WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 5.990
Volume 4, Issue 9, 1761-1775. Research Article ISSN 2277– 7105

ASSESSMENT OF KNOWLEDGE AND ATTITUDE OF PRESCRIPTION WRITING AMONG INTERNS IN A TERTIARY CARE TEACHING HOSPITAL

Dr. Revathy Saravanan* and Ganeshkumar D.

Professor, Department of Pharmacology, Sri Venkateahwaraa Medical College Hospital and Research Centre, No.13-A Pondy-Villupuram Main Road, Ariyur, Pondicherry- 605102.

Article Received on
08 July 2015,

Revised on 01 Aug 2015,
Accepted on 25 Aug 2015

***Correspondence for Author**
Dr. Revathy Saravanan
Professor, Department of Pharmacology, Sri Venkateahwaraa Medical College Hospital and Research Centre, No.13-A Pondy-Villupuram Main Road, Ariyur, Pondicherry - 605102.

ABSTRACT

Introduction: As prescribing is an art and an essential part of physician adequate knowledge and confidence on drug efficacy, safety and competence in prescribing are important. It is ideal to achieve the skill to prescribe rationally during internship period itself while still under supervision. This study has been planned to assess the knowledge and attitude of interns to suggest possible steps to make them good competent prescribers. **Materials and Methods:** A cross sectional questionnaire based study was conducted among 100 interns of tertiary care level hospital in Pondicherry in December 2014 to January 2015. Descriptive statistics was applied for the data analysis. **RESULTS:** Knowledge about generic name with their advantages and trade name were good in 65% and 75% of our participants. But their knowledge regarding format of the prescription and their contents is very poor with only 4% of interns being familiar.77%-84% were not aware of p-drug concept. Prescriptions of seniors and clinical teachers, textbooks and others like CIMS, MIMS were expressed as their references. 93%-96% have stated that training or refreshing will improve their prescribing skills. **DISCUSSION AND CONCLUSION**: Lack of knowledge and prescribing medicines irrationally by interns have been observed in some studies. Causes for prescribing errors and the impact of training in improving them has been established by systematic analysis of such studies .Even with average to good knowledge as seen in our study, academic and practical training in and during the internship will sensitize them which can be practiced and corrected under the guidance of teachers. This will improve

their prescribing behavior so that rational use of medicines and health benefits can be promoted.

KEYWORDS: Prescribing Knowledge and Attitude of Interns, prescribing errors and their causes, training for rational prescription.

INTRODUCTION

Prescription writing is a science and an art as it conveys messages from the prescriber to the patient. Rational prescription is defined as the use of least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost.[1]

Diagnostic skills are focused more than therapeutic skills in clinical training of M.B.B.S. Prescription writing exercises are planned in second year itself. It may be difficult to understand the rationality in choosing the drugs at that time as they are not much aware of disease states, where teaching is mostly drug centered.[2] The traditional didactic lecture at that period creates pressure to learn only high information and lack logical and scientific approach of prescribing in real life situations during their internship.[3]

By the time they start their internship their pharmacological knowledge can disappear slowly. As a result they are either expected to copy the prescribing behavior of the teachers or have to take the help of some paramedical persons also at times who might be well versed to choose the drugs but don't have legal authority to prescribe.[2&4] They may even assume that prescribing knowledge can be improved after graduation, but not seen so by researches done. Irrational use of fixed drug combination has been observed in 62.79% of prescriptions in a study done at a medical college hospital, Karnataka in 2011.[5]

26 drug-drug interactions were identified in 18 prescriptions. Drugs chosen were not in accordance with WHO essential list in 41.6% of prescriptions. Generic names were prescribed only in few prescriptions by physicians in another study.[6]

Inappropriate use of drugs (33%) and use of generic name which will be economical and rational was found only in 5% of prescriptions by qualified medical P.G. doctors.[1]

Bad prescribing habits can lead to ineffective and unsafe treatments and harm to the patients leading to high cost which may be followed by junior students also. So breaking of bad prescribing habits and promotion of rational prescription is essential at internship level itself.

A cross sectional study done to assess the knowledge and attitude of interns about the prescribing errors in a tertiary care hospital Nigeria in 2014 has also stressed that inadequate knowledge and competence and incomplete information about clinical characteristics of patient can result in prescribing faults. Unfamiliarity to drugs also has been mentioned as an important barrier in prescribing rationally which can be improved by frequent assessment of knowledge and skills during and after intership.[7] As much information are not available about the knowledge, attitude, confidence and competence regarding prescription writing rationally by interns this study has been undertaken with the objectives to assess the knowledge of rational prescribing pattern, to assess the knowledge of rational use of drugs and to offer some practically possible suggestions for improving the standard and quality of prescription writing.

