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The use of Standard Treatment Guidelines and Essential Medicines List by professional nurses at primary healthcare clinics in the uMgungundlovu District in South Africa

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ABSTRACT

One of the major challenges for the Department of Health in South Africa today is inequity and the need to provide quality integrated health care for all its citizens. Primary healthcare (PHC) has been declared as the way to achieve this goal, through the District Health System. Standard Treatment Guidelines (STGs) and the Essential Medicines List (EML) have been developed and are used at PHC clinics and hospitals. This study explored the use of STGs and the EML by professional nurses at PHC clinics in the uMgungundlovu District, province of KwaZulu-Natal in South Africa.

A quantitative descriptive research design was used. Questionnaires were used to collect data from respondents at the PHC clinics. The researcher also reviewed the professional nurse's registers retrospectively on the rational use of drugs.

The findings of the study revealed that the respondents had a good understanding of the use of the STGs and the EML. There was no evidence of polypharmacy, and medications were prescribed according to the STGs and the EML guidelines. Areas that were suboptimal were related to prescription writing, in writing of schedules and routes of medication as indicated in facility records. The results further showed that training on the use of the STGs and EML were inadequate, which implies the need for strengthening of training programmes.

1. Introduction

The quality of healthcare services is very important for people of a country. In South Africa, an individual's first stop is at a primary healthcare (PHC) clinic, when in search of health services (Dennill, King, & Swanepoel, 1998). It is vital that the PHC practitioners render the best service to the consumers of healthcare. There are guidelines and protocols that assist the professional nurses whilst working at the clinic, in assessing, diagnosing, prescribing and treating clients seeking health care, the main ones being the PHC STGs and EML.

Essential medicines have been defined as 'those that satisfy the priority health-care needs of the population' and this is one of the eight elements of PHC as stated in the Declaration of Alma-Ata (WHO, 1978). The idea behind an essential medicines is that a list of a few selected medicines will help meet the priority health needs of populations, resulting in better health care, improved medicine management, better use of financial resources and greater access to care (Quick, 2003).

In South Africa, a National Essential Drug Programme was introduced in 1996. This was followed by the presentation of the Essential Drug List (EDL) and STGs for PHC, which was revised in 1998 (Department of Health, 2000). It catered for the most common diseases that patients were treated for at PHC clinics.

Following the introduction of PHC, a policy document was formulated by the South African Department of Health in 1996, called "*Restructuring the National Health System for Universal Primary Health Care*". This document stated that a specialised group of professional nurses would function independently as frontline providers of clinical PHC services within the public health facilities. This group of nurses were previously known as primary healthcare nurses (Department of Health, 1996). This is an extended role of the professional nurse and is recognised and regulated by the South African Nursing Council (SANC) through the Nursing Act, No. 33 of 2005 as amended (Republic of South Africa, 2005). The

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professional nurses examine every patient that comes to the clinic, and treats and discharges those patients she/he is able to treat. If they cannot make a diagnosis or cannot treat the patient, the patient is referred to a doctor or to the next level of care (Magobe, Beukes, & Muller, 2010).

The Comprehensive PHC Service Package for South Africa is one of the important documents that were released in 2001 which aimed at standardising care with the purpose of defining the services to be rendered through the District Health System (Department of Health, 2001). In order to ensure that everyone has access to appropriate, efficient and quality health services, South Africa is in the process of introducing an innovative system of health care financing, the National Health Insurance. It is commonly referred to as NHI, which will be phased in over a period of 14 years (Republic of South Africa, 2011). One of the key interventions that will be addressed by the NHI is the provision of a comprehensive package of care underpinned by a re-engineered PHC to focus mainly on health promotion, preventative care and rehabilitative services.

2. Aim and objectives

The purpose of the study was to examine the use of STGs and the EML by professional nurses at PHC clinics in the UMgungundlovu District, in order to find out whether these guidelines are used effectively. The objectives of the study were to:

- Determine the use of STGs and the EML by professional nurses working at PHC clinics.
- Review the rational use of medicines at the clinics by auditing clinic registers kept by the professional nurses.

3. Methodology

A quantitative descriptive research design was used. A self-administered questionnaire was used, to determine the use of the STGs and the EML. Furthermore, the professional nurses' registers were reviewed retrospectively in order to assess the rational use of medicines that they prescribed. Data collection tools were pre-tested to determine their validity and reliability and there were no changes that were made on the tools.

