Asian Journal of Pharmaceutical Technology & Innovation

Clinical Case Study

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Rationale Drug Use In Two Hospitals In Khartoum State: Is There A Role For Clinical Pharmacists?

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ABSTRACT

This is a prospective, observational hospital study set out to assess the need for a clinical pharmacist within the hospital. The study was conducted in two hospitals in Khartoum state, Hospital 1 and Hospital 2 during a period of 30 days.

The data collected was questionnaire based from all patients attending the Medicine and Paediatric ward (n=140) in the two hospitals, consultants (n=3), registrars (n=3), housemen (n=35) and nurses (n=30). The data was analysed using statistical package of social science (SPSS) computer programme.

The investigation examined the major drug use aspects with particular emphasis on the components of drug supply, storage, prescribing, dispensing and treatment monitoring. The overall results from the two hospitals were fairly in good agreement that have warranted justifiably the grounds to reach the following findings;

- The main prescribers of drugs in hospitals are the housemen doctors
- Lack of adequate awareness of doctors of what drugs their patients are taking or currently using. (As indicated by the discrepancy between the number on record sheet and that directly observation).
- All aspects of drug use are handled by co patients.
- Advice on dosage regimen aspects as well as side effects to patients was often lacking.

This finding are very much indicative of the need to ensure rational medication use in its broad meaning, and area well within the role and responsibilities of a clinical pharmacist as judged by today's globally established definition of clinical pharmacy ' the area of pharmacy concerned with the science and practice of rational medication use'.

Key-words: clinical pharmacist, Drug Use, Hospitals In Khartoum State

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Introduction:
The rationale use of medicine may be defined as the patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time and the lowest cost to them and their community[1].
Rationale drug use is important because the irrational use of drugs may lead to:
1. Ineffective and unsafe treatment.
2. Exacerbation or prolongation of illness.
3. Distress & harm to patients.
4. Increase the cost of treatment[2].

Irrational use is the use of medicines in a way that is not compliant with rational use as defined above. Worldwide more than 50% of all medicines are prescribed, dispensed, or sold inappropriately, while 50% of patients fail to take them correctly[3]. Sudan, along with many African countries, is facing difficulties in providing access to essential medicines and ensuring that these medicines are used appropriately, to provide a complete picture and illustrate the scale of the problem this observational study was conducted in two teaching hospitals in Khartoum state.

Rationale:
- This study is meant to find out if there is a real need for a clinical pharmacist in the Sudanese hospital ward or whether the existing health care providers are performing the standard role of clinical pharmacist.
- This study may act as a baseline study for a comparative study after introducing the clinical pharmacist.
- Irrational use of drugs is not un common in Sudanese hospitals , this happens because of inappropriate practices in health care system.

A major step towards rational use of medicines was taken in 1977, when the WHO established the first Model List of Essential Medicines to assist countries in formulating their own national lists. The present definition of rational use was agreed at an international conference in Kenya in 1985. In 1989, the International Network for the Rational Use of Drugs (INRUD) was formed to conduct multi-disciplinary intervention research projects to promote more rational use of medicines[3].
Today more than 150 countries have an essential drug list, 71 countries of which only reported to WHO that the list guides drug procurement in the public sector. However, drug supply in the private sector is generally neither regulated nor guided by the essential medicines policy. This is a problem, as indicated by studies which have shown that people rely heavily on private and informal sources of medicines. The situation in Sudan is closely similar to this; much has been learned from past successes and failures in measuring and changing medicine prescribing and use in Sudan and other countries.

