

Article

Assessment of the Rational Use of Morphine in Cancer Patients at Raleigh Fitkin Memorial Hospital, Eswatini

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Abstract: The promotion of rational use of morphine is an important necessity in the management of cancer related pain. The World Health Organization (WHO) provides standards for the rational use of morphine in cancer patients. The aim of this study was to assess the rational use of morphine in cancer patients at Raleigh Fitkin Memorial Hospital. A quantitative research approach using a descriptive, retrospective, cross sectional design, to assess prescribing indicators and completeness of prescription. A descriptive, prospective, cross sectional design was used to evaluate patient care indicators and health facility specific indicators at Raleigh Fitkin Memorial Hospital. A sample size of 600 prescriptions was selected for a period of a year from July 2018 to July 2019 using systematic random sampling. Out patients of about 30 were randomly selected and 2 pharmacy personnel for prospective review. Different types of cancer cases were observed at RFM, i.e. cervical cancer (40.3%), prostate cancer (11.8%), breast cancer (3.7%), colon cancer (7.5%), vulva cancer (7.2%), lung cancer (4.3%), retinoblastoma (4.3), malignant melanoma (2.2%), Kaposi's sarcoma (3.7%), oesophageal cancer (6.0%), thyroid cancer (2.7%), hepato carcinoma (1.5%), leukaemia (0.8%) and other types of cancer being (4.0%). The gender of patients taking morphine, 60% were females and 40% were males. With regard to age category, about 3.3% of patients below 18 years were taking morphine, 3.3% of patients between 19-30 years, 23.3% of patients between 31- 40 years, 26.7% between 41- 50 years and 43.3% of patients were above 50 years. Findings from the study showed that morphine was being used rationally in cancer patients at the facility. There was 97.83% of morphine daily dose not exceeding 200mg recorded and only 2.17% of morphine daily dose exceeded 200mg. The findings of this study indicated that morphine was being used rationally for the management of pain in cancer patients at RFM.

Keywords: rational use, morphine, cancer patients, Raleigh Fitkin Memorial Hospital

1. Introduction

The kingdom of Eswatini is a small, independent, low income resource nation in Southern Africa of just 1.3 million people [1]. About 900 people develop cancer each year and about 600 people die from it. These numbers are expected to rise by more than a third by 2030. The two most common cancers; Kaposi sarcoma and cervical cancer account for almost half of all the cases in Eswatini which increased about 20-fold since the advent of AIDS [1]. Cancer is a type of malignant growth or tumour caused by abnormal and uncontrolled cell division, it may spread through the lymphatic system or blood stream to other parts of the body [2]. The potential for suffering from cancer can be a horrifying experience for anyone with the diagnosis and pain is probably the most frightening of all cancer symptoms for patients. Although cancer can be a terminal disease, there should be no reason to deny a patient the opportunity to live productively and be free of pain [3], Pain is an unpleasant sensory and emotional experience associated with either actual or potential tissue damage. The intensity, degree of pain relief and effect of pain vary according to the type of cancer, treatment, and personal characteristics but prevalence and severity of pain usually increase as the disease progresses [4]. The under treatment of chronic pain is a problem, especially for people in the final stages of cancer. Chronic pain can be controlled by a simple and inexpensive use of oral analgesic drugs including morphine and other opioids [4]. Morphine taken by mouth produces good pain relief for most people with moderate or severe cancer pain. Morphine is now available in different dosage forms that release the morphine over various periods of time [5]. Although it has a bad reputation for its addiction and side effects, morphine is still one of the most potent analgesics for cancer related

pain [6]. Opioid production, consumption and importation are strictly controlled thus included in the schedules of the Single Convention on Narcotic Drugs which restricts and regulates their use [7]. In addition to policy and legal barriers, professional barriers such as lack of training of medical staff also account for the inadequate medical use of opioids. Rational drug use is defined as patients receiving medications appropriate to their clinical needs, in doses that meet their own individual needs for an adequate period of time and at the lowest cost to them and their community [8]. It also includes the utilization of medication as per patient safety, its effectiveness, cost and compliance. It is commonly simplified as the five rights; the right drug at the right dose by the right route at the right time for the right patient [9]. Irrational prescribing does not comply with the prescribing standards, and includes; under prescribing, over prescribing, incorrect prescribing, multiple prescribing and extravagant prescribing. The effect of irrational use of medication is vast and results in the different conditions. The most important and widely reported impact is in the form of side effects that may be harmful in a way that may result in mortality [10]. Factors associated with irrational drug use include poor knowledge of medical staff, short years of experience, traditional beliefs about illness, short consultation time, lack of interaction between dispenser and patients and poor implementation of the National Drug Policy guidelines [11].

