Full Length Research Paper

A description of the pattern of rational drug use in Ghana Police Hospital

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Irrational use of drugs is a widespread problem at all levels of care, and results in increased mortality, morbidity, adverse drug reactions, poor patient outcomes and wastage of scarce resources. The main objective of the study was to investigate the pattern of rational drug use in the Ghana Police Hospital. Based on World Health Organization (WHO) core indicators of rationale drug use, prescribing data were obtained from 120 outpatients' records from January-July in 2009. Patient and health facility indicators were obtained by interviewing 100 outpatients and 9 prescribers. Data was analysed with an excel software program. Average number of drugs per patient encounter was 3.7. Of the 446 prescribed drugs identified within study period, 24.2% of encounters received all their medications, 12.5% did not receive any of their prescribed medications while 62.6 % were prescribed by their generic names. Percentage of encounters with injection and antibiotics were 8.3% and 11.9% respectively. Average consulting and dispensing time were observed to be 8 and 1.52 minutes respectively. Percentage of patients who knew the correct drug dosage schedule they received was 62.5%. Percentage of key drugs and treatment guidelines availability were 75.8% and 77.8% respectively. Rational drug use and drug availability at the Hospital was not satisfactory. Adequate drug funding to ensure availability of essential medicines and education of stakeholders is vital to improve the situation.

Key words: Rational drug use, Prescribing indicators, Patient indicators, Health facility indicators, WHO/INRUD indicators, Ghana.

INTRODUCTION

Drugs are a valuable resource in any health facility, and are considered an indicator of quality of care worldwide (Odusanya and Bamgbala, 1999; Offei et al., 1995). This is because most leading causes of death and disability in developing countries can be prevented, treated or at least be alleviated with cost effective essential drugs (WHO, 2009). Though essential drugs are intended to meet the real health needs of the majority of the population, however, many of those who do have access are given the wrong treatment, receive too little medicines for their ailments or do not use the drug(s) correctly among other reasons (Hogerzeil, 1995). Irrational drug use is a common problem which happens to be worse in developing countries due to a myriad of challenges such

as: inadequate funds for drug procurement, inadequate training of prescribers, attitudes of prescribers, and beliefs of patients. Its impact include reduction in quality of drug therapy, increased morbidity, mortality, cost of therapy, risks of unwanted drug effects, ultimately leading to poor patient outcomes and significant wastage of scarce resources. It is not surprising that, rational use of drugs is one of the major objectives of most drug policies as stated in the Ghana National Drug Program (GNDP) document in 2004.

Since the conference of experts on the rational use of drugs, convened by the WHO in Nairobi, Kenya (WHO, 1985), several efforts have been made to improve drug use practices by promoting drug utilization studies, reviews and evaluation initiatives (Walker et al., 1990). The principal aim of drug utilization research is to assess whether drug therapy is rational or not in populations (WHO, 2003). Without knowledge of how drugs are being prescribed and used, it is difficult to initiate a discussion

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on rational drug use or to suggest measures to improve prescribing habits. In order to obtain objective, reproducible and enable comparisons of measures of the effectiveness and efficiency of drug use practices at facility, regional and country levels, WHO and International Network for Rational Use of Drugs (INRUD) introduced drug use indicators (INRUD, 2004). These indicators depend on three perspectives; the patient, prescriber and health care environment in which the patient is being treated. Due to the relevance of drug utilization studies in ensuring safe and effective drug therapy outcomes in the healthcare system, healthcare institutions in various parts of the world are providing insightful research findings which have been very useful in making appropriate interventions in the rational use of drugs at both the institutional and national level. The main objective of this study was to investigate the pattern of rational drug use at the Ghana Police Hospital using the WHO standard indicators.

Recommendations from findings would be made to policy makers, health managers and health workers within the Ghana Police Health Services to design interventions which would improve rational drug usage at the Ghana Police hospital.

METHODOLOGY

A cross-sectional descriptive study was conducted using both qualitative and quantitative tools to gather data between January-June 2009 at the Ghana Police Hospital, Accra. The Ghana Police Hospital is a 100 bed facility, which was established in 1976, serves as the headquarters of the Ghana Police Health Services and provides health services to police personnel, their dependents and general public.

