical care. Pain influence has been well recognized to an extend whereby it was considered one of the ''vital signs'' in some countries such as America as reported [3].

The World Health Organization also defines pain as an unpleasant sensory or emotional experience related to actual or potential tissue damage or described in terms of such damage. That definition implied that, pain was not just a physical sensation but composed of an emotional response. Hence, described as a multi-dimensional experience. It was also a unique personal experience [4].

Pain could be broadly classified as acute or chronic. Acute pain occurred due to obviously critical injury or disorder. It had a specific onset with a predictable limited duration. Chronic pain on the other hand is persistent lasting for more than 3 months, was much more subjective and not easily described. It can be malignant or benign pain and might have accompanied a disease process such as cancer, arthritis, HIV, or degenerative joint disease [5].

Inadequately managed pain can lead to adverse physical and psychological patient outcomes for individual patients with their families. In referrence to the importance of nursing care, unrelieved pain reduces patient mobility, resulting in complications such as deep vein thrombosis, pulmonary embolus or pneumonia [6].

Pain Assessment

Quality care for patients presenting with chronic pain begin with a thorough assessment, including an extensive history and physical examination. The assessment should be comprehensive, individualized and holistic. It should also take a multidisciplinary team approach [7]. Therefore it requires use of an appropriate pain assessment tool.

Additionally, measuring the effectiveness of palliative care interventions required reliable and valid assessment tools that matter to patients and families. Tools that could evaluate the impact of interventions, be administered in palliative care populations and settings [8 & 9].

While pain assessment was a prerequisite for appropriate management of acute pain, there were some concerns about the use of pain intensity scoring systems. This was owing to the fact that, pain experience was subjective.

Hence, self-reporting of pain was variable and could influence the perception of pain by a number of factors such as;

- language
- culture
- and psychological factors.

It should then be noted that, self-reporting of pain only provides healthcare practitioners an insight into how patients perceive their pain levels [10].

Pain Assessment Scales

Pain assessment scales could be classified as single- dimensional or multi-dimensional. Further they can be classified as subjective or objective pain-scoring assessment tools. Single- dimensional tools provided fast tools of measuring pain that could be administered several times with minimal administrative effort. They include:

1. Numerical rating scales
2. Verbal rating scales
3. Visual analogue scales
4. The pain thermometer [11].

Alternatively, Multi - dimensional assessment

scales provided more information in the qualitative and quantitative aspects of pain. They measured the intensity, nature and location of pain. In some cases, the impact that pain was having on a patient's activity or mood, multi-dimensional scales were useful in complex or persistent pain. Examples of Multi-dimensional pain measurement tools were:

1. McGill pain questionnaire.
2. Brief pain inventory.
3. Behavioral pain scales.
4. Neuropathic signs.
5. Symptoms (Leeds assessment of neuropathic symptoms and sign-LANSS)[12].

Pain could be assessed by both subjective and objective means. Examples of subjective-pain scoring tools included:

1. The visual analogue scale (VAS),
2. Numerical rating scale (NRS) and
3. The faces pain scale (FPS).

Alternatively, objective measures included:

1. The behavioral pain assessment scale.
2. Functional activity score.
3. Abbey Pain Scale for assessing pain in non- verbal or cognitively impairment patients such as in *dementia* [13].

A recent study has shown the use of the Face, Legs, Activity, Cry, Consolability (FLACC) behavioral scale which was similar to the behavioural pain assessment scale, as an effective tool for pain assessment in children[14]. Successful Pain management interventions depended on the choice of method used. This could be pharmacological or non-pharmacological [15].

The study focused on pharmacological management of pain specifically by use of opioid analgesics. Opioid analgesics have both long term and short term side effects which if not well monitored and managed can lead to life threatening complications and/ lack of compliance to treatment making pain management unsuccessful.

Holistic patient care involved patient assessment carrying out interventions as well as evaluation of the outcomes of interventions. An impediment to sound pain management practice could occur due to lack of clear guidelines. It was with that background that the researcher sought to undertake this research to analyze the commonly used guidelines or tools to establish their effectiveness in pain management process.