Approximately 80% of the world population has either no or insufficient access to treatment for moderate to severe pain, and that every year, tens of millions of people around the world including around four million cancer patients and 0.8 million HIV/AIDS patients at the end of their life suffer from such pain without treatment [12]. In the United States, an estimated 25 million people experience acute pain and between 70 and 90 percent experience cancer pain yet surveys have shown that over one third are not adequately treated for pain. Lack of access to pain medication in pharmacies and fear of addiction on the part of patients are significant limiting factors in the United States [12]. In Kenya, 30 percent of hospitalized patients experienced moderate to severe pain [13]. More than half of the patients had undertreated pain as mostly non-opioid analgesics are prescribed and often the patients do not receive their medication as prescribed. The potential reasons for the under treatment was thought to be due to staff shortages and system failures making it easy to overlook giving medications at the correct time. More than 60% of the 14 million new cancer cases worldwide in 2012 were reported in the developing part of the world, including Africa, Asia and South America [14]. Thirty-two countries in Africa have almost no morphine distribution at all and only fourteen have oral morphine [12]. Although consuming only 6% of the morphine used worldwide, Africa has more than half of cancer patients. In developing countries pain and palliative care are poorly understood and are traditionally given low priority in national health care systems [12]. In Tanzania, for many years, morphine has been the most successful opioid in alleviating pain in cancer patients [15]. The use of morphine is acceptable among a large proportion of patients receiving palliative care. However, the level of knowledge about morphine is low in most patients. Therefore, there is a need to encourage patient participation to strengthen the whole process of pain management and that information, education and communication on the use of morphine needs to be improved. Cervical cancer is the most common cancer in women in the Kingdom of Eswatini where most women rarely undergo cervical screening. The very high prevalence of HIV/AIDS complicates the management of pre-invasive and invasive cervical cancer [16]. High risk human papillomavirus (hr-HPV) infection and the dual burden of HIV/AIDS remains a huge challenge in some low income countries such as the Kingdom of Eswatini [3].

The Kingdom of Eswatini established a cancer registry in 2015 and initiated cervical and breast cancer screening activities at 80 primary care clinics. However, cancer care services are currently limited and the Government refer the majority of cancer patients for treatment to neighbouring countries like South Africa [1]. Also, current oral morphine available in the Kingdom of Eswatini is not enough and stock-outs are reported thus affecting patients and health care providers [17]. According to the WHO cancer profile of the Kingdom of Eswatini (2014) cancer treatment and palliative care on chemotherapy and oral morphine accessibility was generally unavailable in the public health system. Despite all the attempts carried out to decrease the cancer prevalence in the Kingdom of Eswatini like implementation of the national cancer registry, cancer remains one of the leading causes of death in most patients [1]. Cancer is one of the fast-growing diseases and its main symptom is pain. Morphine is a drug of choice in the management of pain in cancer patients [17]. Large number of patients are using morphine, proper usage of it prevents opiophobia and addiction. Cancer is becoming a major public health concern and the Kingdom of Eswatini needs to apply the same diligence in cancer control as in the fight against HIV/AIDS [1]. Although, much has been done on developing a national cancer control plan, coordinating cancer projects and establishing equity in the delivery of services, not much has been done on evaluating the different ways to manage cancer pain including palliative care. The kingdom of Eswatini'

cancer country profile had no specific values of morphine consumption in cancer treatment and palliative care [18], thus there is a need to determine if morphine is used rationally and according to the WHO three step analgesic ladder and according to the Standard Treatment Guidelines of the Kingdom of Eswatini.

The findings of this study might improve rational drug use in terms of rational prescribing, dispensing and usage of morphine. Patients might benefit in the sense that rational drug use of morphine will eliminate morphine under-use which will prevent opiophobia and overuse which result in addiction. The findings from this study might broaden the level of knowledge about morphine as it is currently low in most patients. Therefore, there is a need to encourage patient participation to strengthen the whole process of pain management and that information, education and communication on the use of morphine needs to be improved for both health practitioners and patients. The purpose of the study is to assess the rational use of morphine in cancer patients at Raleigh Fitkin Memorial Hospital, Manzini Eswatini.

2. Materials and Methods

The researcher employed specific method to gather data at Raleigh Fitkin Memorial Hospital (RFM). Quantitative data are measures of values or counts and are expressed as numbers [19]. In this study, the researcher used a quantitative approach to gather data as it is more applicable than using categories. Study design refers to the overall strategy or plan that should be followed to integrate the different components of the study in a coherent and logical way, thereby ensuring that the research problem will be effectively addressed [2].



Fig. 1. (left) The map of Eswatini and (right) the RFM Hospital.

The study population was all cancer patients and prescriptions between July 2018 to July 2019 and all outpatients in July 2019 with cancer related pain. Pharmacy personnel at RFM were also selected. The target population consisted of 600 prescriptions randomly selected, 30 out-patients and 2 pharmacy personnel at RFM. Sample size and sampling method are as follows:

- Patient care indicators: a total of 30 out-patients were randomly selected.
- Prescribing indicators and prescription completeness: a total of 600 prescriptions were systematically selected.
- Facility specific indicators: 2 pharmacy personnel were interviewed.