The study population was primarily outpatients who utilized the outpatient department (OPD) and OPD prescribers (doctors and medical assistants). The outpatient population was made up of various categories of clients such as Police personnel, dependents of Police (wives, husbands and children), civilians, crime suspects and health insurance clients.

WHO (1993) recommends use of at least 100 patient records in a single health facility for drug utilization studies. Medical records of 120 patients who utilized the OPD within the study period were randomly collected from the Health Information Unit and recorded on a WHO indicator form to obtain prescribing pattern data; mean number of drugs per prescription, percentage of drugs prescribed by generic names, percentage of prescriptions containing antibiotics, percentage of prescriptions containing injectables, percentage of drugs prescribed by brand name, percentage of drugs prescribed from national essential drug list (EDL), percentage of prescribed drugs supplied to patients. Systematic random sampling was used to gather data on consulting and dispensing time spent on 100 patients at the consulting

room and pharmacy respectively. A structured questionnaire was used to obtain data on appropriateness of labeling and knowledge of medication use from these patients at the pharmacy after collection of their medications. All the outpatient prescribers (9) were interviewed with aid of a simple questionnaire to determine the level of use of the national standard treatment guidelines (STG) at the hospital.

Data collecting instrument was used to obtain information on the availability of key essential drugs. To ascertain the level of availability of key drugs: 30 key drugs required for the management of the top 10 outpatient diseases was developed by the study investigators. OPD prescribers were then tasked to select 20 drugs from this list based on their relevance in the management of common OPD cases. Prescribers rating of the 20 most essential were assessed and used in the development of a model essential list for the study (table 1). This model list was used as the evaluation tool to check for their availability during the study period.

Data was analysed to measure drug use indicators with an Excel software program. The study protocol was conducted in line with the requirements and approval of the Ghana Police Hospital administration.

RESULTS

Prescribing Indicators

A total of 446 individual drugs were prescribed for the 120 patients medical records. The average number of drugs per encounter was 3.7 and the **number** of drugs per encounter ranged from 1 - 7 drugs. The number of encounters with antibiotics constituted 11.9% of the total number of drugs prescribed. Antibiotics commonly prescribed included; ceftriaxone, amoxicillin, ciprofloxacin, flucloxacillin, erythromycin, amoxicillin-clavulanic acid. Injection use was the lowest at 8.3% of the total drugs prescribed. Commonly prescribed injections observed included; arthemether, diclofenac and tetanol. Generic prescribing constituted 62.6% of the total drugs prescribed and the proportion of drugs prescribed which were on the hospital's model essential drug list was 53.6%. The summary of the findings on the prescribing indicators are presented in the figure 1.

From the study, only 37.94% of clients who utilized the hospital's services patronized the hospital's pharmacy services. 64.8% of prescribed drugs were actually supplied from the hospital pharmacy, of which: 24.2% of the encounters received all their prescribed medications, whilst 31.7% and 14.2% received more than half, and half of their drugs respectively. The proportion of clients who received less than half of their drugs was 17.5%, whilst 12.5% did not receive any of their prescribed drugs. The proportions of prescribed drugs received by patients who visited the pharmacy are presented in figure 2.

Table 1. Model outpatients essential drugs list.

Number	Drug
1	Paracetamol
2	Amoxicillin
3	Artesunate-Amodiaquine
4	Metronidazole
5	Ceftriaxone Injection
6	Quinine
7	Multivitamin
8	Ciprofloxacin
9	Diclofenac
10	Nifedipine
11	Buscopan
12	Glibenclamide
13	Dextrose Saline Infusion
14	Normal Saline Infusion
15	Ringers Lactate Infusion
16	Dextrose 5% Infusion
17	Pethidine Injection
18	Hydrocortisone injection
19	Griseofulcin
20	Chloramphenicol Eye Drops

Patient Indicators

The average consulting time which prescribers spent with a patient was 8 minutes and ranged between 2-20 minutes. Observing the interaction between dispensers and patients at pharmacy window where clients were collecting their medications, the average dispensing time was 1.52 minutes. The range for this indicator was between 11 seconds to 3 minutes.
63.2% of patients knew the correct dosage schedule for all the drugs they received, whilst 31.6% of them had partial knowledge of the dosage schedule.

