



Evaluation of Knowledge on preferring Medications during Pregnancy among Interns and Medical students

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ABSTRACT

Background: Prescribing drugs to a pregnant mother needs meticulous assessment of the risk/ benefit ratio for both mother and the baby. Both overestimation and underestimation can lead to harmful and unpleasant outcomes. Hence a thorough knowledge about prescribing drugs in pregnancy is essential. Therefore we conducted a study among interns and medical students to evaluate their knowledge on preferring medications during pregnancy.

Methods: A preformed structured questionnaire in multiple choice question pattern was given to interns and medical students. The total knowledge score ranged from 0 to 15. Participants scoring more than 12 were graded as excellent, scores between 9 to 12 were graded as good, those between 6 to 8 were graded as average and scoring below 6 were graded as poor. The data was analysed using descriptive statistics.

Results: In our study, Knowledge was found to be excellent in 3% of the pre-final year students, 8% of final year students and 2% of interns. 24% of pre-final year students, 67% of final year students, and 48% of interns exhibited good knowledge about FDA pregnancy category "A". 76% of pre-final year students, 33% of final year students and 52% of interns were not aware of US-FDA pregnancy category "X".

Conclusion: From our study, we found out that most of the students did not have adequate knowledge about drugs used in pregnancy. Medical undergraduate students and interns must be trained to efficiently treat a pregnant woman. This emphasizes the need to provide sufficient learning opportunities and robust assessment to ensure better awareness and knowledge.

Keywords: Pregnancy, prescribing drugs, FDA- category, interns, medical student

INTRODUCTION

Pregnancy is a special physiological condition where drug treatment presents a special concern because the physiology of pregnancy affects the pharmacokinetics of medications used and certain medications can reach the fetus and cause harm. It's a symptom-producing event during which a number of illness can need to be treated. Treatment of the pregnant mother not only helps them to recover from

maternal illness but also ensures the optimum fetal growth¹.

The maternal mortality in India ranges from 100/1,00,000 to 1500/1,00,000 with an average of 400/1,00,000 deaths. About 30% of the babies born have low birth weight with perinatal mortality ranging from 70 to 80/1000. Main causes for such unfavorable outcomes are infections, haemorrhage,

anemia and pre-eclampsia which can be prevented by optimum antenatal care. Hence timely treatment of these conditions can reduce the perinatal morbidity and mortality. Pregnant women requiring prescription drugs pose a challenge to physicians to avoid any risk to the mother and to the fetus.

Teratogenicity is defined as “any morphological, behavioral or biochemical effect induced during embryonic life or fetal life detected at birth or later”. The term teratogen is originated from a Greek word ‘teras’ meaning a monster. A number of factors like infections (TORCH), ionizing radiation, metabolic disturbances (diabetes mellitus and phenylketonuria) and drugs act like a teratogen. Teratogenicity is a major cause of abortion, still birth and can result in longterm disability with a significant impact on individuals, families, societies and healthcare systems².

Thalidomide crisis in the 1960's⁴ and the teratogenic effects of use of diethylstilboestrol in 1971 led the US Food and Drug Administration [US FDA] to demonstrate safety and efficacy of any drug before it is marketed³.

US-FDA Category

The FDA, in 1979 developed a classification system which groups drugs under A, B, C, D, X, according to the degree of their potential risk of foetal teratogenicity during pregnancy⁶.

Category A - Controlled studies showed no risk to humans

Category B - No evidence of risk in humans.

Category C - Risks cannot be ruled out in humans

Category D - Clear evidence of risk in humans.

Category X - Drugs contraindicated in human pregnancy^{4,5}.

Teratogenicity is an important cause of fetal birth defect leading to neonatal morbidity and mortality still awareness about teratogenicity is found to be inadequate among physicians. It is essential that the interns and medical students understand the principles of teratology and be aware of which medications are safe to use during pregnancy. Prescribing during pregnancy requires careful

estimation of risk/benefit ratio for the mother and her baby. Both underestimation and overestimation can produce undesirable maternal and fetal outcomes

There is a need for the early exposure of students to the concept of teratogenicity which will bridge the gap between knowledge and prescribing skill. This also will lay the foundation for safe prescribing for a pregnant woman. Thus creating awareness through early educational intervention among undergraduate medical students who are the future physicians is necessary to decrease the incidence of preventable teratogenicity.

An assessment of knowledge is an important tool to understand the lacunae and benefits about a subject in the community, so that we can improve the outcome and effective steps can be taken in that direction. Hence the present study will assess the knowledge of interns and medical students related to the prescribing of medications during pregnancy.

Objective:

To assess the knowledge on preferring medications during pregnancy among interns and medical students

Materials and Methods:

The cross sectional study was conducted by the department of Pharmacology at Dhanalakshmi Srinivasan Medical College and Hospital among interns and medical students from the month july to october 2019. A total of 252 students willing to give consent were included in the study. Participants not willing to give to give consent were excluded from the study.