Methodology
Research Design

A two phase research cross sectional study was conducted in Embu and Machakos level five Hospitals' palliative care Units. In phase one both descriptive and exploratory cross sectional study designs were adopted aimed at establishing the commonly used pain assessment and management tools including the gaps in those health facilities.

In phase II, exploratory study design was adopted to scrutinize the tools/guidelines for gaps that were hindering successful pain assessment and management in those facilities.

Study Area

The study was conducted in Embu and Machakos County Referral Hospitals in their general wards and Palliative Care Units. Embu was one of the cosmopolitan counties in Eastern - Kenya providing referral services to patients from within the county and the neighboring counties. Machakos county referral hospital owing to its proximity to Nairobi (capital city of Kenya) provided services for many cancer patients from the overstretched Kenyatta National and referral Hospital. It also provided referral services for most patients from the other counties in the South Eastern Bloc.

Study Population

The study targeted 258 healthcare workers distributed as follows: In phase one 238 nurses working in Embu and Machakos level five hospitals and palliative care units were recruited while in phase 20 key informant interviewees were recruited from Ministry of Health headquarters, County health offices, Teaching institutions, hospices and Kenya Hospice and Palliative care Association (KEHPCA).

Sampling

In phase one, sample size determination was done using Slovin's formula then systematic random sampling was done to get the 238 participants from the 600 nurses working in the clinical areas. Participants' recruitment was done based on convenience and availability. In phase two purposive sampling was done based on qualification, position and availability of the Key informants.

Eligibility Criteria

In phase one participants were nurses working in the clinical areas at the time of data collection, be Kenyan citizens aged 20 years and above; excluding those deployed in administrative offices or on leave. Phase two participants were nurse managers in the Ministry of health headquarters, county offices, the referral hospitals; palliative care specialists (oncologist & nurses) and experts working in KEHPCA, hospitals, hospices and teaching institutions.

Data Collection Procedure -

In phase one a pretested questionnaire modified from the Nurses' Knowledge and Attitudes Survey Regarding Pain (NKASRP) tool was administered. The tool gives questions on pain assessment, management, patient considerations and side effects of analgesics. The questionnaire had a section for demographic data, commonly used pain assessment, management tools and the gaps in the tools.

In phase two a key informants interview guide was used to collect information regarding policies, gaps in the commonly used pain management tools and the recommendations for improvement.

Validity and Reliability of Data Collection Tools

To test the validity of the data collection tools pretesting was done in Thika Level Five Hospital.

Data Management

Data entry was done in *epidata 3.1*. Quantitative data was analyzed in *Stata Version 14* and in Excel. Qualitative data was analyzed using Thematic analysis as follows: Transcription of the interview audio recordings was done by use of Temi after which the researcher read through the data to familiarize with the responses. Deductive coding was adopted with predefined codes identified based on study questions and the responses given. Themes were generated from patterns of responses identified from the participants while naming of the themes was done based on the key words identified in the themes and finally a write up was accomplished.

Ethical Considerations

Permission to conduct the study was sought from Jomo Kenyatta University research and ethics

Committee and from National Commission for Science, Technology and Innovation. Permission to access participants was sought from the Ministries of Health in the respective counties. Confidentiality was assured and all participants provided written informed consent prior to all study procedures.

Results

Pain Assessment Tools/Guidelines

Concerning the availability of pain assessment tools/ guidelines out of the 238 respondents 176 (74%) reported awareness of the recommended pain management tools. However 62(26%) reported lack of awareness of any pain management tools. Asked to specify the standard recommended tools / techniques for pain assessment, a hundred and ten (110) respondents utilized pain rating scale to include: verbal descriptor scale, numeric rating scale and Wong's faces. Eighty nine (89) utilized both history taking and physical examination, Ten (10) used Wong's faces scale while the rest used other modes of physical examination such as the APVU and PQRST as indicated in the *Table 1:*

Table 1- Showing Commonly Used Pain Assessment Techniques/Tools

Pain assessment technique	Number of respondents
Numerical rating scales	110
History taking & physical examination	89
Wong's faces	10
PQRST & APVU	17