The importance of rationale drug use has come from the consequences of irrationality. Irrational drug use can have various consequences, for the patient, the public, the health system and even the economy. A few important consequences are :
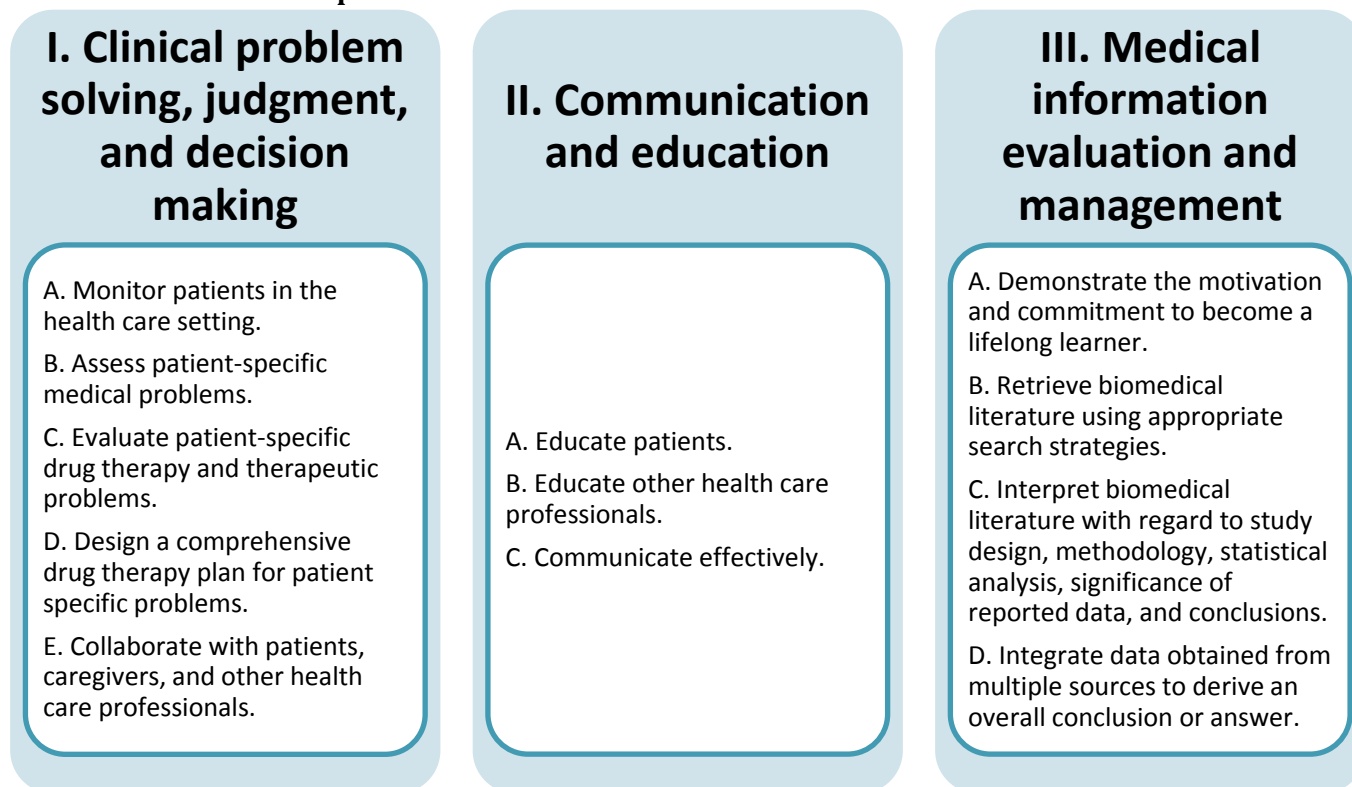1. Reduction in the quality of drug therapy- this can lead to increased morbidity and mortality.
2. Waste of resources- This can lead to reduced availability of other vital drugs and increased costs.
3. Increased risk of unwanted effects, adverse drug reactions and the emergence of drug resistance.
4. Psychosocial impacts : patients may believe that there is 'a pill for every ill'[4].However the rational drug use is not just important for promoting the use of pharmaceuticals but also to provide health related quality of life (HRQOL) for a community[5].

The underlying causes of irrational drug users are complex and various factors and actors are involved. These causes may be generated by the provider, the consumer, by the health care system or they may originate from the social-cultural environment.
Many causes are involved in rational drugs use, some of which are the following:
1. Irrational prescribing practices of doctors.
2. Dispensing by pharmacists and drug sellers.
3. Drug pricing policies and promotional activities of the pharmaceutical industry.
4. Lack of information, education and communication on rational drug use to providers and consumers.
5. Lack of effective control and regulatory mechanisms on drug use and
6. Lack of political will and leadership to promote rational use[6].

Clinical Pharmacist Competencies:

I. Clinical problem solving, judgment, and decision making

A. Monitor patients in the health care setting.

B. Assess patient-specific medical problems.

C. Evaluate patient-specific drug therapy and therapeutic problems.

D. Design a comprehensive drug therapy plan for patient specific problems.

E. Collaborate with patients, caregivers, and other health care professionals.

II. Communication and education

A. Educate patients.

B. Educate other health care professionals.

C. Communicate effectively.

III. Medical information evaluation and management

A. Demonstrate the motivation and commitment to become a lifelong learner.

B. Retrieve biomedical literature using appropriate search strategies.

C. Interpret biomedical literature with regard to study design, methodology, statistical analysis, significance of reported data, and conclusions.

D. Integrate data obtained from multiple sources to derive an overall conclusion or answer.

Objectives of the Study:
- **General objective:** Do Khartoum hospitals wards need clinical pharmacist?
- **Specific objective:**
  - To determine prescriber within the hospitals.
  - To determine appropriateness and accuracy of records of prescription in the hospital wards.
  - Determine how patients obtain their drug from the pharmacy
  - To assess the adherence of the patients to the prescribed drugs.
  - Assess inter and intra prescriber uniformity.
  - To determine site & safety of the medications within the ward.
  - To assess if there opportunities for improvement by introducing clinical pharmacist to the system of rationale drug use.

Research Design & Methods

This is a prospective, observational hospital based study set out to assess the need for clinical pharmacist within the hospital.

Study area:
The study was conducted between December 2009 and April 2010 in the Hospital 1 & Hospital 2.

Data Collection:
The data collection took about 30 days and 2 random days was selected one (or two then consecutive) for each of the two wards, the data collected was questionnaire based from all patients attending Medicine and Paediatric ward in the two hospitals, 3 consultants, 3 registrars, 35 housemen and 30 nurses.