Heath Facility Indicators

Key Drugs Availability

The proportion of key drugs available based on the model essential drugs list for the hospitals' outpatients by the end of the study period was 100%. However, the average key drugs availability over the study period was about 75.8% which reflects the general drug situation. There was only one major drug procurement for the 6 months period instead of two for the first two quarters of the year. Drug availability during the first quarter of the year was due to the delayed purchase and bulk of the drugs purchased was received in December 2008. The model 20 essential drugs needed for outpatient care is presented in table 1.

Availability of Standard Treatment Guidelines

Of the 9 outpatient prescribers asked if they had access to the Standard treatment guidelines as a tool for reference, 77.8%of them claimed they used it and only 22.2% answered in the negative. The prescribers who claimed used the STG, 71.4% had it either on their desk or bags in the consulting room. The other 2 prescribers said they had left them in their homes.

DISCUSSION

Studying prescribing patterns seeks to monitor, evaluate, as well as make interventions so as to make medical care rational and cost-effective (Ravi et al., 2002). The number of drugs prescribed per encounter of 3.7 obtained in this study, was higher than the WHO's average of 2 or less (WHO, 1993), suggesting the presence of poly pharmacy. Similar findings higher than the recommended index has been observed in other studies in India, Nepal, Niger, Nigeria, Cameroun, Swaziland, Ethiopia, Morocco, Mozambique and Uganda ranging 2.2-5.3 (Costa et al., 2008; Mallet et al., 2001; MSH, 1997; WHO, 1993). Even though this study's result was quite comparable to the findings of GNDP (2002) survey of 3.5, it is almost twice the recommended index by WHO. The challenge of irrational prescribing which has been observed as a common occurrence in clinical practices in several studies (Ramsay, 1993) was also observed in this study. The risk associated with polypharmacy includes increased drug interactions, dispensing errors, poor knowledge of dosage regimen, adverse drug reactions and consequently not achieving desired therapeutic outcomes. Abuaku et al. (2005) are of the view that, a continuing downward trend of the number of drugs per prescription is an indication of treatment being more
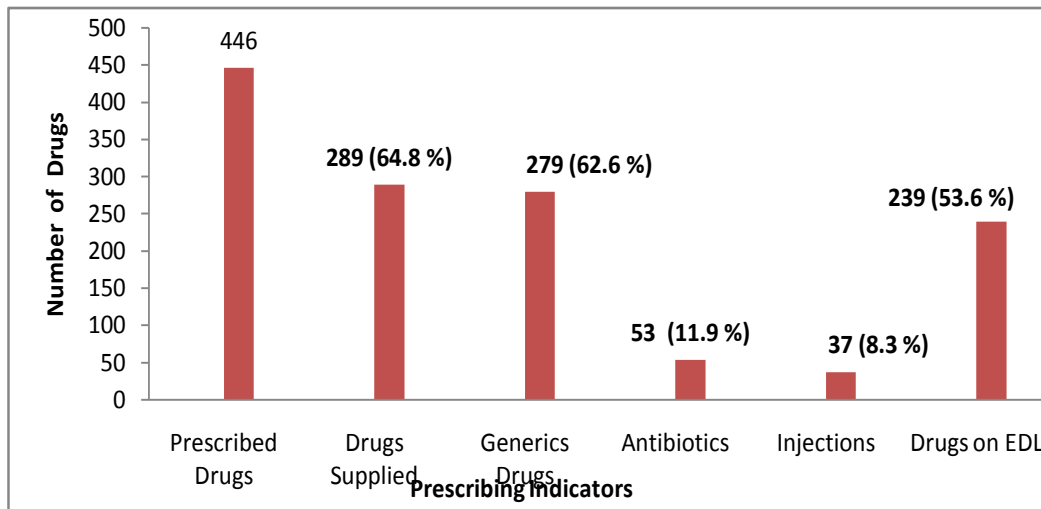
Figure 1. Histogram showing prescription pattern at the Ghana Police Hospital.
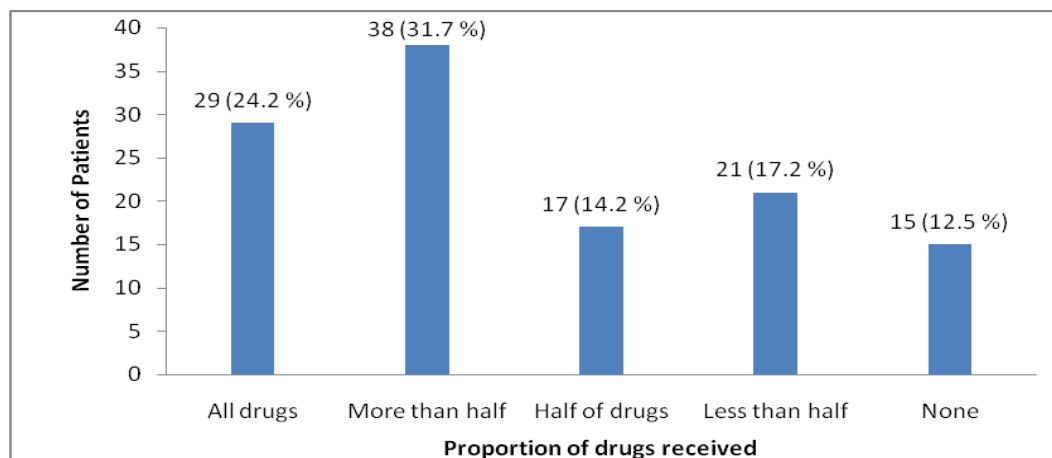