Data collection forms were used when collecting prescribing data as well as prescription completeness while questionnaire were used to collect data pertaining patient care indicators and facility specific indicators as well as observational surveys. Prescribing indicators evaluated the rational use of drugs according to the set standards by WHO rational drug use and prescribing patterns. This was done through retrospective evaluation of prescriptions. The data was collected on the following prescribing factors:

- The average number of drugs per encounter.
- The percentage of drug prescribed by generic name
- The percentage of drugs prescribed from essential drug list or formulary.

Patient care indicators addressed key aspects of what patients experience at health facilities and how well they have been prepared to deal with pharmaceuticals that have been prescribed and dispensed to them. This

was done through prospective and cross-sectional design. The data was collected on the following patient care indicators:

- The average consultation time
- Average dispensing time
- The percentage of drugs actually labelled
- Patients knowledge of correct dose
- The percentage of drugs actually dispensed

Facility-specific indicators measured the availability of essential medicines in the facility and the ability to prescribe drugs rationally. This was done through observation and interviewing the pharmacy personnel. The data was collected based on the following facility-specific indicators:

- The availability of the essential drugs list or formulary in the facility.
- The availability of key drugs in the stock.

The collection of data was done through the filling of the following data collection forms. The prescribing indicator form and patient indicator form was filled through the use of patient prescriptions. Pharmacy personnel was selected for facility specific indicator form and 30 cancer patients were selected to fill in the questionnaire.

- prescribing indicators form (see appendix 1)
- patient-care indicators form (see appendix 2 and 5)
- facility-specific indicators form (see appendix 3)
- Prescription completeness form (see appendix 4)

Data was collected and analysed using IBM Statistical Package for Social Sciences (SPSS) version 20. The results were presented using tables and graphs in percentage form. The research proposal was presented at Eswatini Medical Christian University (EMCU) Pharmacy Department for approval and then submitted to the Research and Ethics Committee of the Eswatini Medical Christian University. Once it was approved by the EMCU Research and Ethics Committee, it was then submitted to the Kingdom of Eswatini's Ministry of Health Research and Ethics Committee for final ethical clearance. Upon obtaining the national ethical clearance, a letter was written by the Head of Department of Pharmacy EMCU, which was then presented to the Senior Medical Officer (SMO) of the RFM Hospital and permission was obtained to collect data and access information necessary for the study. A consent form was given to each participant to complete. The participants were clearly informed about the study and were informed that their participation in the study was voluntary. The participant was informed of his or her rights to withdraw from the study if they wished to do so. The researcher ensured that only those participants that signed the consent form participated in the study. The information provided by the participants was treated confidentially. Those who have access to the results of the study were principal investigator and the supervisor. For anonymity reasons, codes and numbers were used instead of the names of the participants. The research report will be submitted to the Pharmacy Department of the Eswatini Medical Christian University and a copy will be made available at the library of the University. A copy will be submitted to the Senior Medical Officer and the Eswatini Research and Ethics committee.

3. Results

The findings of the research will be presented in tables, charts and figures in this chapter. The pattern of presentation will be in sections, starting with Section A: Prescription completeness, Section B: Prescribers indicators, Section C: patient care indicators and Section D: facility specific indicators and Section E: morphine dosage regimen. The tables and figures below are the result of completeness of prescription parameters assessed:

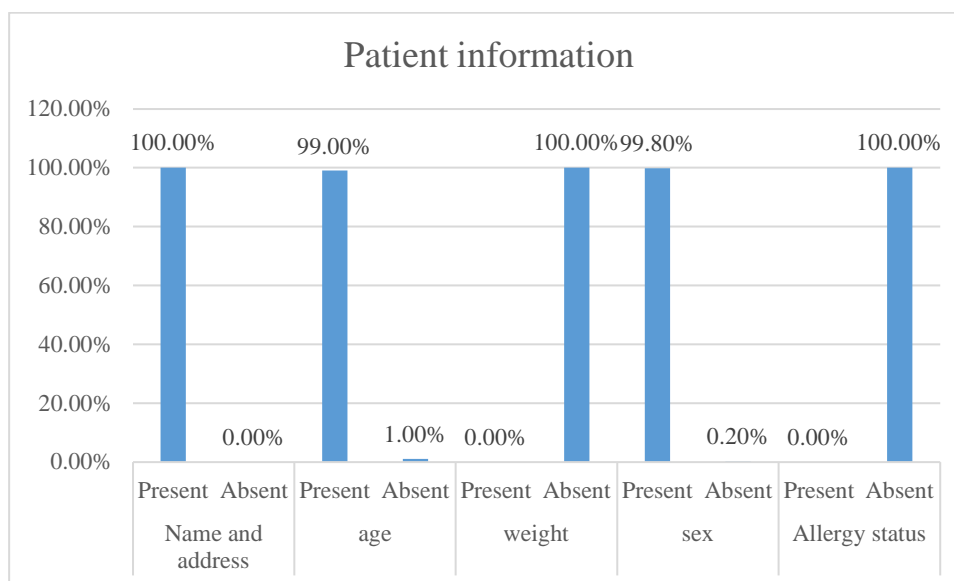


Fig. 2. A bar chart showing results from prescription completeness under patient's information.