Statistical analysis:
A spread sheet of all the results from the three different questionnaires (Patient, Doctor and nurse) were done using Microsoft office Excel (2007), then the data was entered and analysed using statistical package of social science (SPSS) computer programme.
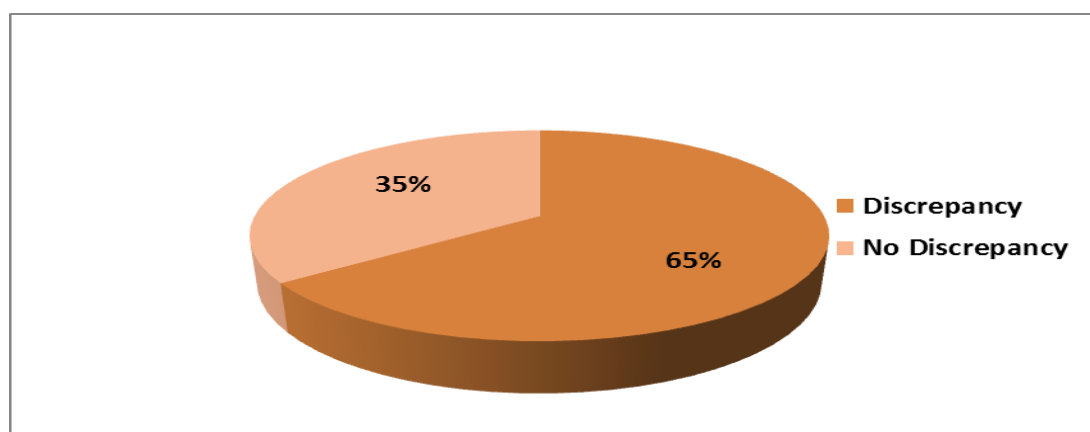
Results

The data presented in the following figures and tables are average of the two hospitals throughout the study (n=140)
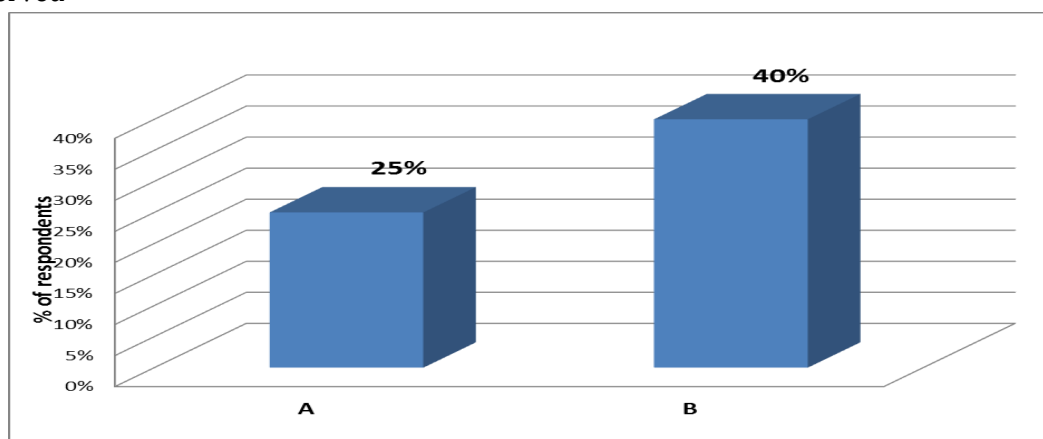
Figure 1: Distribution of study sample according to who prescribe the drugs
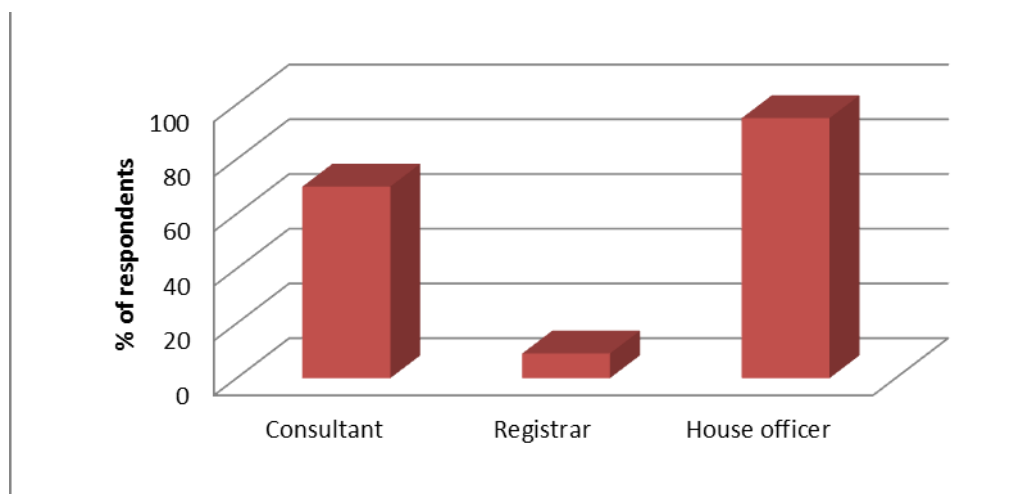
Figure 2: Shows the accuracy of records (the existence of discrepancy between the number of drugs on the record sheet and those actually observed. (n=140)

Figure 3: Distribution of discrepancies: (A): More drugs And (B) : fewer drugs on the record sheet , than observed

Table 1a and 1b: The causes of irrationality may be due to : (A) The drug is inappropriate for the indication (B) mismatch in number & kind of drugs observed versus recorded;

1a: Hospital (1):

| Causes of irrationality	Total Number of patients (70)
A	4
B :Mismatch in kind	2
B: Mismatch in number.	7
Combination of A& B	27
Total	40 (57%)

1b: Hospital (2)

| Causes of irrationality	Total number of patients (70)
A	20
B: Mismatch in kind	2
B: Mismatch in number	-
Combination of A and B	28
Total	50 (71%)