Pain Management Modalities

The commonly used modalities reported by the participants were as follows: by use of opioid analgesics (96 respondents), use of both pharmacological and non- pharmacological methods of pain control (50 respondents) with some emphasizing on utilization of WHO ladder (30); by ladder, mouth and clock.
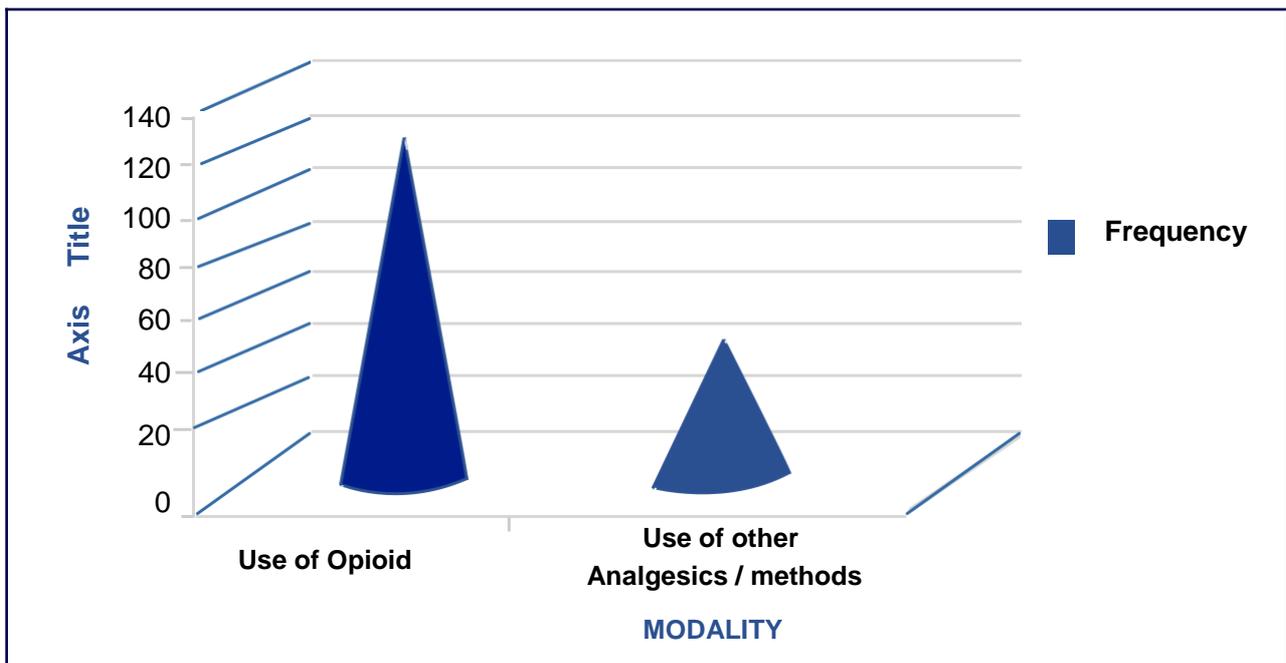
Figure 1- Pain Management Modalities

Gaps in the Pain Management Guidelines

Gaps Reported by Participants in Phase One

The researcher went on to establish the gaps in the pain management tools/ guidelines that could act as barriers to effective pain management from the participants in phase one; and the results were as shown in figure 2: Out of the 176 respondents 116 (66%) attested to the fact that the guidelines/tools did not provide for monitoring of side effects of the medication while 119 (69%) reported that the tools didn't provide for management of side effects and for intervention.