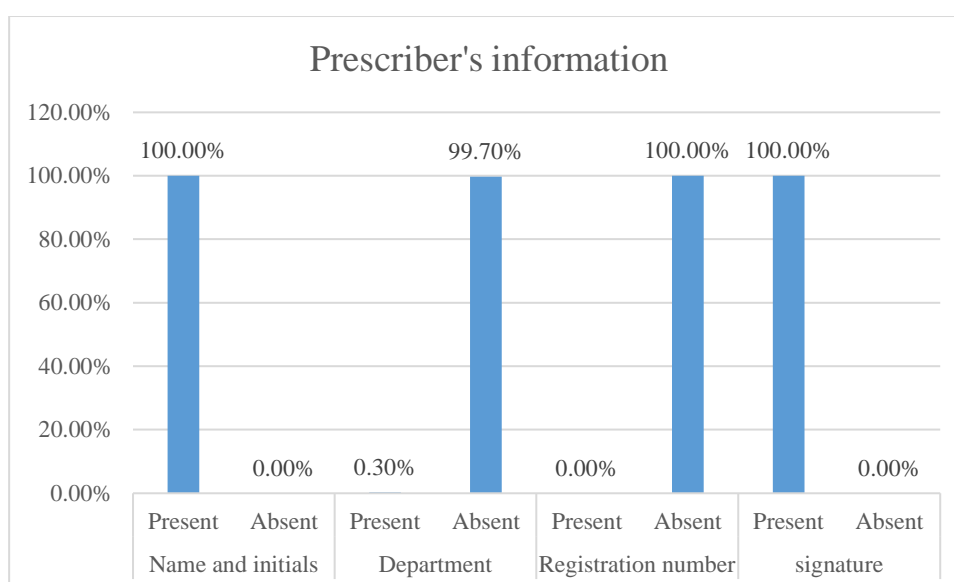


Fig. 3. A bar chart showing results on completeness of prescription under prescriber's information.

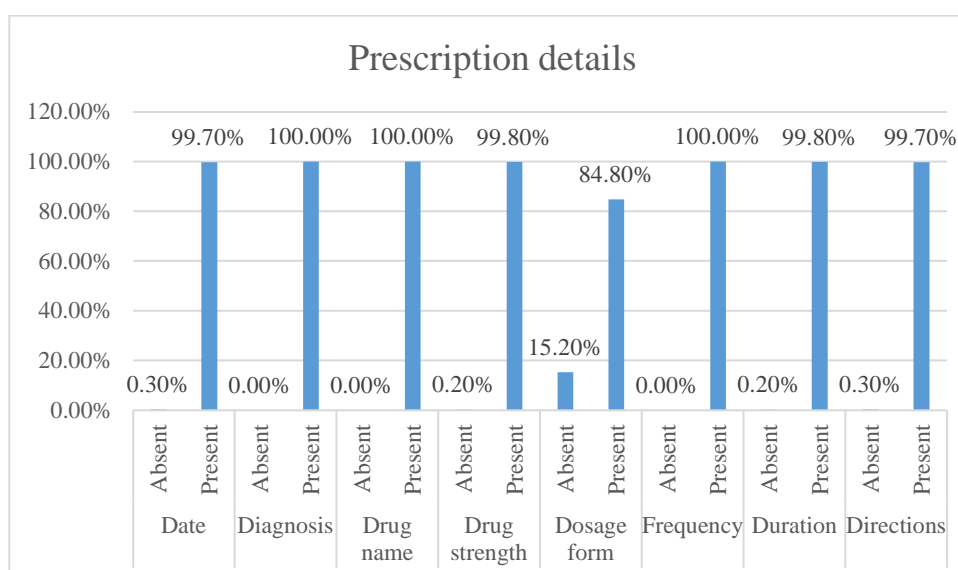


Fig. 4. A bar chart showing the completeness of prescription details as per WHO INRUD standards.