MATERIALS AND METHOD

Our cross sectional study was carried out after getting the approval of Institutional Research and Ethics Committee between December 2014-January-2015.100 interns working in a tertiary care level teaching hospital in Pondicherry were approached and explained in detail about the aim and scope of this study and requested to fill the structured questionnaire.

The filled in forms were collected and answers were analyzed and expressed in percentages using descriptive statistics. Scoring was done to assess the level of knowledge about the different components of prescription format and their contents as shown in Table.1.

TABLE.1.SCORING FOR KNOWLEDGE ASSESMENT

S.NO	Name of the component	Contents
1	Superscription	Details of prescriber ,and Patient,diagnosis etc.
2	Inscription	Drug details- Name, formulation. dose, route of administration ,frequency and duration of treatment etc.
3	Subscription	Signature of the prescriber with date, Instruction to the patient/pharmacist etc.

Each known factor was given a score of 1 to the maximum of 6.

RESULTS

Out of 100 Interns including both the sex participated in our cross sectional study done for a period of 2 months 26 had less than 6 months and 74 had more than 6 months internship training. (Fig.1) The knowledge about the prescription format was expressed by 65%(out of

26) and by 75% (out of 76) of interns of less than 6 months and more than 6 months of training respectively.(Fig.2).

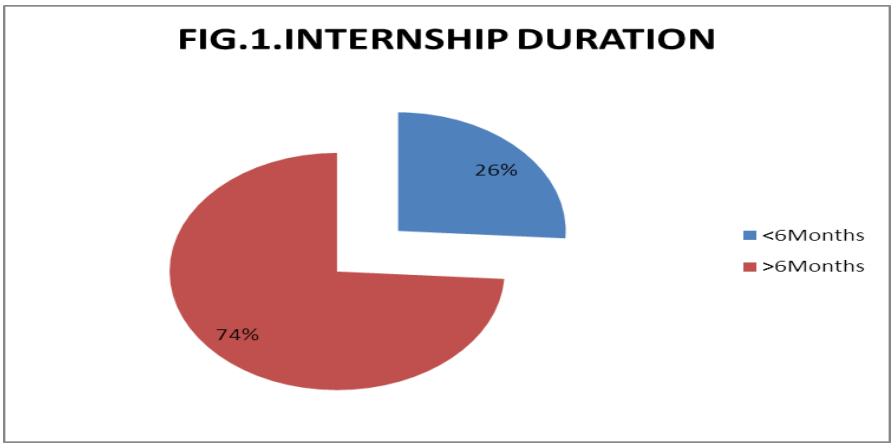


Fig.1 shows no of interns having less than and more than six (6) months period of training

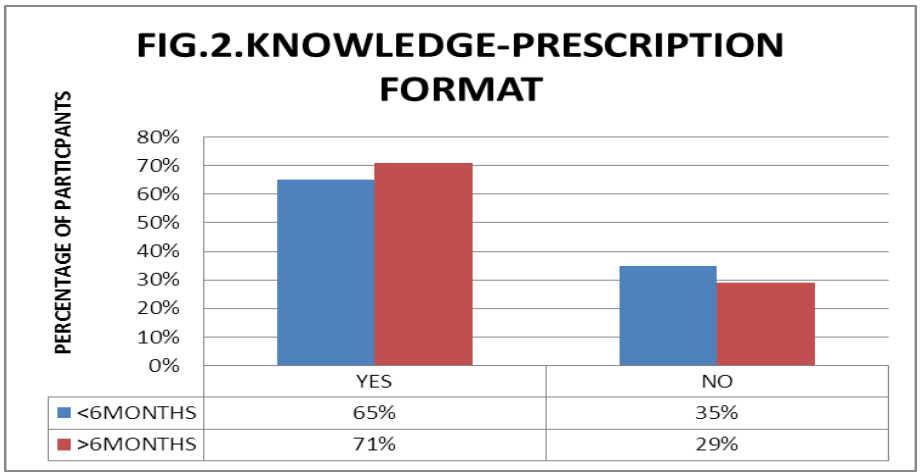


Fig.2 percentage of participants having knowledge about the format of prescription.

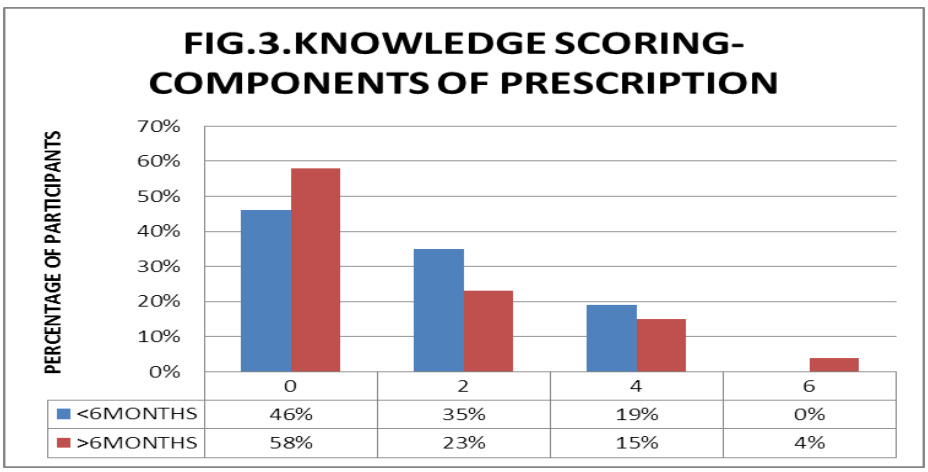


Fig.3- Scoring on the names and contents of different components of prescriptions