Percentage of Respondents
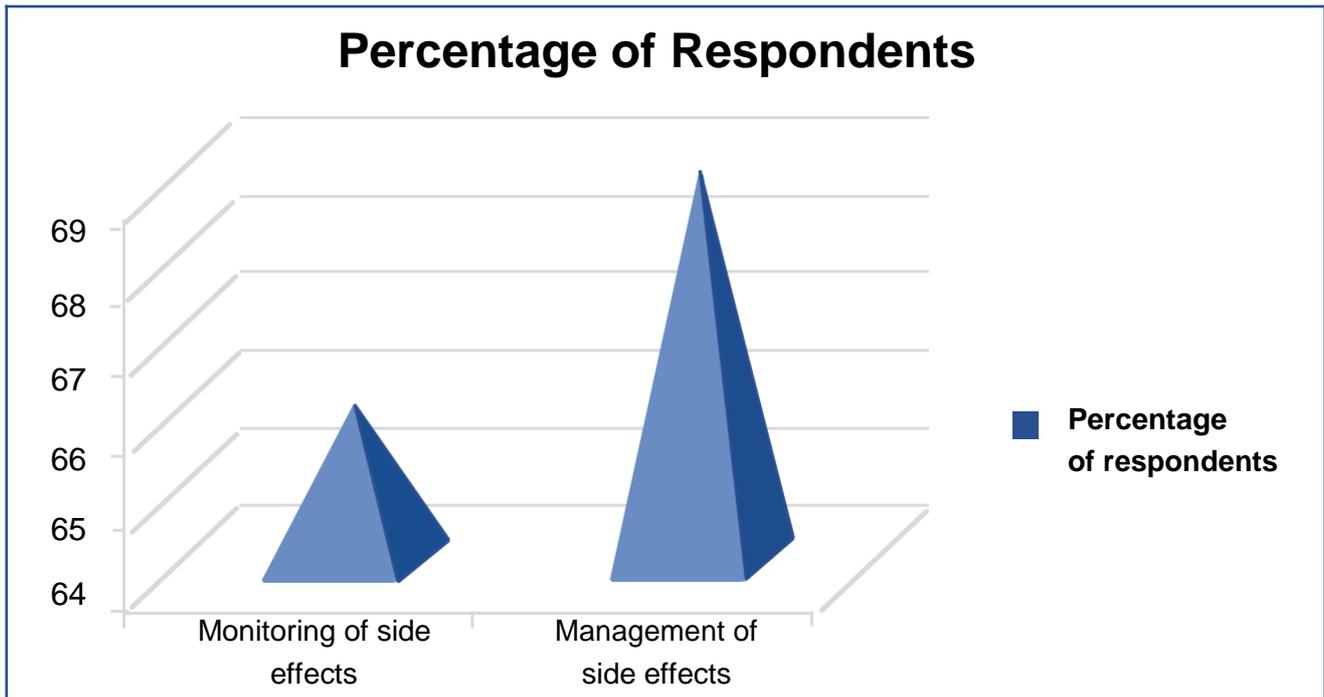
Figure 2: Gaps in Pain Management Tools Identified in Phase One

Gaps Identified from Key Informant Interviews

During phase two, further scrutiny of the pain management guidelines/tools revealed some notable gaps since most of them focused on assessing pain and pharmacologic management of the same neglecting the patient holistic care that encompasses evaluation of the interventions. The key informant interview results were as follows:

Perception on Pain Management Policies

The questions were directed to the participants in policy formulation both at the National and County levels of the Ministry of Health. Respondents form the National level demonstrated awareness of the National palliative care policy with some of them pointing out that it did not clearly articulate nursing issues. All the respondents in this category reported need for a comprehensive palliative care policy to facilitate better pain management practice.

"There is a palliative care policy in existence though it does not clearly articulate nursing issues. It is important to develop guidelines that will improve nursing care" (p11).

"There is need to change legislation to allow nurses trained in Palliative Care to prescribe opioid analgesics so as to increase the number of prescribers "(P17).

"Any policy that will bring improvement to nursing care is welcome. It is important to improve palliative care since cancer is on the rise.