4. Sampling process

The total number of professional nurses working at the clinics in the uMgungundlovu District is 445. A total of 120 nurses were sampled, which was calculated as the minimum sample required (94 plus 20% to allow for non-response). Cochran's sample size formula for continuous data: Alpha = 0.05; margin of error = 0.03; based on continuous 5-point scale response, was used. In order to have a representative sample from all types of clinics, the sample was a proportional random sample from the different types of clinics as follows, 103 professional nurses from PHC clinics, five from mobile clinics, six from community health centres and six from gateway clinics.

The required sample size for the review of registers, population: 71 clinics with 800–1000 records per month at each clinic = 56,800–71,000 records in total. Using an alpha level of 0.05 and an acceptable margin of error of 0.05, the total number of records needed was 382. This number was divided amongst the 120 nurses, five entries per nurse was sampled. Each registered nurse keeps their own register, where they record patient details, diagnosis and the treatment that was prescribed. To ensure representativeness, the researcher sampled five entries per nurse, per register, using systematic random sampling, where every tenth entry in each register for that particular month was reviewed (Polit & Beck, 2012).

5. Data collection process

Data collection commenced on the 4th February 2013. The researcher visited the clinics where a self-administered questionnaire was handed to the participants. The completed questionnaires were collected immediately after completion from each of the professional nurses. Whilst the professional nurse filled the questionnaire, the researcher reviewed her/his register to check whether drugs were prescribed rationally. A tool was drawn up for the record review, where the researcher documented the age, gender, diagnosis, the names of the medication prescribed, schedule, dose, route, and frequency and quantity of drugs issued on the audit tool. A total of 565 entries were reviewed in the records. The researcher matched the record reviews with the answered questionnaires and stapled them together so that during analysis of data the information would be linked. The data gave the researcher an indication about the participants' understanding of the EML and STGs, and whether treatment was prescribed appropriately or not. The efficacy and appropriateness of initiated treatment was then determined by reviewing the treatment prescribed, against the STGs and the EML. The patient carrier card was not accessed. Only details regarding age, gender, diagnosis, medication prescribed, as annotated in the register by the professional nurse was used.

6. Data analysis

Data was analysed using descriptive statistics, using frequency and cross tabulation tables and various types of graphs. The data was reduced and analysed with the help of a statistician, using the statistical software SPSS version 20.0.

7. Ethical considerations

Ethical clearance was granted by the Durban University of Technology Research Ethics Committee before data collection was commenced (REC number 55/12). Permission was also sought from the KwaZulu-Natal Provincial Department of Health. Each respondent received an information letter that explained the outline study. Thereafter, each respondent provided a written consent. During data collection, respondents were allocated numbers in order to maintain confidentiality.

8. Results and discussion of the results

8.1. Demographics

The sample consisted of participants of various races namely Whites 2.5% ($n = 3$), Blacks 92.5% ($n = 111$), Indians 4.2% ($n = 5$) and Coloureds 0.8% ($n = 1$). The age of participants ranged from 20 to 55 years. The age groups of the participants were as follows, 6.7% ($n = 8$) were in the 20–29 years age group, 35.8% ($n = 43$) were in the 30–39 years age group, 29.2% ($n = 35$) were in the 40–49 years age group and 28.3% ($n = 34$) were in the 50+ years age group. Both males and females were part of the study sample, which consisted of 95.8% ($n = 115$) females and 4.2% ($n = 5$) males.

The study explored eight areas from Standard Treatment Guidelines and Essential Medicines List, Essential Drug Programme South Africa which were as follows:

1. Standard Treatment Guidelines and the Essential Medicines List
2. Training
3. Dose calculation of medicines

4. Writing of prescriptions
5. Chronic illness
6. Disease notification procedures
7. Adverse drug reaction reporting
8. Flow charts

8.1.1. Standard Treatment Guidelines and the Essential Medicines List

All the respondents reported that they had copies of the STGs and EML ($n = 120$), and were adhering to the guidelines for diagnosis and prescribing according to the guidelines. There was no evidence of polypharmacy. Of the 120 respondents, 61.7% ($n = 74$) reported that they were timeously notified of changes in guidelines and treatment protocols. Boonstra, Lindbaek, Khulumani, Ngome, and Fugelli (2005) argue that although the STGs are important tools used for prescribing and management of patients; they should not be a replacement for sound clinical judgement or experience. The STGs and EML guidelines were published in 2008.