Scoring of Knowledge about the different components and their contents is depicted in Fig.3.Maximum score of 6 was obtained only by 4% of interns with more than 6 months training. All the participants belonging to both the groups knew what generic name is. (100%).compared to familiarity to trade name which is expressed by 88% to 100% of the participants.(Fig4) Only 8% and 7% of interns with less than and more than 6 months experience did not know about the advantages of using generic name in the prescription.(Fig.5).

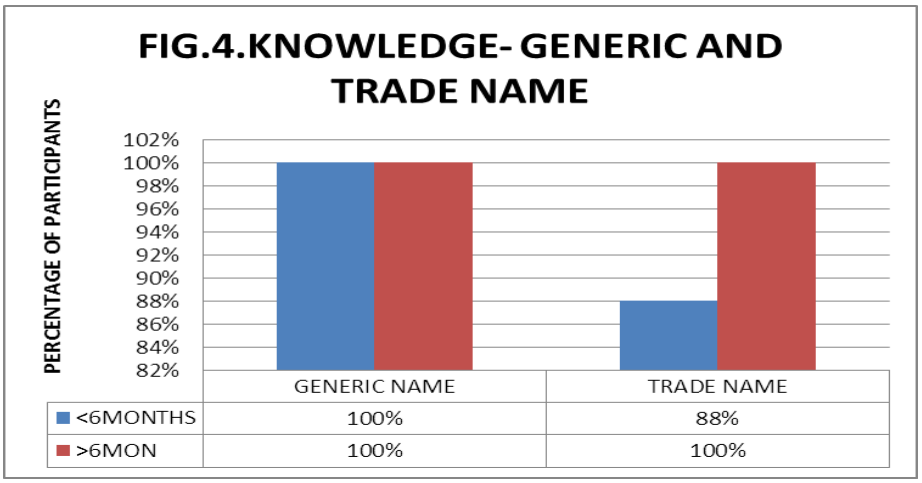


Fig.4.Depicts the status of knowledge on generic and trade names.

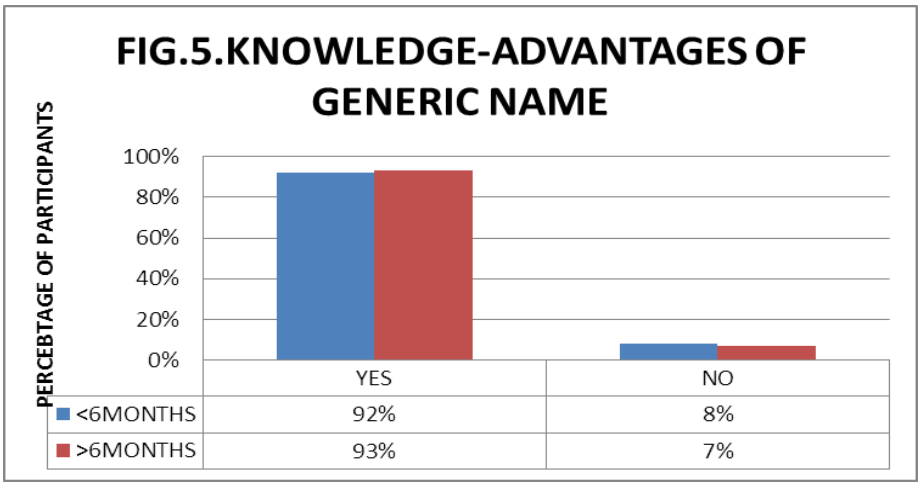


Fig.5. Knowledge status of the participants on the advantages of using generic name.