*We need better policies and guidelines
to improve nursing care "(p13, p14, p16).*

*"Guidelines will enhance overall
patient monitoring since cancer patients also
experience side effects from other treatment
interventions such as chemotherapy "(P12).*

*"During my course of practice,
I never saw Nurses demonstrate competence
in pain management by use of opioids.
Nurses could be better allowed to recommend
opioid drugs upon consultation with the
oncologists" (P18)*

Perception on Pain Assessment Tools

In referrence to the commonly used pain assessment tools most of the respondents agreed that there existed gaps in the tools as they did not provide for impeccable pain assessment. That was reported as follows:

*"The commonly used tools lack capacity to
competently assess all patient populations" (p9)*

*"Commonly used Pain Assessment Tools
lack capacity to assess patients with dementia, or
patients with any cognitive impairment or even those
low levels of consciousness. The tools may not be able
to assess
non- verbal pediatric patients" (P16, P7).*

*"The commonly used tools for sure have gaps
in that, the assessor will leave out
some patients with special needs" (P8, P10).*

*In PC, you have to observe, review, reassess the
patient and monitor the outcome of the treatment
to be able to tell how the patient is doing while
on medication and enhance compliance (P8,
P10).*

*Pain assessment tools lack capacity to assess other
distressing symptoms (P1, P6).*

*There is need to sensitize healthcare workers on how to
use the (recommended pain assessment) tools even for
ICU patients or those unable to communicate (P17).
"....there is a gap especially in areas where*

*people have not been trained on palliative care.
Partuculary on basic pain assessment and
the WHO pain management criteria (P8)*

Perceptions on Pain Management Guidelines

The WHO ladder was the sole recommended pain management tool. KEHPCA had trained some nurses on pain management using morphine by mouth, by ladder and by clock. Participants reported gaps in the ladder as follows:

*"WHO ladder does not have the capacity to facilitate
assessment or evaluation by a nurse" (P4).*

*"WHO tool does not provide for assessment of pain
and management of treatment outcomes" (P1, p5).*

*"WHO ladder does not give provision for
impeccable pain assessment and
monitoring treatment outcomes.
Assessing treatment outcome is also very, very
important for caregivers to know a patient's
progress" (p6 & p8)*

*"WHO ladder is not completely comprehensive
since it focuses on physical pain yet pain
is not only physical but you might be having a patient
who is having pain because of social issues,
psychological issues and above all that,
there is spiritual issues" (P5, P8)*

*"WHO ladder is a tool for the prescriber,
not for the nurse" (p6, P9)*

However, a dissenting opinion by one of the respondents who felt that, the pain assessment tools and the WHO ladder were adequate for the task;

*"The WHO pain management ladder
is what KEHPCA recommends and
I feel it is adequate to manage pain since that is
what we have used over the years (P20).*

Recommendations for Improvement in Pain Management Practice.

Most participants (95%) reported the need for improvement on pain management practices as indicated by the following responses:

*"Nurses need further sensitization on the
recommended tools for total pain assessment" (p9)*

Pain is a major concern in palliative care and pain management requires a multidisciplinary approach. We need to equally come up with a better assessment tool" (p4)

"Improve on guidelines since cancer patients suffer from many side effects of treatment interventions and so, require to close monitoring" (p12).

"It was desirable to sensitize healthcare workers on how to use the (recommended pain assessment) tools even for patients in ICU or those unable to communicate" (P17).

"Nurses need to learn how to utilize other assessment tools like FLACC for pediatric patients, PAINAD scale for those with dementia and BPS for those with

impaired consciousness (P16)

"There is need to develop comprehensive guidelines/model to facilitate pain assessment and management of treatment outcomes. It's important for healthcare workers to understand the side effects of the medication and how to manage them" (P17).

Table 7- *Gaps Identified in the Guidelines & Recommendations by Key Informants*

Pain Management Guidelines/Technique	Gaps Identified
Numerical Rating Scales, Visual Analogue Scale, Wong Backer Facial Scale, APVU	Cannot be used to assess pain in critically ill patients or non- verbal children, blind patients and patients with dementia.
	Pain assessment tools assess only physical pain- cannot perform impeccable pain assessment
	The tools lack of capacity to assess other distressing symptoms
History & Physical Examination	Cannot be used effectively in non- verbal patients especially those not accompanied
	Not comprehensive.
	Targets the prescriber
WHO Ladder	Lacks provision for pain assessment and management of treatment outcomes.
	Recommendations
	Nurses need to be sensitized on other assessment tools like FLACC for pediatric patients, PAINAD scale for those with dementia and BPS for those with impaired consciousness.
	There is need to develop comprehensive guidelines to facilitate pain assessment and management of treatment outcomes. These should include assessment for special populations.
	Need to improve on PC policy to adequately address nursing issues Change of legislation to allow nurses to prescribe opioid analgesics to increase the number of prescribers and ensure adequate pain control.