Table 1. Showing results from prescribing indicators.

		no. of drugs per prescription	Percentage of generic drugs	Percentage of antibiotic	Percentage of injections	Percentage of drugs in EDL
N	Valid	600	600	600	600	600
	Missing	0	0	0	0	0
Mean		3.58	93.08	3.315	0.25	100.00
Mode		4	100	0.0	0	100
Std. Deviation		1.352	12.080	10.2781	2.878	0.000
Range		8	67	75.0	50	0
Minimum		1	33	0.0	0	100
Maximum		9	100	75.0	50	100

Table 2. Showing results on patient care indicators.

		consultation time (min)	dispensing time (sec)	no. of drugs prescribed	no. of drugs dispensed	no. adequately labelled
N	Valid	30	30	30	30	30
	Missing	0	0	0	0	0
Mean		8.847	18.20	3.60	3.13	3.10
Median		9.000	16.00	4.00	3.00	3.00
Mode		4.0	16	4	3	3
Std. Deviation		3.9981	10.949	1.248	1.332	1.322

Table 3. Standard by WHO/INRUD, showing optimal values on the different indicators.

Prescribing indicators	Optimal values
% non-Polypharmacy prescriptions	63
% drugs prescribed by generic name	100
% prescriptions including antibiotic	<30
% prescriptions including injection	<10
% drugs prescribed from EDL or formulary	100
Patient care indicators	Optimal values
% consultation time/min	>30
% dispensing time/sec	>60
% drugs actually dispensed	100
% drugs adequately labeled	100
% patients' knowledge of correct dosage	100

The figure and table below are the result of the facility specific indicators parameters assessed:

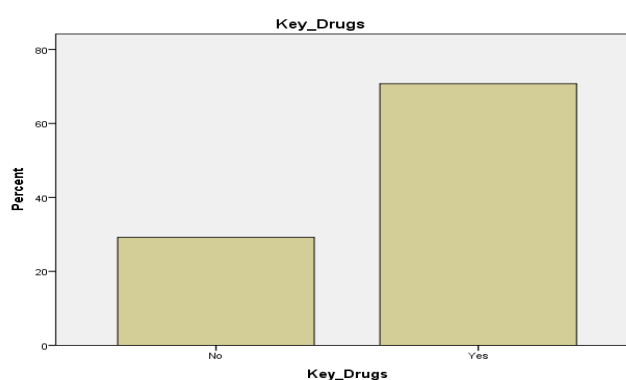


Fig. 5. Shows percentage of key drugs available.

Table 4. Shows percentage of key drugs available.

		Frequency	Percentage
1	Yes	14	70%
2	No	6	30%

Table 5. Shows the availability of an EDL or a formulary.

	Frequency	Percentage
Yes	1 formulary	100%
Yes	1 Essential Drug List	100%

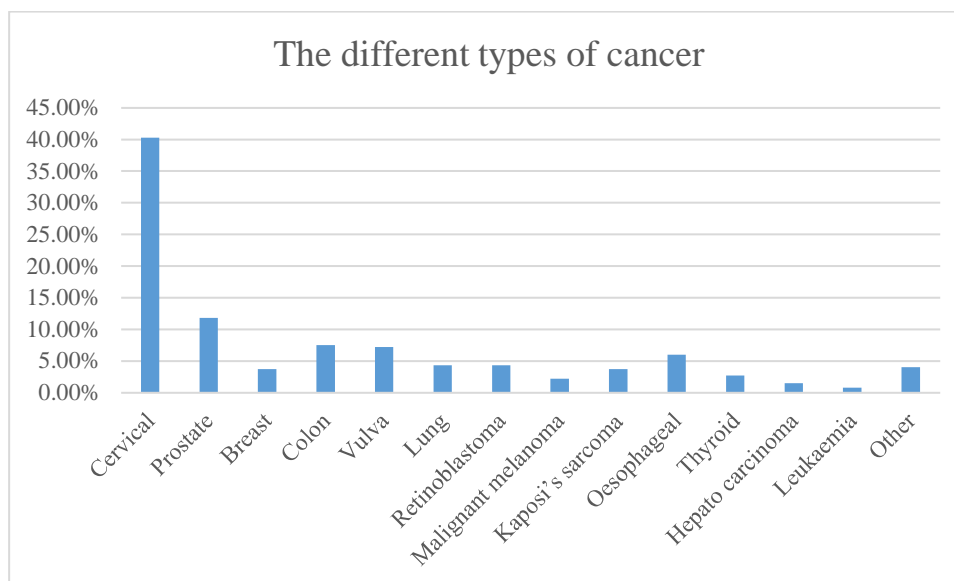


Fig. 6. Bar chart showing the different types of cancer patients being given morphine.

Table 6. Showing mean of daily dose of morphine.

		Total daily dose
N	Valid	600
	Missing	0
Mean		62.704
Mode		60.0
Std. Deviation		53.2183

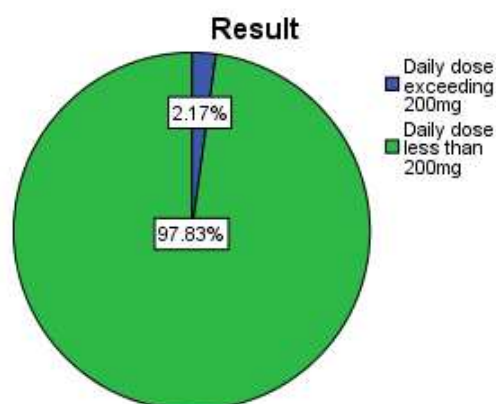


Fig. 7. A pie chart showing patients taking morphine that is more 200mg.