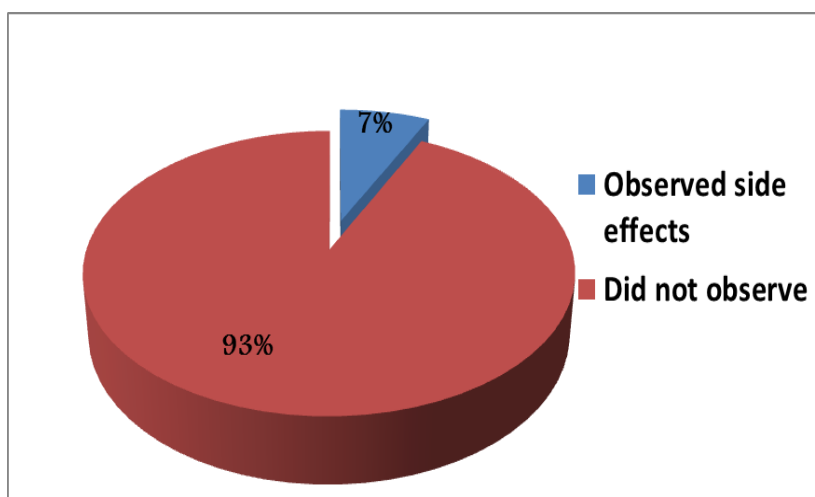**Figure 4**: Distribution of study sample according to who obtains the drugs from the   pharmacy.
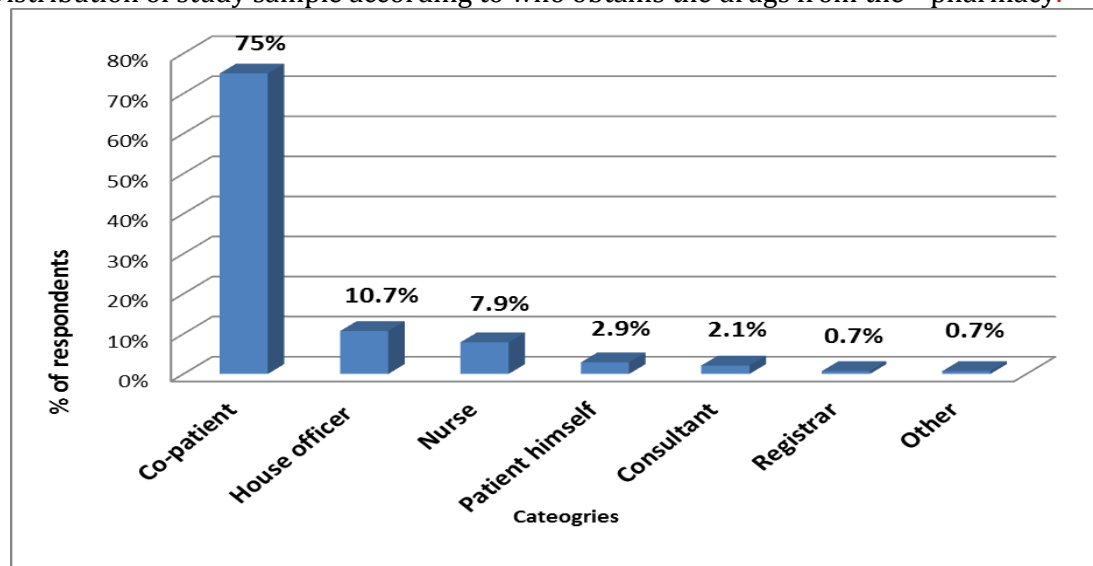
Figure 5: Distribution of study sample according to who often reminds the patient to take the drug
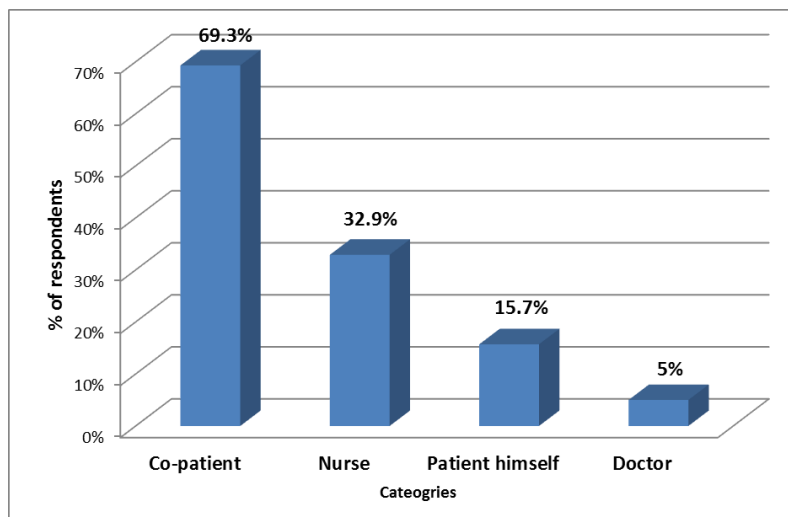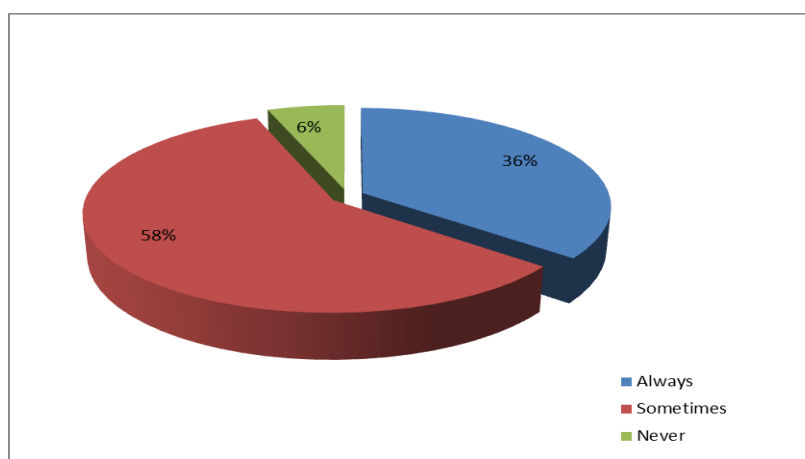
Figure 6: Distribution of study sample according to patient compliance
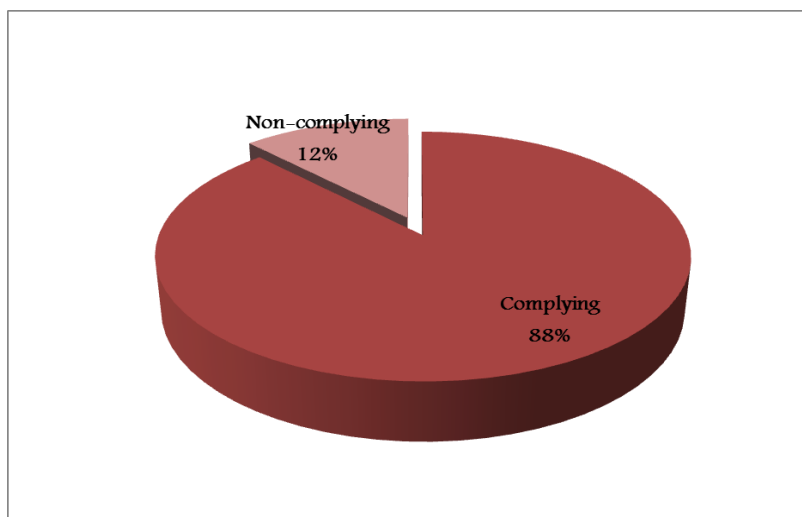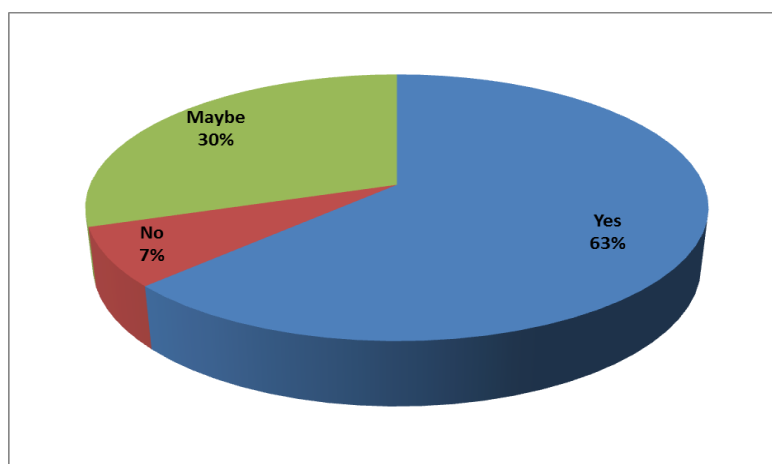