Generating Themes on Recommendations for Improvement on Pain Management

Data collected from 2nd phase was analyzed by first reading the interviews, familiarizing with the data, noting the themes and concepts that emerged. A thematic framework was developed from the identified themes and sub-themes which was used to create codes for coding the raw data.

Naming of themes was done to include; need for policy shift, comprehensive guidelines, Continued Professional Development (CPD) and impeccable pain management as indicated in *Figure 12*. The themes were used to generate recommendations of the study.
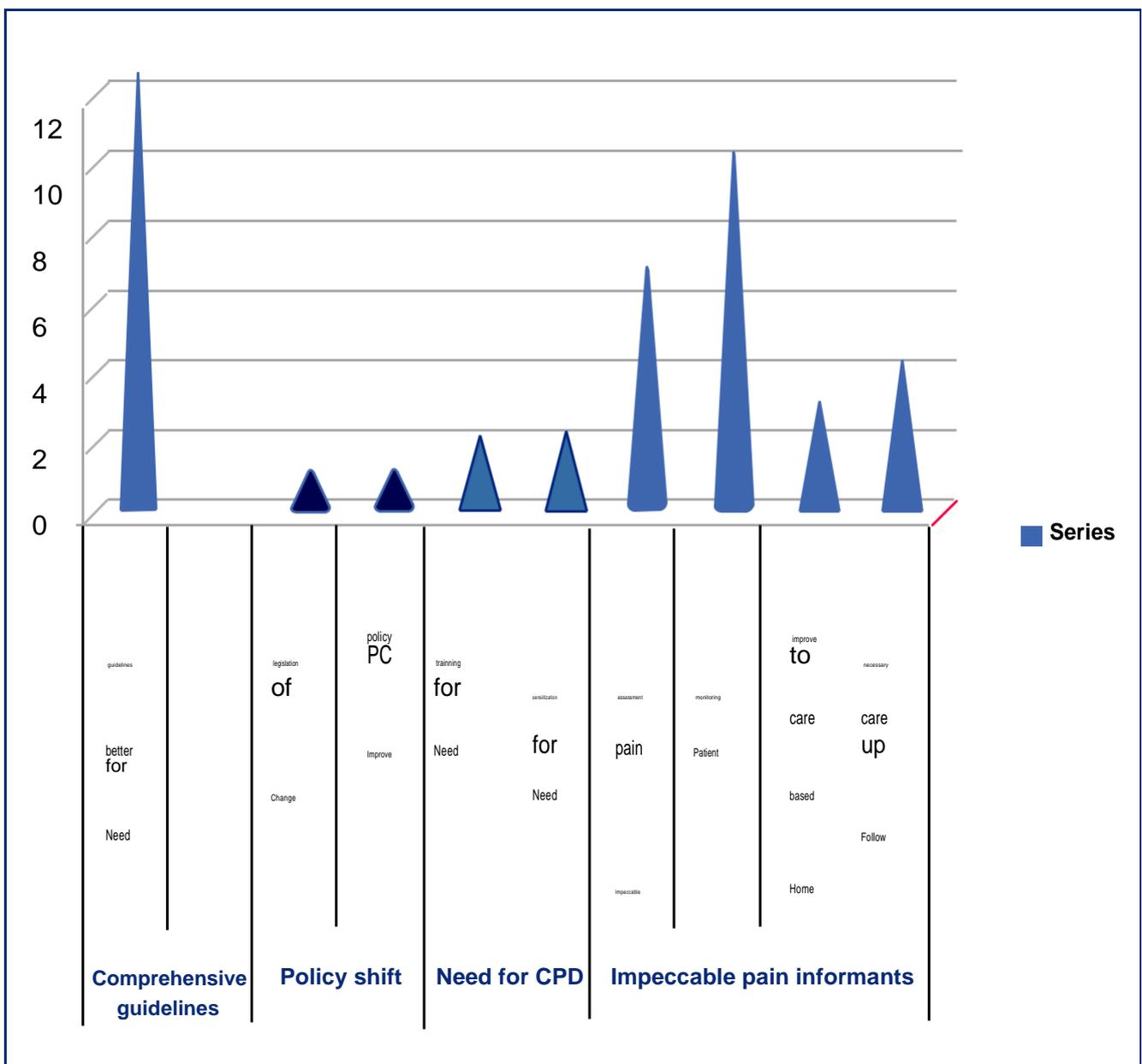
Figure 12: Showing Emergent Themes from Views of Key Informants