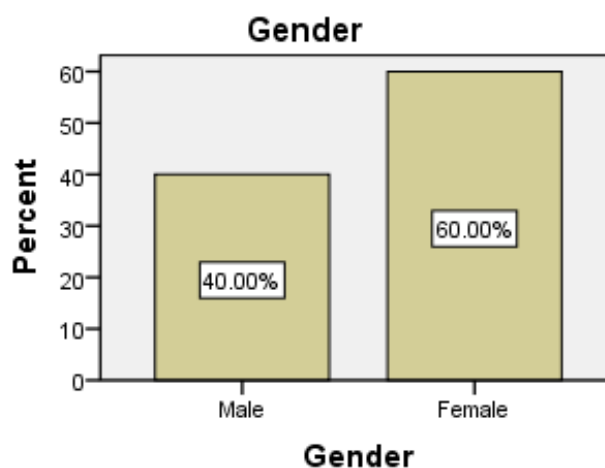


Fig. 8. Gender of the 30 participants who were taking morphine.

Table 7. The table shows age ranges of the patients.

Age Category	N	N %
Below 18 years	1	3.3%
19-30 years	1	3.3%
31-40 years	7	23.3%
41-50 years	8	26.7%
Above 50 years	13	43.3%

Table 8. The table shows common types of cancer at RFM.

Type of cancer being treated	N	N %
Breast	2	6.7%
Prostate	8	26.7%
Cervical	15	50.0%
Brain	1	3.3%
Thyroid	1	3.3%
Kaposi's' sarcoma	1	3.3%
Retinoblastoma	1	3.3%
Esophageal	1	3.3%

Table 9. The table shows answers to questionnaires.

Answers to questionnaire	N	N %	
Any other treatment	Yes	24	80.0%
	No	6	20.0%
Frequency of morphine	Once a day	1	3.3%
	Twice a day	3	10.0%
	Three times a day	1	3.3%
	Other	25	83.3%
Duration	1-3 weeks	4	13.3%
	1-3 months	0	0.0%
	4-6 months	6	20.0%
	7-12 months	8	26.7%
	More than a year	12	40.0%
Pain rating	No pain to mild	6	20.0%
	Moderate to severe	11	36.7%
	Very severe	3	10.0%
	Worst pain possible 10	10	33.3%
Refills	Monthly	29	96.7%
	Other	1	3.3%
Advice on side effects	Yes	28	93.3%
	No	2	6.7%

Table 10. Table showing pain rating cross matching the gender. Pain rating * Gender Cross tabulation.

		Gender		Total
		Male	Female	
Pain rating	No pain to mild	3	3	6
	Moderate to severe	2	9	11
	Very severe	1	2	3
	Worst pain possible 10	6	4	10
Total		12	18	30

4. Discussion

This chapter contains the discussion of the results obtained during the study using the WHO/INRUD drug use indicators optimal standards to assess the rational use of morphine in cancer patients based on: prescribing indicators, patient care indicator and facility specific indicators at Raleigh Fitkin Memorial Hospital. The findings of this research will be discussed in this chapter as compared with the WHO/INRUD optimal standards and also with similar studies in and out of the Kingdom of Eswatini. It will be in this order: Section A: Prescription completeness, Section B: Prescribing indicators, Section C: patient care indicators, Section D: facility specific indicators and lastly Section E: morphine dosage regimen.

In this study, figure 2 indicates that, all the prescriptions had the name and address of the patient (100%), about 99.0% of the prescriptions had the patient's age. About 99.8% of the prescriptions included the patient's gender. With respect to patient's information, the body weight and allergy status were not included in any of the prescriptions. In a study conducted in community pharmacies in India, however, the weight of the patient was mentioned only on 8.4% of prescriptions and address mentioned only on 1.8% [20]. The prescriber's information (Figure 3), such as name, initials and signature were available in all the prescriptions (100%). Only 0.3% included the department of the prescriber and no prescription included the prescriber's registration number. In a study conducted in India, prescriber details like name, designation, signature, were present in 46.25%, 21.75% and 73.25% respectively [21]. Figure 4 contains data on prescription details, it was found that the diagnosis, drug name and frequency were available in all the prescriptions. About 99.7% prescriptions had the date, 99.8% of prescriptions contained the drug strength, 84.8% mentioned the type of dosage form, 99.8% of prescriptions depicted the duration of treatment and 99.7% of prescriptions had instructions for direction of use. In a similar study conducted in a tertiary hospital in India, details of medication like strength was 70.33% and frequency of administration was 93.77%, the route and dosage form were 26.92% and 77.93% respectively [21].