Generic name was preferred by 54%and 58% of the participants while prescription writing. (Fig.6).Willingness to prescribe medicines on the basis of disease only was expressed by 88% and 92% of interns.(Fig.7) Knowledge about p-drug concept was not known and understood by many persons in 77 and 84 percentage of groups belonging to less than and more than 6 months training respectively.(Fig.8)

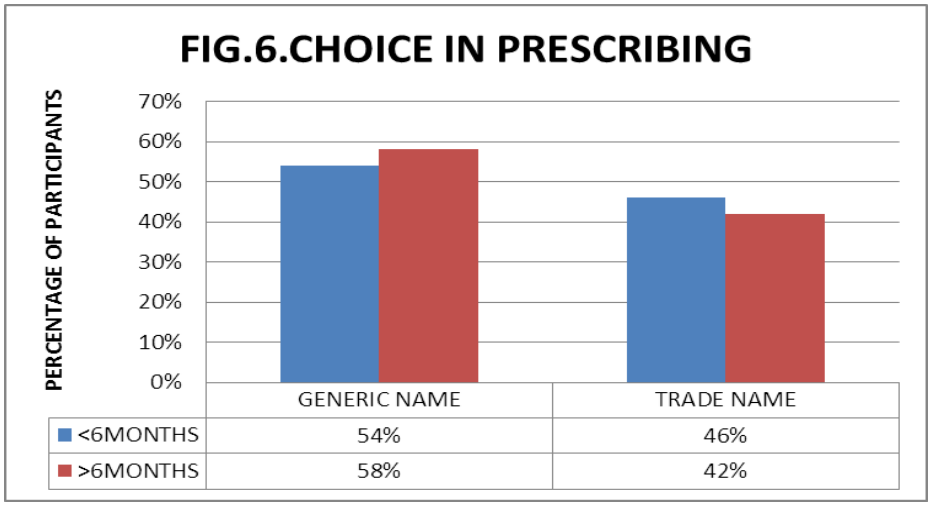


Fig.6. Shows the choice of the interns in prescribing.

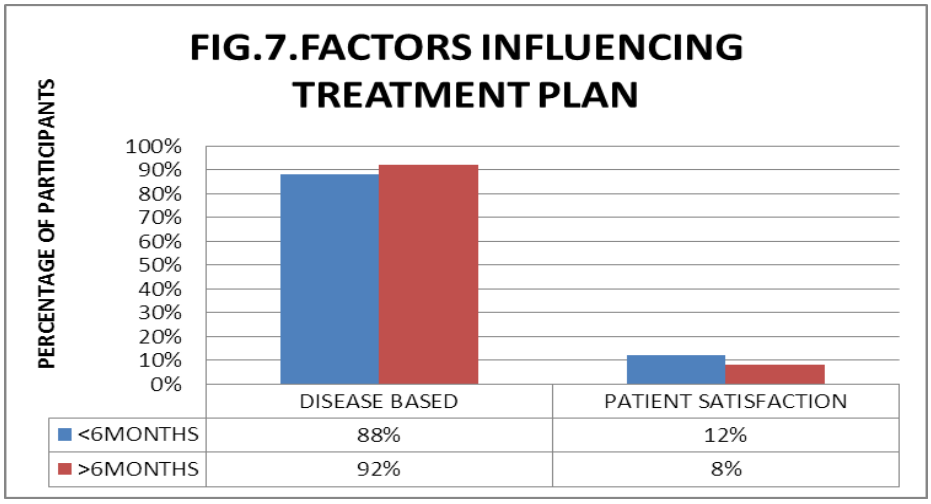


Fig.7.Percentage of participants stating the factors based on which prescribing medicines are to be chosen

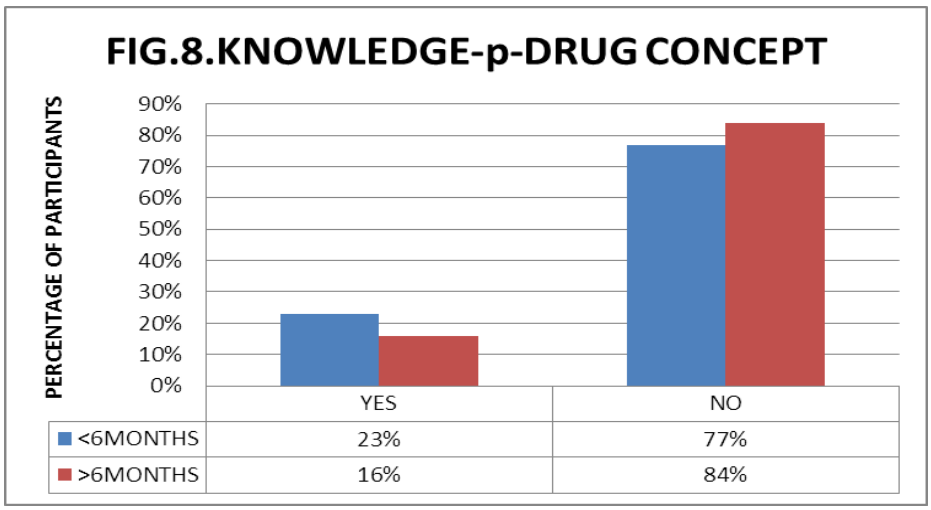


Fig.8. Depicts status of knowledge on p-drug concept.