8.1.2. Training

Due to staff shortages and influx of patients at PHC clinics, professional nurses are employed at PHC clinics without qualifications in the Diploma in Clinical Nursing Science, Health Assessment, Treatment and Care. They are orientated and supervised by the professional nurse in charge and learn 'on the job', by experience. Thus in-service training is vital in employment, as it keeps all employees up-to-date with knowledge and current trends in their professions (Norushe, van Rooyen, & Strumpher, 2004). There were 68 respondents in the study who agreed that they received in-service training and 52 respondents disagreed.

Of the 120 respondents, 59.2% ($n = 71$) of respondents had the added qualification of a Diploma in Clinical Nursing Science, Health Assessment, Treatment and Care. This qualification is specifically designed for nurses working in the PHC setting. Professional nurses undertake this course for one year at a higher education institution and qualify as Primary Clinical Nurses, obtaining a certificate from the SANC (SANC, 1982). They are equipped with extensive knowledge in assessing, diagnosing, and treating patients and are proficient with the STGs and the EML. Norushe et al. (2004) found that professional nurses perceived in-service programmes as inadequate and ineffectively implemented thus leading to decreased job satisfaction. The authors suggested guidelines to improve in-service training programmes for professional nurses (Norushe et al., 2004).

8.1.3. Dose calculation of medicines

The professional nurses had a good understanding on the calculation of dose of medicines (Fig. 1). Calculation of medicines is imperative for effective treatment of conditions and diseases and preventing over and under dosage of medicines. Weight bands are written out dosages of medication in the tablet and syrup form for approximate age groups. The majority of respondents 89.2% ($n = 107$) in the study agreed that they calculated the dosage of medication by age, weight and on the basis of referral to weight bands. The respondents also reiterated positively that they understood the calculation of medicines. The use of weight bands for dosage of medication was noted in a study conducted out by Weidle, Abrams, Gvetadze, Rivadeneira, and Kline (2006) where antiretroviral dosing charts were developed in weight bands to assist with proper dosing of HIV infected children in areas where resources were limited. The results showed that weight bands provided reasonably precise dosing as compared with body surface area-based dosing (Weidle et al., 2006).

8.1.4. Writing of prescriptions

Prescriptions should have generic names. A generic or scientific name is the term given to the active ingredient in the drug. An expert committee decides on this and it is understood internationally. A generic name is also called the 'non-proprietary name' of the drug (National Health Services, 2015). The results of this study revealed that 45.8% ($n = 55$) of the respondents always wrote medicines or preparations in full using the generic name (Fig. 2). Abbreviations are not acceptable due to misinterpretations, as found in the study by Dooley, Wiseman, and Gu (2012), who evaluated three Australian hospitals regarding the prevalence of error-prone abbreviations used in medication prescribing for hospital patients. Patients records were audited and the results revealed that 76.9% ($n = 369$) of the patients had one or more error-prone abbreviations used in prescribing, and 8.4% of orders contained at least one error-prone abbreviation. Of the prescriptions evaluated, 29.6% were deemed to be high risk for causing significant harm (Dooley et al., 2012).

Out of the 120 respondents, 72.5% ($n = 87$) always stated the frequency of doses in terms of time. The SANC regulation (R.2418) on the keeping, supply, administering or prescribing of medicines by professional nurses stipulates that an authorised nurse must write in the patients record the name, quantity, strength and dosage of the medicine supplied, administered or prescribed, and must also write down the dosage on the container in which the medicine is supplied (SANC, 1984).

Writing the date on prescriptions is noteworthy and a legal requirement as it reflects that the drugs are in current use and that the prescription is valid and not an out-dated prescription. The majority of respondents 80.8% ($n = 97$) responded that they always wrote the date on the prescriptions. The section in the SANC regulation R.2418 specifies that the date and time of supply, administering or prescribing must be written in patients file or treatment record (SANC, 1984).

The writing down of schedules of drugs is a reminder to prescribers of the lethality, toxicity and dependency state of specific drugs, and the vigilance that is required in the handling and control of them. Only 50.8% of the respondents reported that they wrote the schedule of the medicine that they were prescribing. This is an indication that respondents needed to improve in this area, as SANC regulation R.2418 stipulates that the prescriber shall write the number of the schedule to the Medicines Control Act in which such medicine is listed (SANC, 1984).