Discussion

Generally respondents reported importance for the improvement of pain management policies which would lead to overall enhancement in nursing care. They also reported that owing to nationwide increase in cancer cases the demand for upgrading palliative care was long overdue. Commonly used pain assessment tools were:

(i).   Verbal descriptor scale.
(ii).   Numeric rating scale.
(iii). Wong's faces.

This was contrary to a previous study conducted in 2015 which reported that, uni-dimensional scales that capture self-reported pain intensity ratings undervalued the complexity of the pain experienced [16].

Pain was a bio-psychosocial experience and assessment was a complex social transaction with an exchange of the meaning of pain that demands a more comprehensive approach [16].

The key informants identified some gaps in the pain assessment tools. The identified gaps include:

(i).   Inability to assess pain in patients with dementia.

(ii). Inability to assess pain in patients with other forms of cognitive impairment.

(iii). Inability to assess pain in patients with non communicative pediatric populations.

(iv). Inability to assess pain in the unconscious patients.

The concern was mostly reported in regard to nurses who had not been trained in palliative care nor undertaken short courses in pain management. The findings were similar to those of another study conducted in Nepal to determine the utility and validity of pain intensity rating scales for use in developing countries. The Nepal study had reported that, Faces Pain Scale was the most preferred scale, followed by a Verbal Rating Scale [17].

The WHO ladder was the sole recommended pain management tool. Similar findings were shared by a study conducted in Illinois to determine effectiveness of WHO cancer pain relief Guidelines. Evidence from the research indicated that 20%–100% of patients with cancer pain – considering their status of treatment or end-of-life care could gain adequate pain relief with application of the WHO guidelines [18].

However, on scrutinizing the WHO ladder, some gaps were identified which included inability to provide for total pain assessment as it focused on management of physical pain only. The ladder did not provide for monitoring and management of treatment outcomes. It was also reported to target only the prescriber and not the nurse.

Those limitations were an impediment to provision of Palliative Care especially by nurses not trained in the area, as well as to home based care providers. Those findings resonate with those of previous studies e.g.. In the study of 2010 to review the ladder, it was reported that, the WHO ladder was often inadequate in daily practice, especially when dealing with the diverse nature and etiology of various pain conditions [19].

Another study conducted in 2015 concluded that the WHO ladder which was developed in 1986 needed review as new approaches to pain control, such as neuromodulation, nerve blocks, intrathecal drug administration, and non-pharmaceutical protocols also had been developed [20].

To facilitate sound Palliative care, the challenges aught to be met and remove perceived barriers including but not limited to;

- Building up knowledge

- Creating awareness among health professionals

- Developing updated, well-defined and standard pain management guidelines tailored to different needs of the populations.

To improve on pain assessment techniques it was recommended that there was need to train/ sensitize nurses on the appropriate pain assessment tools especially for evaluating patients with special needs or the critically ill.

The WHO ladder requires revision considering that pain is not only physical and other pain intervention measures to include; non-pharmacological intervention needs to be considered.

Finally, healthcare professionals require adequate exposure to quality practice in palliative care, especially on pain management. There is also need for continued

professional development sessions to update them on emerging and re- emerging issues in pain management.

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