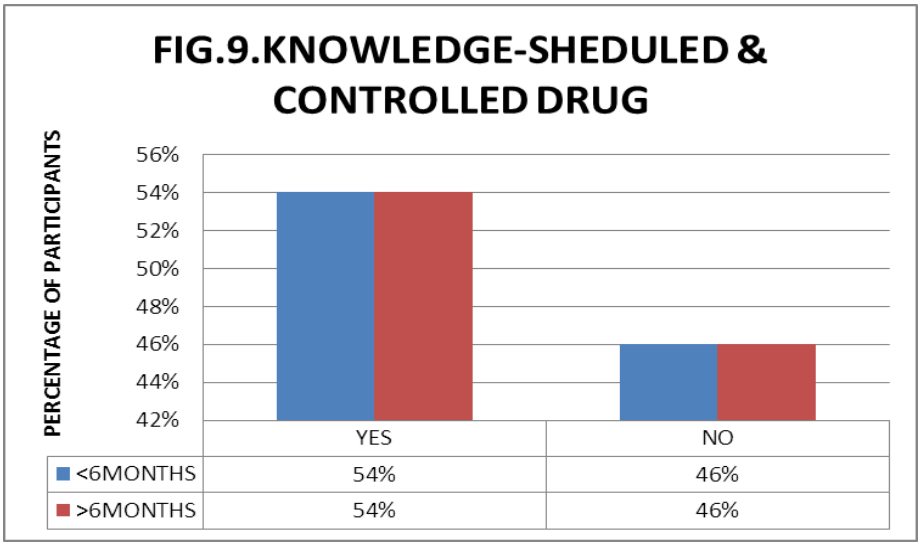


Fig.9. Percentage of participants having knowledge on sheduled and controlled drugs while prescribing.

Equal percentage of participants from both the groups (54%) are aware about the rules and regulations for prescribing scheduled and controlled drugs.(Fig.9) Prescribing exercises taught during their 2nd year MBBS course was said to be useful during their internship by 88% and 77% of interns with less than and more than 6 months experience.(Fig.10).Good knowledge about advantages and requirements for rational prescription have been expressed by 62% and 64% of participants of the two groups.(Fig.11)

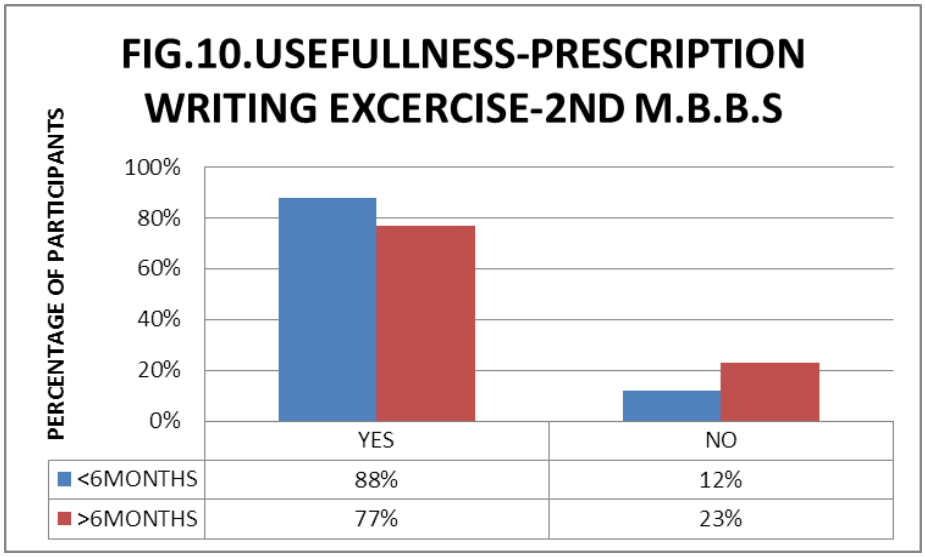


Fig.10. Shows the usefullness of prescription writing in 2nd MBBS teaching.