The majority of the respondents were in agreement that they were self-assured that they were knowledgeable about prescription writing, and that medicines were prescribed rationally. However, the results of this study showed that not all respondents were abiding by the SANC regulations relating to the keeping, supply, administering and prescribing of medicines by professional nurses (SANC, 1984). Further, studies by other authors also showed that health care workers were not prescribing medicines effectively (Awad & Al-Saffar, 2010; El Mahalli & Akl, 2011; Kristiansson et al., 2008; Uzochukwu, Onwujekwe, & Akpala, 2002).

8.1.5. Chronic illness

The professional nurses were all competent in their interaction and treatment of patients regarding their chronic illnesses. They were competent in creating and assessing patient's adherence to treatment plans, motivating them to participate in treatment support programs. Furthermore the professional nurses were able to encourage patients to identify and set goals regarding their chronic illnesses and to adopt to change techniques.

8.1.6. Disease notification procedures

Majority of the professional nurses were aware of the different notifiable diseases and the notification procedure with 98.3% ($n = 118$) of respondents answering 'Yes' to being aware of the

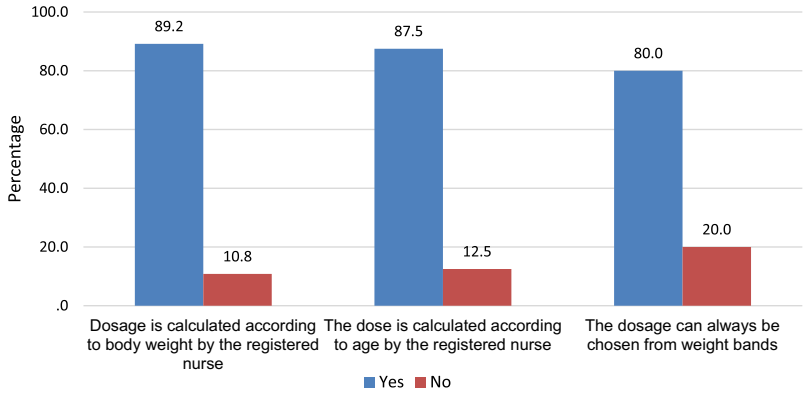

Fig. 1. Dose calculation of medicines.

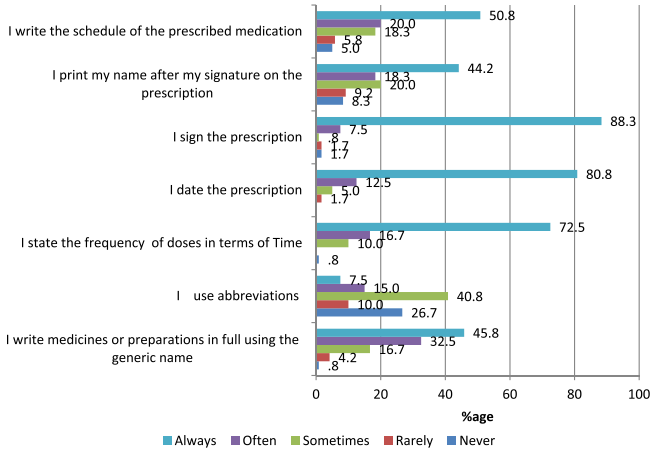

Fig. 2. Writing of prescriptions.

Table 1
Use of flow charts.

	Frequency	Percent (%)
Strongly disagree	1	0.8
Disagree	3	2.5
Unsure	15	12.5
Agree	61	50.8
Strongly agree	40	33.3
Total	120	100.0

Table 2
Accessibility of the flow charts.

	Frequency	Percent (%)
Strongly disagree	5	4.2
Disagree	6	5.0
Unsure	18	15.0
Agree	62	51.7
Strongly agree	29	24.2
Total	120	100.0

different notifiable diseases, and only 1.67% ($n = 2$) of respondents answering 'No'.

8.1.7. Adverse drug reaction reporting

Most of the professional nurses understood the management of adverse drug reactions with 59.2% ($n = 71$) of respondents answering 'Agree', 20.8% ($n = 25$) answering 'Strongly agree'.

8.1.8. Use of flow charts

STGs and the EML have flow charts which the professional nurses use to select the appropriate medicine to treat the patients. Flow charts are part of the STGs and EML and are thus easily accessible to nurses (Department of Health, 2008). Professional nurses are expected to have desk copies at hand whilst they are consulting with patients.