**Figure 7a:** Distribution of study sample according to side effects; (a) observed and complained of by patient

Figure 7b: Distribution of study sample according to side effects; (B) noted and regarded by the treating doctor (n=70)

Figure 8: The distribution of study sample regarding the need for a clinical pharmacist in the ward as judged by doctors (n=70)
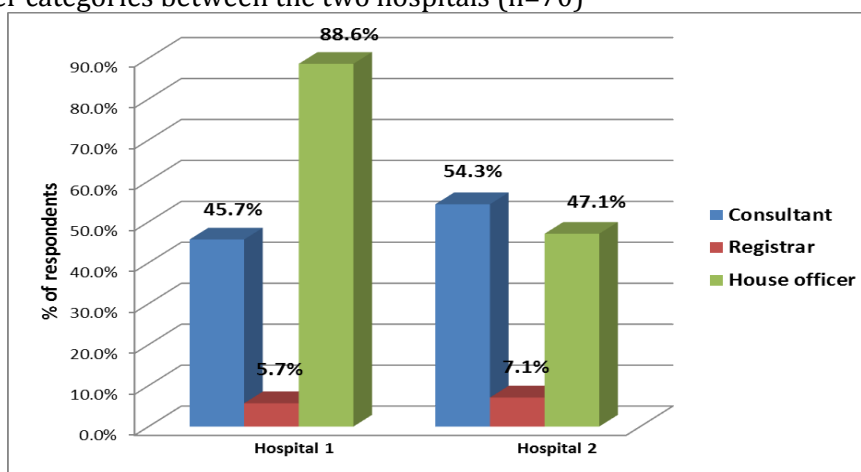