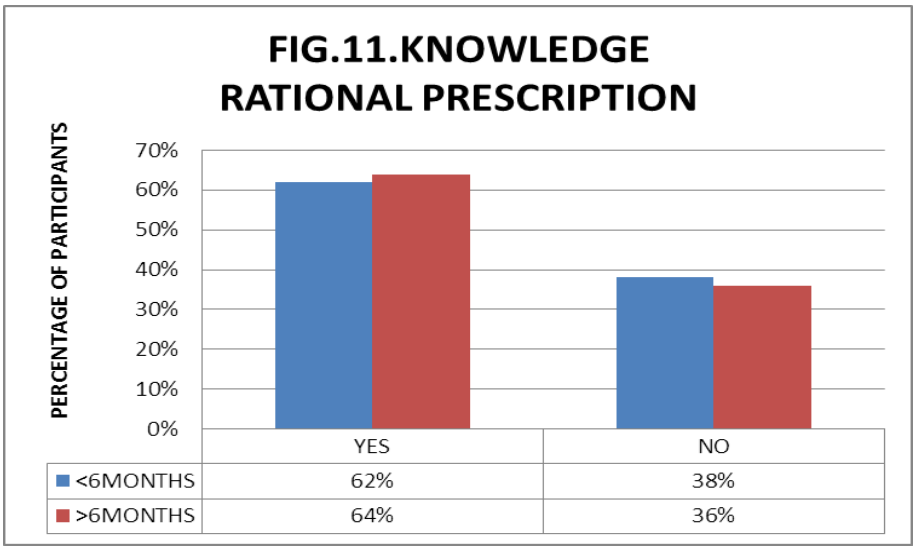


Fig.11. Participants knowledge about requirements of rational prescription

Various factors that can influence prescribing behavior is shown in Table.2.Teachers are considered as the main source for all the drug information by 46% and 58% of the participants undergoing internship training followed by 27% and 30% of participants considering text books as their source and other books like CIMS, MIMS and IDR by 11% and 12% of participants as the referrals to seek information. (Table.3). Specific focused training and refreshing courses on rational prescription have been suggested by majority of participants (96% & 93%).Few of them have given some other options like giving prescriptions themselves under the guidance and suggestions by seniors and clinical teachers.

Table.2- Details about varying factors that influence prescribing behavior of interns.

TABLE.2.FACTORS INFLUENCING PRESCRIBING BEHAVIOUR		
FACTORS	<6MONTHS (NO.26)	>6MONTHS (NO.74)
Following prescribing behavior of seniors/ clinical teachers	74%	72%
Your Self decision under supervision by teachers	3%	4%
Following standard guide lines	23%	24%

Classes on pharmaco-therapeutics and pharmaco-vigilance before starting internship have been suggested by some. (Table.4)

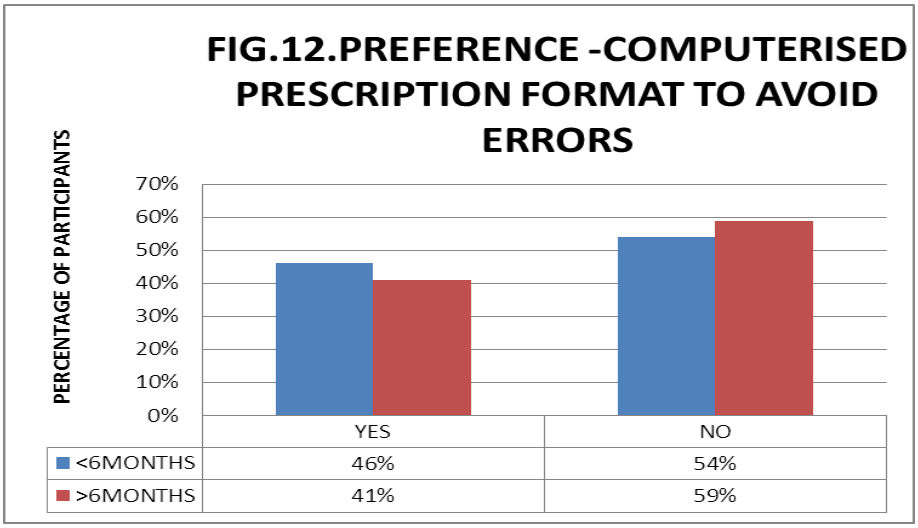
Table.3. List of different sources of drug information expressed.

TABLE.3. SOURCES OF MEDICINE IMFORMATION		
SOURCES	**<6MONTHS**	**>6MONTHS**
TEACHERS	46%	58%
TEXT BOOKS	27%	30%
REFERENCES-CIMS,MIMS,IDR etc	12%	11%
HOSPITAL FORMULARIES	15%	1%

Table.4. Suggestions given by the participants to improve prescribing skills.

TABLE.4. SUGGESTIONS TO IMPROVE PRESCRIBING SKILLS		
SUGGESTIONS	**<6MONTHS**	**>6MONTHS**
Training / refreshing before starting internship	96%	93%
OTHER SUGESTIONS 1Senior's suggestions& training during internship period 2.Allowing prescribing by self with guidance from teachers 3. Classes on Pharmaco-therapeutics & Pharmaco vigilance by clinical Pharmacologist before internship. 4. Consulting Seniors. 5.Following Prescriptions of Senior Clinicians	4%	7%

Computerized transmission of prescription in standard prescription format was not preferred by 54% of participants. (Fig.12)



DISCUSSION

General Medical Council of U.K had outlined the principals of prescribing in 2008 itself and had made a rule that every medical doctor must have the skill to prescribe safe and effective drugs without errors.[3, 4]

Prescription error is defined as clinically meaningful prescribing errors occurring as a result of a prescribing decision or prescription arising process, there is an un-intentional significant reduction in the probability of treatment being timely and effective or increase in the risk of harm when compared to generally accepted practice. Several factors that have been reported to result in prescription errors are.[8]

1. **Environmental factors:** office area, working environment being cramped, noisy, busy, hectic, distractive, staffing level ,work load etc. especially at the time of discharge.