Figure 2. Histogram showing percentage of patients who received drugs at Pharmacy.

specific. Hence, the hospital's Drugs and Therapeutic Committee (DTC) should employ educational and other interventions to strive towards WHO optimal index which has been obtained in similar studies (Hamadeh et al., 2001: Guyon et al., 1994).

Increasing generic prescribing has been proven to rationalize the use as well as reduce the cost of drugs to patients (Quick et al., 2002). The rate of 62.6% obtained in this study was much lower than findings from African countries like Zimbabwe and Tanzania which were above 80% (Hogerzeil et al., 1993), but higher than similar studies from Kenya (40 %), Nigeria (55.7%) and Dubai (4 %) (Sharif et al., 2008; Shah, 2007; Ibrahim, 2004). The result obtained from this study was lower than the value of 74% obtained by GNDP in 1998 (GNDP, 1999). The low generic prescribing observed at Ghana Police Hospital as against the desired 100 % (De Joncheere,

2002) is likely to increase cost and pose barrier to its clients, which may hinder compliance and consequently reduce optimal therapeutic outcomes.

Antibiotics play a key role in the treatment of infectious diseases which are prevalent especially in developing countries, however reports of their excessive use has been reported (Tomson, 1993; Summers et al., 1986). The figure of 11.9% prescriptions having antibiotics in this study was lower than values obtained from studies done in parts of Ghana ranging from 41-55% (Bosu and Ofori-Adjei, 1997; GNDP, 2004, 1999). Findings from this study suggests the use of antibiotics in the hospital to be prudent compared to reports from similar studies in the country, and also when compared to WHO recommendation of less than 30% (INRUD, 2004) or less than 20% national index by GNDP (1999). Findings from this aspect of the study suggests prudent antibiotic use at

the hospital and the low risk of serious clinical problems such as drug resistance, cost of retreatment, super-infections associated with antibiotic misuse and abuse.

Excessive use of injectables is common in developing countries (Tomsom, 1990). The figure of 8.3% obtained in this study was however, much lower than figures obtained from other studies which ranged between 11-56% (Desta et al., 1997; MSH, 1997). Furthermore, the findings from this study was lower than similar studies in Ghana which ranged from 34.9- 60% (GNDP, 2002; 1999; Bosu and Ofori-Adjei, 1997). A study by Hazra et al. (2000) revealed a very low rate of injection use (3.9 %) in West Bangal, India. The low rate of injectables use observed in this study is likely to reduce risk of anaphylactic shock, tissue necrosis and asepsis in the hospitals' clients (Santos et al., 2004).