Figure 9: The distribution of study sample regarding the need of a clinical pharmacist in the ward as judged by nurses (n=60).
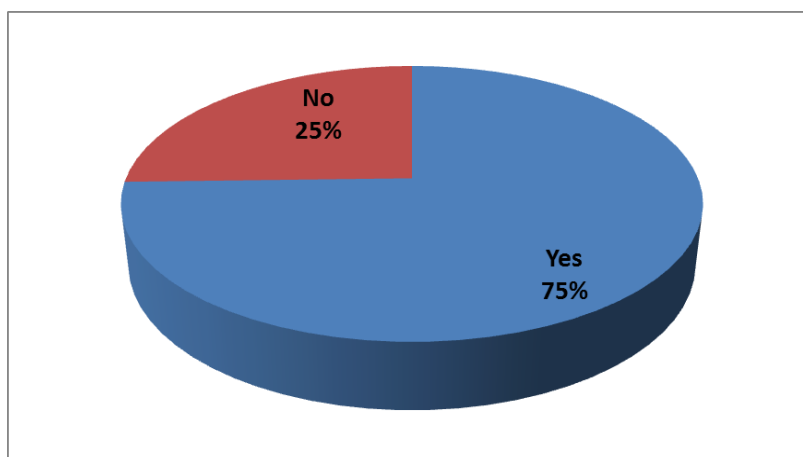
Figure 10: Prescriber categories between the two hospitals (n=70)

Figure 11: Patient compliance between the two hospitals as reported by patients.

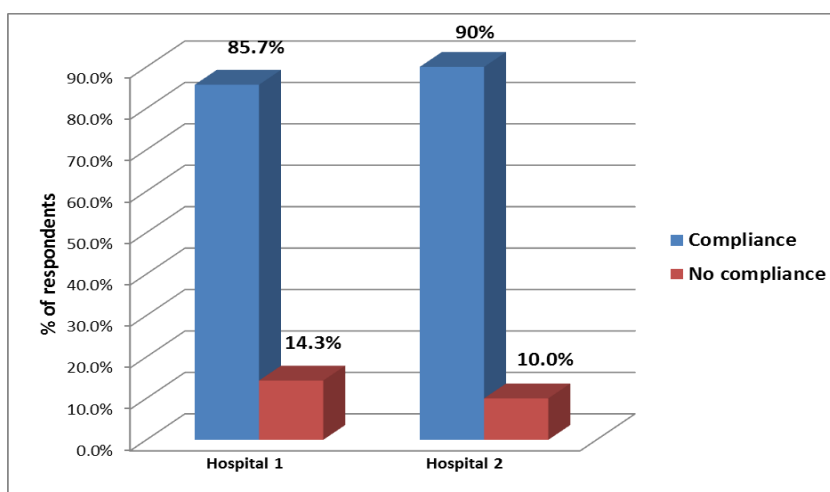**Figure 12a/12b: Pictures on storage and safety of medicines in Reference (RH, p1, 2, 3) and Test Hospitals (TH p1, 2... 8)**

12a: International standards of storage and safety (Reference hospital RH)		
RH. Picture 1	RH. Picture 2	RH. Picture

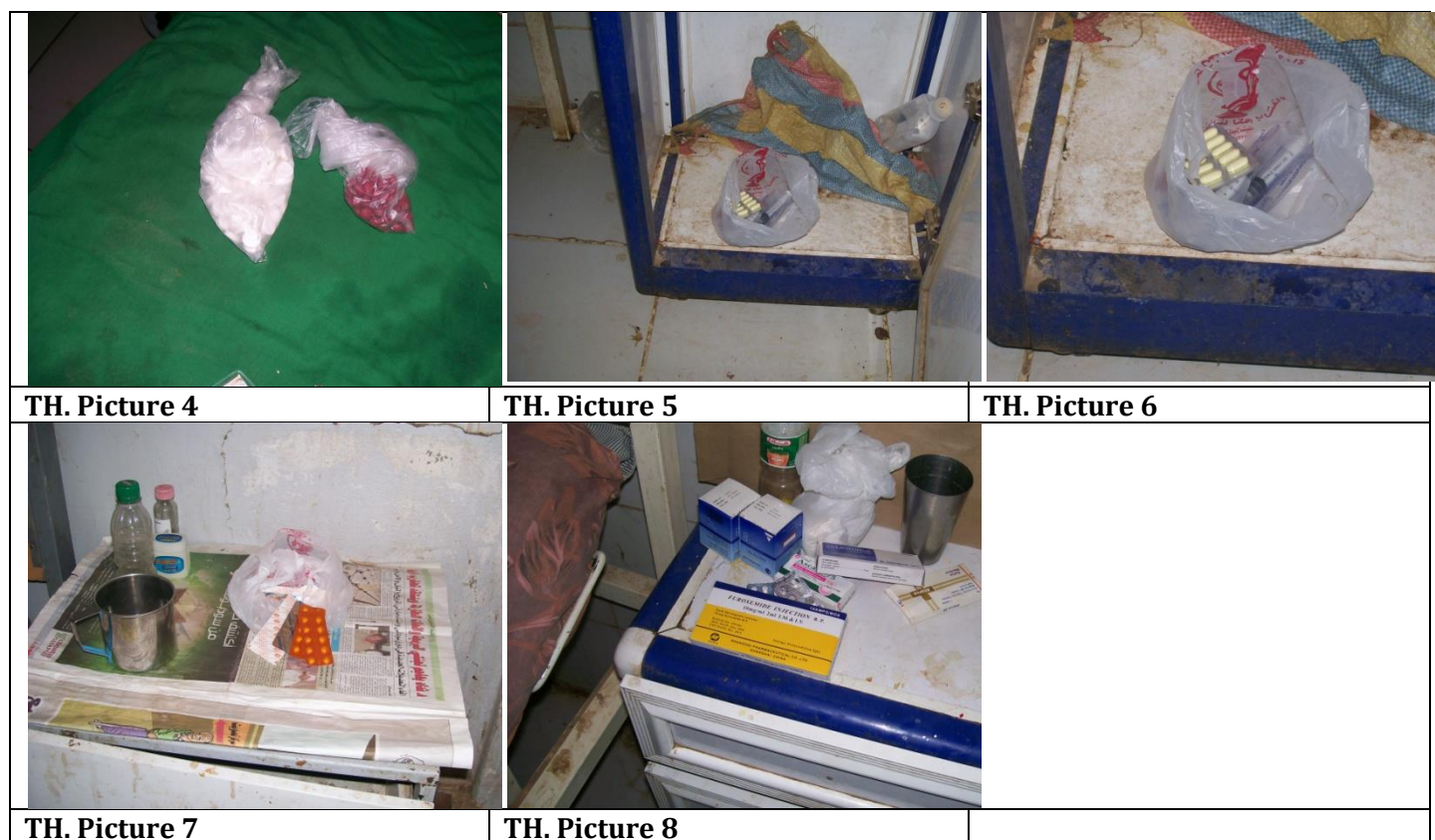| **12b:** Storage and safety in Test Hospital(TH)		
TH.Picture 1	TH.Picture 2	TH.Picture 3