2. **Task factors:** finding long treatment charts and discharge prescription being difficult leading to slips in prescription.
3. **Individual factors:** lack of knowledge about drug name, dose especially for pediatric patients ,indications etc.
4. **Team factors:** Lack of knowledge or skill to follow the instructions, having implicit trust on superiors preventing from questioning and clearing their doubts.
5. **Patient factors:** complexity of diseases, being seen out of hours and language difficulty etc.

The effect of these factors resulting in prescription errors has been well established by a prospective questionnaire based study done by face to face interviews and by analysis of human factors following Vincent etal and Dean etal model among interns of a tertiary care hospital in Brisbane, Queens land between February-June 2004.[8]

In a study done to assess the knowledge about diseases and about clinical pharmacology and Therapeutics (CPT) for safe and rational prescription among interns in Nigeria in 2009 it was felt that training in CPT was deficient. It was suggested that the importance of Principles of rational prescriptions, drug dose calculation and pharmaco-vigilance should be focused and stressed for students and interns. They have also suggested periodical assessment of their knowledge regarding them both theoretically and practically during their training period will reduce the prescription errors.[9]

In the cross sectional study done by us 100 interns had participated of which 26 had less than 6 months and 74 had more than 6 months period of experience. (fig.1) Different components of prescription were said to be known by 65%-71% of participants. (Fig.2) But they did not show good knowledge about different details to be written under each heading namely Superscription (prescriber's & patient details, diagnosis etc). Inscription (entire drug details) and subscription (Instruction to patient/pharmacist etc) Only 4% out of 76 participants with more than 6 months training has scored 6 points whereas 46%-58% from both the groups have scored 0 point.(Fig.3) This feature is similar to the facts identified by a study done in Nigeria among interns in 2009.[9] Knowledge about generic and trade names and the advantages of generic name were found to be satisfactory in our study.(Fig.4&5) Prescribing by generic name has been chosen by 54%-58% of interns similar to a study done by Sheilash Mundhava et al among interns and post-graduates of a tertiary care hospital in India in 2005,

stating difficulty in recalling of trade name being an important reason for choosing generic name.[10] In contrary only 34.97% of drugs have been prescribed in generic name that too only by 16% of participants in an analytical study done on prescribing pattern by interns working as part of their training in Primary Health Centre in India.[11] This shows that there is definitive gap between the clinical knowledge obtained during their MBBS course and it's practical application which need to be narrowed or closed by effective timely training to improve the prescription habits.

Many interns have opined that they prefer to prescribe medicines based on disease only which is an appreciable attitude and needed to be encouraged. But few 8%-12% have expressed that patient's satisfaction is their aim which may lead to prescription of unnecessary and irrational usage of drugs. (Fig.7) The ill effects of irrational prescribing habit and its avoidance need to be highlighted during their training. p-drug knowledge was poor among majority of participants with only 23% and 16% belonging to less than and more than 6 months period of training being familiar (Fig.8) Similar deficient knowledge about p-drug concept has been observed in yet another study with only 37% of interns were aware of p-drug concept, which seems to be little higher among P.Gs. This knowledge might have been acquired during their practice before joining the course.[10] Having personalized list of medicines with all minute details like M.O.A, dose, Indications, contra-indications and ADRs etc will definitely help to prescribe rationally the Right drug for Right disease in Right dose for the Right individual in Right frequency for Right duration as suggested by W.H.O. This will help to prescribe safely and effectively avoiding possible drug interactions which can result in ADRs and even to therapeutic failure at times. Awareness about scheduled and controlled drugs was found to be moderate with 54% in both the groups in our study (F.g.9) as suggested by General Medical Council.[4] 77%-88% of the participants from our study have stated that prescribing exercises taught to them in their 2nd year of MBBS course were useful in contrary to the opinion by 84% of interns who have expressed that U.G teaching regarding clinical pharmacology need to be improved in a study done in another tertiary hospital of India.[10] As teaching is mainly theoretical , errors may be committed in prescribing on practical application either at the level of decision making for the appropriate drug for correctly diagnosed disease or in deciding dose and other factors.. This can be overcome by knowing full details of the chosen drug based on diagnosis and by obtaining previous drug history in detail. All these findings confirm that there is a definite need for practical training for which initial internship period is suitable when they start facing clinical

cases personally and practically. Knowledge about the requirements for rational prescription was found to be good in 62.5-64% of participants. (Fig.11) which needs to be emphasized further.