In this study, it was found that the average number of drugs per prescription encounter was about 3.58. This result was higher than the WHO/INRUD standards, with optimal value of 1.6 - 1.8 per patient encounter. The results of this study revealed that more drugs were prescribed in one prescription paper (Table 1) which was more than WHO set standard. Results from this study are lower than that of a study conducted in Ghana Police Hospital, average drugs per prescription was 3.7 [22], while another study in Nigeria found out that the average drugs per prescription was 6.11, which is very high [23]. The observed poly pharmacy may seriously affect healthcare by increasing side effects, non-compliance and drug-drug interaction. Poly pharmacy also causes confusion, whereby the patient end-up mixing up the drugs. Rational prescribing is advocated to avoid wastage of medicines and to avoid possible adverse effects to patients. Moreover, prescribing unnecessary medications to patients has cost implications for national health systems. The percentage of drugs prescribed from the EDL was 100% which conformed to the WHO optimal value. WHO recommend the use of EDL for effective health delivery. It is slightly higher than study done in Nigeria Military hospital (80%) [24]. Even though it is less than WHO set point (100%), prescribers were well aware of drugs in the essential drug list. The practice of prescribing from EDL should be encouraged through capacity building so as to increase rational drug prescribing patterns. WHO highly recommends prescribing medications by generic name as a safety precaution for patients because it identifies the drug clearly, enables better information exchange and allows better communication between health care providers [25]. Regarding prescription by generic name, 93.08% of prescriptions were prescribed by generic name (Table 1) almost near to the one recommended by WHO (100%) [26]. It is a good practice in the study area as compared to studies done in North Western Ethiopia (Gonder Hospital, 72.6%; Bahirdar Hospital, 70.5%; and Debretabor Hospital, 84.1%) [27] and Yenagoa of Nigeria (62%) [24]. The reason may be due to the prescriber's preference of essential drugs which are usually written in generic names as compared to other study sites. This will significantly lower money wastage which will be

incurred by purchasing brand drugs. The percentage of encounters with an antibiotic prescribed was 3.3%, lower than the optimal value proposed ($\leq 30\%$). However, it is difficult to judge whether antibiotics were appropriately prescribed as this was not part of the study design, this study focused mainly on the rational use of morphine. When compared to other studies, this values it very low, which suggests that at RFM they are rationally prescribing antibiotics in patients who are using morphine. Rational use of antibiotic combats the battle of bacterial-resistance. Different drugs are administered through a variety of routes with all their pros and cons. About 1% of the prescription at the study site were with injection. This value is way too small and out of the acceptable range set by WHO (13.4%-24.1%). This a good practice since it decreases the cost of health, oral medication is cheaper than injectable. Also the skills required to administer injectable together with the supplies of needles, also removes the risk of transmitting diseases such as HIV and hepatitis. More than half of all medicines are inappropriately prescribed, dispensed or sold with such practices deemed to be most prevalent in healthcare settings in the developing world where mechanisms for routine monitoring of medicine use are still in early stages of development [28]. In the African region, it was reported that the average number on medicines per patient encounter was 2.6, percentage of encounters with antibiotics prescribed was 45.9%, encounters with an injection was 28.4%, percentage of medicines prescribed from the EDL to be 89% and percentage of medicines prescribed in generic name as 65.1%. All these values proved to be higher than the set WHO standards [28]. Proper utilization of medicines is a critical component of pharmaceutical care plan. Physicians should be educated and trained about rational prescribing and motivated to enhance generic prescribing [35].

Table 2 shows the average consultation time as 8.85 minutes which was considered to be inadequate considered to be less than the WHO standard being 10 minutes [29]. Another factor affecting the quality of health care is patient care practices. The average times taken for consultation and dispensing medicines were 8.85 minutes and 18.2 seconds, respectively. Dispensing time should be greater than 90 second. This was closer to the studies done in South West Ethiopia (6.14 minute and 1.28 minutes, respectively) [27]. Nevertheless, the time allotted for consultation was less than that of a study in Nigeria (11.5 minutes) [24]. The major reason for this could be patient load. The communication of patients with health care providers helps them to get enough information about their medications and enhance adherence. Short dispensing time <60 s is not sufficient to explain dosage regimen, adverse effects of drugs, all precautions, and actually label and dispense a drug. It is clear that patient compliance directly depends on his/her knowledge about the drug. Prolongation of dispensing time is a necessary step toward improving patient care. In a similar study conducted in Rwanda, the average consultation time was 10.1 minutes, compared to WHO target of at least 10 minutes. The average dispensing time was 222.2 seconds compared to WHO standard of ≥ 90 seconds. Time spent counselling the patients affects the knowledge gained by the patient on how to take the drugs. Knowledge of the patient is a very central factor in the therapeutic process. There should be improvement as patients' active participation in the health care process will enrich their knowledge if drug compliance and desired therapeutic goals are to be achieved. The percentage of prescribed drugs that were actually dispensed was 88.9%. Lower labelling of dispensed drugs (0%) was found. While the percentage of patients with adequate knowledge of correct dosage schedule was 84.3% compared to the WHO standard of 100% [30]. Writing the patient's name and generic name of the drug on the label is necessary. This would also help in reducing the risk of dispensing errors. Knowledge about side effects of drugs is also low (6.6%). The good thing is more patients (23.3%) knew drug food interaction.