TH. Picture 4

TH. Picture 5

TH. Picture 6

TH. Picture 7

TH. Picture 8

Discussion:

The overall results obtained from this study have to a greater extent indicated that there is major irrational use of drugs at both health providers and patient's levels.

The major irrationality of drug use clearly displayed by the results of study includes:

1. The main prescribers of drugs in hospitals are the poorly trained housemen.

2. Lack of adequate awareness of doctors of what drugs their patients are taking or currently using. (as indicated by discrepancy between the number on record sheet and those by direct observation).

3. All aspects of drug use are handled by co patients e.g. Supply, storage& drug intake.

4. Advice on dosage regimen aspects as well as side effects to patients was often lacking.

The prescriber's population in both hospitals was dominated by house officers, expectedly an un ideal situation. The inappropriate prescribing by house officers is largely due to: not being taught therapeutic drug management at undergraduate level, limited experience in practice, and the lack of close guidance by their superiors, furthermore rational drug use teaching is lacking in many medical schools nationwide, this situation can contribute considerably to drug use risks and thus poses a major hazard to patient's care.

The significant difference in the discrepancies found between the number of drugs on the record sheet and number of drugs taken by the patients is very alarming (65%). This may lead to:

- Over and/ or under use of drugs, a rather serious situation that could result into unexpected morbidity and even mortality.
- lack of awareness and close monitoring by doctors of what patients are taking, is likely to put the patients in serious drug-drug/ Drug-Diet /Drug-disease interaction.
- May lead to un justifiable waste of already limited financial resources of patients as well as hospitals.

This irrational use of drugs with its consequences may be due to that: doctors are not aware of how drugs are used rationally, or they are too busy, or they feel that this is not their duties, the later may raise the need for clinical pharmacist in patient care in the hospital settings (who is knowledgeable about the drugs, have sufficient time to review drugs use and counsel the patients). This agrees well with many studies which have documented drug use patterns, and indicate that overprescribing, multi-drug prescribing, misuse of drugs, use of unnecessary expensive drugs and overuse of antibiotics and injections are the most common problems of irrational drug use by prescribers, dispensers as well as consumers. Improving drug use would have important financial and public health benefits.

Generally patient who are admitted to hospitals require extra care, supervision, consultations and monitoring especially the elderly , however this is not the case as indicated from the results of our study as reflected by a higher proportion of patients, depending on co patients to obtain their drugs (75%) and to supervise their drug intake (69%), a task expected to be a responsibility of nurse ,thus it seems hospitals are not providing the relevant assistance and that nurses are not performing their duties properly (in many ways they may feel that this is not their duties), this is why patients tend to rely on co-patients who are un expected to have knowledge on drug use. Consequently this may increase risk of patients. This problem can be overcome by strengthening the teaching of nurses the proper role in hospitals at the undergraduate levels, updating them and ensuring that they are being taught therapeutic drug management with especial emphasize in certain issues such as rationale drug use. Furthermore knowledge of rational storage of medicines should be included in nursing undergraduate programmes. Worldwide drug cabinets are designed specifically to meet the requirements of hospitals, health centre, and pharmacy and/ or nursing homes by providing specially designed shelving to ensure maximum utilisation of the available space and accurate delivery of drugs. (Figure 12).

The results of discrepancies between the number of drugs in the record sheet and those directly observed are sufficient enough to indicate patients' lack of adequate adherence to treatment and non-compliance. And this situation could be explained in terms of various reasons e.g. Nurses are not regular on giving the injections; patients refuse to take the drugs...Etc. However the high percentage of compliance reported by patients provide unreliable grounds of evidence since patients are not expected to acquire such knowledge

Surprisingly neither patient in medical wards nor in paediatric wards has been given advice about the side effects and period of use. This raises the concern that doctors are busy to sit and educate the patients about the side effects, based on the aforementioned above and the results of patients observing side effects. Hence patients are not aware about drug side effects and this necessities patient counselling by health care providers.

Since our study is targeted to determine the possibility of introducing a clinical pharmacist services in hospitals by obtaining doctors and nurses opinions about the importance of such services. Those findings show strong agreement between doctors and nurses about the role of clinical pharmacist. Hence if a clinical pharmacist is employed in the hospital he will be an integral part of the medical team and in line with the global situation in this respect[9].