Majority of interns (72%-74%) prefer to follow the prescribing behavior of seniors or clinical teachers. (Table.2)This shows seniors play an important role in inculcating good prescribing habits.23%-24% have expressed that, following standard guide lines will be of help in prescription writing. Hence framing standard guide lines and displaying them at proper places like treatment area will be able to promote their prescribing behavior as suggested as a partial solution to avoid prescribing errors by Ian. D. Coombes et al.[8] Few have opted to choose drugs by themselves under senior's supervision. Poor supervision by seniors or clinical teachers has been stated as an important team factor leading to errors in prescribing in a prospective study done among interns to assess the causes of errors in Brisbane, Australia in the year 2008.[8] which further emphasize the teacher's responsibility in training the budding doctors. Main source to get all information about drugs was stated to be teachers by 46%-58% of our study participants. (Table.3) Text books have been mentioned as another source of information by 27%-30% in our study similar to a knowledge analysis study done among interns in which 41% have expressed them as their choice.[10] Similar to that of 8% showing references like CIMS,MIMS and IDR as their source by interns and P.Gs of a tertiary hospital.[10] 11%-12 % in our study have expressed them as their reference. (Table.3) Hospital formularies has been quoted as reference by 15% & 1% from less than and more than 6 months internship training respectively.(table.3) As checking references has been stated as an important step in rational prescription[7] it is mandatory to make the students aware of such sources of drug information from 2nd MBBS itself when they study pharmacology. Framing standard guide lines and hospital formularies by experts with all the details of the available drugs in the hospital and making them easily available for quick reference is an important responsibility of the administrators. They should also have Essential Medicine List (EML) known to all which need to be revised periodically with necessary modifications if needed. They should ensure that EML and the drugs mentioned in that list are available all the time in adequate quantities. Theoretical knowledge on Rational prescription is found to be good in the study done by us.(Fig.11) But coming to practice they may not follow the same prescribing behavior as has been reported to be irrational by some studies like unnecessary prescription of vitamins and hematinics in[12] 66.3% prescriptions by interns in PHCs attached to medical college in Manipal Karnataka.Minimal usage of generic name which will be cost

effective, prescribing more of analgesics, antibiotics and use of injection etc were noted in some studies.[7,11&12]

This further emphasizes the importance of training or refreshing the knowledge on rational prescription before starting internship which also has been suggested by 93%-96% of the participants from our study. (table.4) Other suggestions given by 4-7% of them also stress the same.(Table.4) Conducting specific training using WHO guide to good prescribing[2&5] and Continuous Medical Education (CME) giving academic detailing combined with feedback will help to improve the prescribing pattern. Such educational interventions in the beginning and during internship have been shown to yield increase in prescription performance, confidence and competence by systematic review of 47 studies done to assess the effect of educational intervention by Kamrudin etal.[13]

Even though electronic prescribing with decision support has been recommended as a partial solution to decrease prescription errors[8], computerized transmission of prescriptions in standard format was preferred only by 41-46% of our participants. (Fig.12) This may be due to technical issues like wrong data entry or loss, data getting corrupted, confidentiality and other security reasons where implementation of Health Informatics might remove these fears. As pharmacology is found to be a dry subject by students and some time by teachers also it can be modified more as clinically oriented curriculum involving clinical pharmacologist which has been shown to improve prescribing understanding in some neighbor modern countries.[3] Introducing information stepwise starting from sources of drugs and drug information to, EML, p-drug concept, Pharmaco-vigilance in phase-1 and prescription writing, problem based learning and pharmaco-therapeutics in phase-4 and 5 has been tried for 3 consecutive years in M.L.N medical college as MLNMC model and reported to have been well accepted and appreciated by MBBS students who also felt it as a beneficial.[14]

CONCLUSION

Lack of knowledge in rational use and prescription of medicines as laid by WHO and as Good practice in prescribing medicines by General medical council leading to irrational use of drugs has been evidenced by many studies .Even though theoretical knowledge might be good or excellent in the cross sectional study done by us without any significant differential effect of 6 months training as interns with deficiency in some areas, likelihood of committing prescription errors are still possible coming to practical use later. Hence both academic and practical training regarding rational prescription and use of medicines should be planned

before starting internship itself, so that they can apply practically and get corrected by feedback while still under supervision by seniors and clinical teachers before the transformation to full pledged medical practitioners. These steps will reduce irrational prescription and irrational use of medicines which can result in ADRs or failure of therapy. This in turn will improve health care to be implemented safely with cost-effectiveness.

ACKNOWLEDGEMENT

Authors would like to thank the Internees from Sri Venkateshwaraa Medical College Hospital and Research center Pondicherry for voluntarily participating in our observational study with interest. We also would like to thank the management of Sri Venkateshwaraa Medical College Hospital and Research center, Ariyur, Pondicherry for permitting us to carry out our work.

Conflict of interest: Nil.

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