The results of the study indicated that 50.8% ($n = 61$) of respondents agreed and 33.3% ($n = 40$) strongly agreed that flow charts were easy to follow (Table 1). This observation is supported by the findings of the study by Mayers (2010) where two guidelines were compared, namely, the South African Tuberculosis Control Guidelines and the Practical Approach to Lung Health in South Africa (PALSA) Guidelines. The findings were that nurses preferred the PALSA guideline as the flow charts were user friendly and colourful.

A positive response was obtained from respondents regarding the accessibility of flow charts (Table 2). Of the 120 respondents 51.7% ($n = 62$) of the respondents agreed and 24.2% ($n = 29$) strongly agreed that flow charts are accessible.

9. Recording of prescriptions

The professional nurse's records were reviewed on their prescribing practices, and the results of the study showed that the professional nurses were prescribing drugs rationally (Fig. 3). This means that they were prescribing the correct medication, according to the diagnosis, in doses that met patient needs for a correct period of time (WHO, 1985). The study results were compared to other studies (Awad & Al-Saffar, 2010; El Mahalli & Akl, 2011; Uzochukwu et al., 2002) which showed that health workers were practicing polypharmacy and that they were not prescribing medicines according to guidelines.

Medication route is the way a drug is introduced into the body, such as oral, enteral, mucosal, parenteral and percutaneous (Eure, 2010). The study results showed that many nurses were not competent in this area, as analysis of the study showed the average percentage score was significantly lower than 50% for writing the route of medication.

The writing of schedules of drugs is imperative as it indicates the lethality, toxicity and dependency state of that specific drug and the vigilance that is required in the handling and control of such drugs. The results of the study showed that the percentage score was significantly lower than 50%, in writing of schedules of

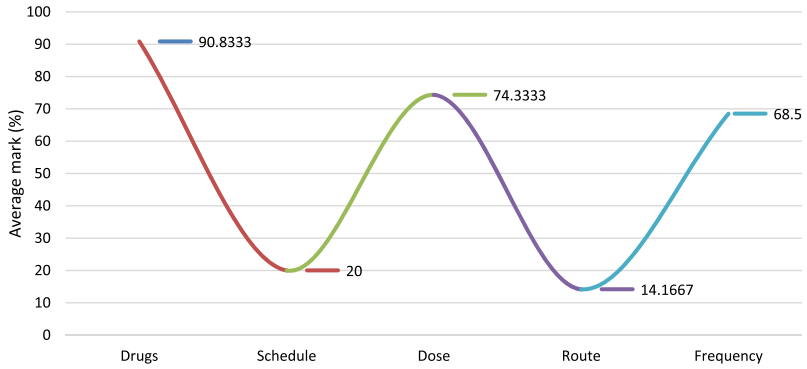

Fig. 3. Recording of prescriptions.

medication. The average mark was 20%. This means that the nurses are omitting to write down the schedules of medication that they were prescribing in their registers. According to the SANC regulation R.2418 (SANC, 1984), the number of the schedule to the Medicines Control Act in which such medicines is listed, must be written.

In all the above eight areas in the STGs and EML, the professional nurses were successfully implementing treatment guidelines to their patients.

10. Limitations of the study

The retrospective study design made the study incomplete, in that the researcher did not obtain a complete picture of the consultation with the client, as only what was annotated in the professional nurses' records was utilised as data. The assessment, nursing diagnosis, planning and implemented treatment as recorded in the nurses' records was used as data. Evaluation of implemented treatment was not feasible as the researcher visited the clinics just once and did not do a follow up with patients that the professional nurse had seen.

11. Conclusion and recommendations

Health care services at the PHC clinics in the UMgungundlovu District were rendered effectively as demonstrated by the study results. The respondents had a good understanding regarding use of the STGs and the EML. There was no evidence of polypharmacy and medications were prescribed according to guidelines. Areas that were suboptimal were related to prescription writing and writing of schedules and routes of medication as indicated in facility records. The results further showed that training on the use of the STGs and EML were inadequate, which implies the need for strengthening of training programmes.

Implementation of the orientation programme for all new staff members on the use of the STGs and EML is recommended. Regular in-service education of trained staff is needed to reinforce and update their knowledge and skills in the clinical area. It is essential that supervisors carry out regular audits of records in order to ensure monitoring and quality control. Further research that will examine the practice of PHC nurses as well as the challenges that they are faced with is recommended.

Conflict of interest

None declared.

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