Conclusion& Recommendations :
Various forms of irrational use of medicines were noted from this study, particularly in the areas of:
- Drug supply / dispensing,
- Bedside storage of medications,
- Adherence to key elements of dosage regimens by patients,
- Monitoring of medications benefits and/or risks.

The aforementioned irrationalities could be mainly attributed to lack of adequate pharmaco medical supervision and patients counseling reflecting
(i) Poor acquaintance of prescribers and nurses with the concept of rational drug use and
(ii) The non-existence of pharmacists' contribution in the chain of events in drug use.

The present situation in hospitals would undoubtedly have a significant negative impact on the therapeutic management and pharmaco economics of drugs. However, it is encouraging as noted from this study that the medical team (prescribers and nurses) are fully supportive to the idea of introducing clinical pharmacists within the team in line with the global vision for the profession of pharmacy "pharmacists are recognized and valued as the preeminent health care professionals responsible for the use of medicines in the prevention and treatment of disease"[9].

The present findings necessitate the expansion of the study to include:
1. A quantitatively and qualitatively larger population of patients;
2. Different hospitals: public vs. private; urban vs. rural and teaching vs. non-teaching.

Hospitals managements should recognize the importance of incorporating clinical pharmacists in their medical teams. Among the strategies that will help address this issue is to clearly define and promote the core competencies of a clinical pharmacy practitioner.

Educational outcomes in line with those globally established should be published to serve as a "target towards which the evolving pharmacy curriculum should be aimed".

Drug committees, therapeutic guidelines and facility formularies are becoming integral components in the establishments of hospitals setups.

Questionnaires 1a: Patients Questionnaire
University of Medical Sciences & Technology
Rationale & irrational drug use among Khartoum hospitals
Patient's Questionnaire
Name: ....   **Age:** ....
Sex: ☐ Male   ☐ Female
Residence...
Accompanying Relative ;(Co-Patient): ....
Ward: ☐ Medicine   ☐ Paediatric.
No of days in hospital: ....
Diagnosis (Provisional Diagnosis): ....
No of drugs used by the patient : (as mentioned by the patient)..
No of drugs by direct observation: (by counting)......................................
No of drugs on record sheets..
Name (generic/trade) by direct observation: ....
Who prescribed the drug?
☐ Patient himself   ☐ Consultant   ☐ Registrar   ☐ House officer   ☐ Pharmacist ☐ Others. Specify..
Who obtained the drug from the pharmacy?
☐ Patient himself.   ☐ Co-patient.   ☐ Nurse   ☐Others Specify...
Who often reminds the patient to take the drug?
☐ Self   ☐ Nurse.   ☐ Relative   ☐ Doctor.   ☐ Other Specify: ....
Is the patient regular on taking the drug (compliance?)
☐ Yes   ☐ No (even one day) If no, Reasons for irregularities: ....
Has the patient been given advice on the drug/s period of use, frequency & side effects?
☐ Yes
By whom: ☐ Pharmacist.   ☐ Resident doctor: (Registrar / housemen).   ☐ Consultant
☐ NO
Has the patient been asked about other drugs?
☐ Yes   ☐ No
Does the patient know when to stop taking the drug (overall dosage regimen?)
☐ Definite.   ☐ Doubtful.   ☐Does not know
Who told them when to stop the drug therapy?
☐ Pharmacist.   ☐ Resident doctor   ☐ Consultant   ☐ Others. Specify..
Did the patient observe any side effects that are attributable to the drug?
☐ Yes   Specify...☐ No

Questionnaires 1b: Doctors Questionnaire
University of Medical Sciences & Technology.
Rationale & irrational drug use among Khartoum hospitals
Hospital Doctor's Questionnaire
• **Position in the hospital :**
☐House man ☐ Registrar ☐Consultant
• **Years of work: ....**
• **Do you prescribe the drugs for all inpatients?**
☐Yes ☐No
If yes
Record sheet (by investigator) ☐ Yes ☐No
If no, where
☐ Verbally ☐ On sheet of paper ☐ on the designed outpatient prescription paper ☐ Combination of the above.
☐Other
Specify..
• **Do you check patient's compliance to treatment?** ☐Yes ☐No
If yes
How often?
☐ Always ☐ Sometimes ☐Never
a. **What method? ....**
• **How often do you consider drug-drug interactions?**
☐ Always ☐ Sometimes ☐Never
• **Do you ask specifically for side effects?**
☐Always ☐ Sometimes ☐ Never
• **Do you think a clinical pharmacist can be useful in doing the above job?**
☐Yes ☐No ☐Maybe

Questionnaires 1c: Nurses Questionnaires
University of Medical Sciences & Technology.
Rationale & irrational drug use among Khartoum hospitals
Nurse's Questionnaire
• **Experience:** ☐Head nurse ☐Trainee
• **(Years of work)...**
• **Do the patients get their own drugs from commercial pharmacy?**
☐Yes ☐No
• **Do the patients get their own drugs from hospital pharmacy?**
☐Yes ☐No
• Do all patient get (buy) the drugs?
☐ Yes ☐ No ☐Partial.
• **Do you check if the patients had the drugs as directed?**
☐Yes ☐No
How? ....
• **Who looks after dosing the patients?**
☐ Doctors ☐ Nurse ☐ Relative ☐ the patient's themselves
• **Do you think a clinical pharmacist in the ward can be helpful?**
☐Yes ☐ No

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