A formulary or an essential medical list was available at the pharmacy therefore it had a result of 100% (Table 5), which aligns with WHO/INRUD optimum value of 100%. A study conducted in Eastern Ethiopia it was found that none of the hospitals involved in the study had its own EDL or formulary [31]. The findings of the study showed that the average percentage of key drugs was found to 70% (Table 4). The optimum standard stipulated by WHO is 100%. In a study conducted in Saudi Arabia, the percent of key drugs on stock was only 59.2% compared to optimal value of 100% [32]. Results of the present study are higher than those of the study conducted at PHC facilities in Kragujevac, Serbia where the percentage of key drugs in the stock was only 38.7%. Shortage of the drug supply of essential drugs that treat common health problems is harmful to health status of patients. Moreover, this probably increases the percentage of prescribing medicines out of the stock. WHO recommends adherence of physicians to the drugs listed in the EDL/formulary while prescribing medications to ensure proper healthcare.

The most common types of cancer at RFM were recorded (figure 6) and results are as follows, cervical cancer (40.3%), prostate cancer (11.8%), breast cancer (3.7%), colon cancer (7.5%), vulva cancer (7.2%), lung cancer (4.3%), retinoblastoma (4.3%), malignant melanoma (2.2%), Kaposi's sarcoma (3.7%), oesophageal cancer (6.0%), thyroid cancer (2.7%), hepato carcinoma (1.5%), leukaemia (0.8%) and other types of cancer

being (4.0%). Figure 8 shows data on the gender of patients taking morphine, 60% were females and 40% were males. With regard to age category, about 3.3% of patients below 18 years were taking morphine, 3.3% of patients between 19-30 years, 23.3% of patients between 31- 40 years, 26.7% between 41- 50 years and 43.3% of patients were above 50 years. About 80% of patients received other medications on their prescription except for morphine and only 20% had no other medications. Table 9 contains data on the frequency of morphine dosing, 3.3% was prescribed once a day, 10% was prescribed twice a day, 3.3% was prescribed three times a day and 83.3% was prescribed in a different frequency per day. About 13.3% of patients used morphine for a duration of 1-3 weeks, 0% of patients used morphine for 1-3 months, 20% used morphine for 4-6 months, 26.7% used morphine for 7-12 months and 40% used morphine for more than a year. On the basis of pain rating, 20% of patients had no pain to moderate pain (0-3), 36.7% had moderate to severe pain (4-6), 10% had very severe pain (7-9) and 33.3% had worst pain possible (10). Most patients refilled the morphine monthly (96.7%) and only 3.3% refilled any other time. About 93.3% patients were advised on the side effects of morphine and only 6.7% were not advised on side effects. The findings of the rational use of morphine in cancer patients showed that morphine is being used rationally (figure 7), as 97.83% of morphine daily dose not exceeding 200mg was recorded and only 2.17% of morphine daily dose exceeded 200mg. According to the World, the effective analgesic dose of morphine varies considerably and ranges from as little as 5mg to not more than 200mg daily [33]. Morphine is the mainstay of cancer pain management; proper prescribing patterns are essential. WHO states that the dose of morphine can vary but it should not exceed 200mg. All patients given morphine should also be given bisacodyl, in this study all the 600 patients were given bisacodyl. The results of this study are in line with the findings in 2009 by Kamuhabwa & Ezekiel in Dar es Salaam [15]. This suggests the proper use of morphine, even more than 50% of the interviewed patients reported to be suffering from side-effects related to the use of morphine. Most of the participants reported to have been taking morphine for more than a year, which explains the high number of patients complaining about side effects. The benefit of morphine outweighs the risk; the patients are in palliative care. About 43% (N=13) of the patients reported that they were in severe or unbearable pain, in pain assessment tool, they scored their pain at 10 out of 10.

With regards to the use of morphine in cancer patients at RFM, morphine was being prescribed and used rationally and such practices are promoted to reduce dependence and addiction. Morphine in cancer patients should be titrated according to the type of cancer, duration of disease progression and the scale or rating of the pain.

Acknowledgment: The paper was supported by Eswatini Medical Christian University.

Conflicts of Interest: The authors have no conflict of interest related to this study to disclosure.

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