The use of locally adapted essential drug list helps promote rational drug use in outpatients department (WHO, 1993). The figure of 53.6% obtained for drugs prescribed from the model essential drugs suggests that, treatment of the hospital's top ten diseases was not a good reflection of the drugs requirement of majority of its OPD clients. Furthermore, results obtained from this study was also observed to be very low compared with findings of studies done in Ghana from 1998-2002 which ranged between 92-93.9% (GNDP, 2002).

Patient Care

The time patients spend with prescribers adequately influences their satisfaction of health services provided and adherence to drug therapy (Tetteh and Nartey, 2001). The average time of 8 minutes that prescribers spent with clients at the Ghana Police Hospital observed in this study was similar to that from Central Africa Republic (Mouala et al., 2008), but much higher than that studies from Malawi (2.3 minutes) India (3.1 minutes) and Nigeria (6.3 minutes) (Hazra et al., 2000; WHO, 1993). Though findings from this study appeared to be better the latter studies, it was lower than the recommended 15 minutes (Santos et al., 2004).

The average dispensing time of 1.52 minutes obtained in this study was lower than the recommended 3 minutes required for pharmacists for orientating patient (Santos et al., 2004). However, findings from this study were better than that obtained from Nigeria (12.5 seconds) and Tanzania (77.8 seconds) (Hogerzeil et al., 1993). Studies by Slobodan et al. (1999) obtained similar results (2 minutes) and suggested that, such a time was too short for proper interaction between the dispenser and patient. The need to ensure adequate dispensing counselling time need not be overemphasized, as all the work that goes into drug management cycle before the patients receives their medication would be rendered almost useless if there is poor dispenser-patient interaction at the time of collection of drugs.

Drug availability has been proved to significantly influence the utilization of health services and patient satisfaction (Offei et al., 1995). In this study, 64.8% of drugs prescribed were dispensed at the pharmacy and was lower than findings (73.4%) obtained from a survey of the pharmaceutical sector in the country by GNDP (2002). With only about a quarter of the encounters receiving all their prescribed drugs at the dispensary, this no doubt influenced significantly the proportion of the hospital's clients who utilized its pharmaceutical services. Significant correlation exists between patients' knowledge about medication therapy, utilization of health care services as well as compliance to medication (Toren et al., 2004). Patient's knowledge of the correct dosage schedule in this study was observed to be 63.2% and this was comparable to findings in Bangladesh (Mallet, 2001), but lower than findings (77.7 %) obtained in Jordan by Otoom et al., (2002). Though findings from this study was better than that of GNDP which ranged between 23-50.2% GNDP (2002; 1999), there is need to improve this index if drug compliance and desired therapeutic goals are to be achieved.

Health Facility

All key drugs are considered fast moving medications which are essential and ought to be available at all times (GNDP, 1999). The study results of 75.8% key drug availability at the hospital was much lower than those from Cameroun, Tanzania, Mozambique, Swaziland and Nepal which ranged from 72-100% (Mallet, 2001; WHO, 1998; MSH, 1997). Much as the availability of key drugs is important to the delivery of health care services, strict adherence to this list alone will not improve treatment practice if its selection is not based on a standard treatment guideline.

Essential drugs can also be used inappropriately if there are no standard treatment guidelines for disease management (WHO/MSH, 2003). Of the 77.8% prescribers who claimed they had copies only 71.4 % could provide their copies at their consulting rooms. This result was quite low, compared to findings from GNDP (2002) survey which showed 94% of prescribers had access to the STG national-wide. It is important to ensure improved availability of the STG to all prescribers in the hospital, as it serves as an educational tool to guide health prescribers in providing cost effective treatment to patients in the health sector.

CONCLUSION

The pattern of rational drug use at the Ghana Police Hospital was generally not satisfactory, though the level of antibiotic and injection use at the facility was recommendable compared to WHO index and national

surveys respectively. The result obtained in this study provides a baseline for managers and policy makers in the Ghana Police Health Service, to monitor and make the necessary educational and managerial interventions, to improve on the situation in the hospital.

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