A structured questionnaire was used to measure the objective of this study. A preformed structured questionnaire was administered to 252 participants. 15 multiple choice questions (MCQs) were used to assess their knowledge. A correct answer was assigned 1 point and an incorrect/unknown answer was assigned 0 points. The total knowledge score ranged from 0 to 15. If the participants scored more than 12 they were graded as excellent, scoring between 9 to 12, they were graded as good, scoring between 6 to 8 they were graded as average and scoring less than 6 they were graded as poor. The data was collected, compiled and compared by frequency distribution and percentage proportion.

Qualitative data variables were expressed by using frequency and Percentage (%).

Results

Table.1. Responses given by participants

S.no	Questions	Correct responses		
		Pre-final year N=91(%)	Final year N=97(%)	Interns N=64(%)
1.	Safer Anti-Diabetic drug in pregnancy	75 (82.4)	63 (64.9)	52 (81.2)
2.	Antiemetic drug contraindicated in pregnancy	25 (27.4)	64 (65.9)	28 (43.7)
3.	Drug of choice for mild GERD in pregnancy	28 (30.7)	59 (60.8)	28 (43.7)
4.	Safer Antithyroid drug in pregnancy	68 (74.7)	69 (71.1)	43 (67.1)
5.	Antitubercular drug contraindicated in pregnancy	73 (80.2)	52 (53.6)	44 (68.8)
6.	Safer Antibacterial drug in pregnancy	40 (43.9)	55 (56.7)	25 (39.0)
7.	Antihypertensive drug contraindicated in pregnancy	61 (67.0)	67 (69.1)	27 (42.1)
8.	What drug used as an Antiemetic in pregnancy withdrawn in 1961 due to its teratogenic effects	72 (79.1)	71 (73.1)	17 (26.5)
9.	Safer analgesic drug in pregnancy	37 (40.6)	45 (46.3)	36 (56.2)
10.	According to US-FDA grading which drug category is safest for pregnant women	22 (24.1)	65 (67.0)	31 (48.4)
11.	According to US-FDA grading which drug category is contraindicated in pregnant women	35 (38.4)	63 (64.9)	33 (51.5)
12.	Antimalarial drug to be avoided in pregnancy ?	44 (48.3)	23 (23.7)	15 (23.4)
13.	which drug does not cross placenta ?	65 (71.4)	65 (67.0)	34 (53.1)
14.	Drug of choice for Giardiasis in pregnancy	15 (16.4)	23 (23.7)	16 (25.0)
15.	A child born with multiple congenital defects including cleft palate, neural tube defect , ASD and microcephaly, which of the following drug was probably used by the mother ?	50 (54.9)	56 (57.7)	48 (75.0)

Fig.1. Response of Pre-Final Year Students

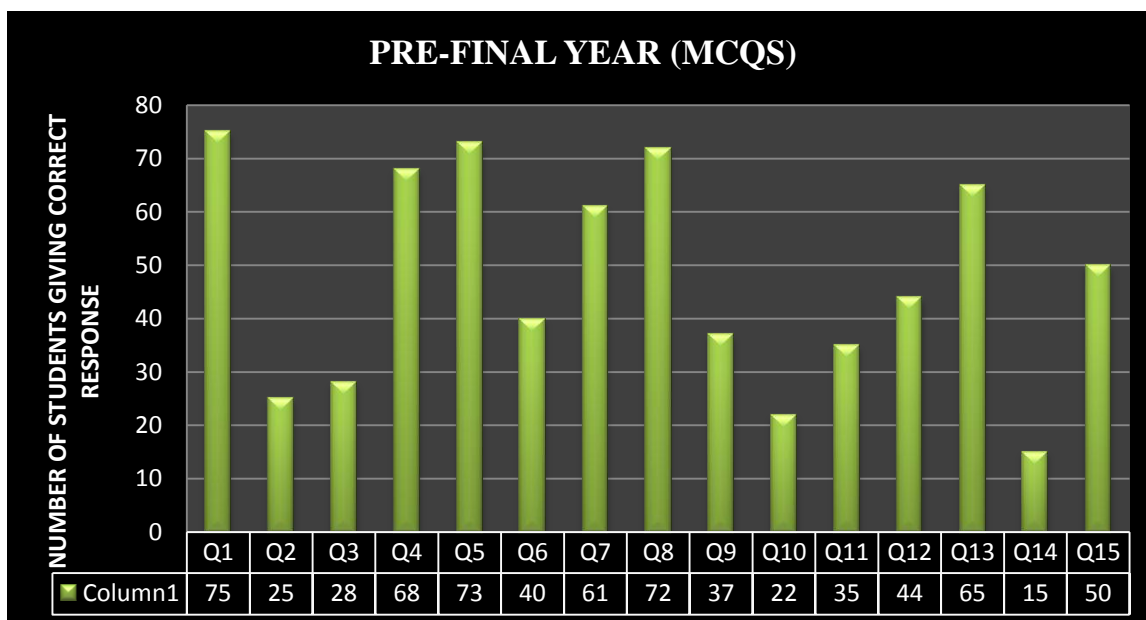


Fig.2. Grading of pre-final year students

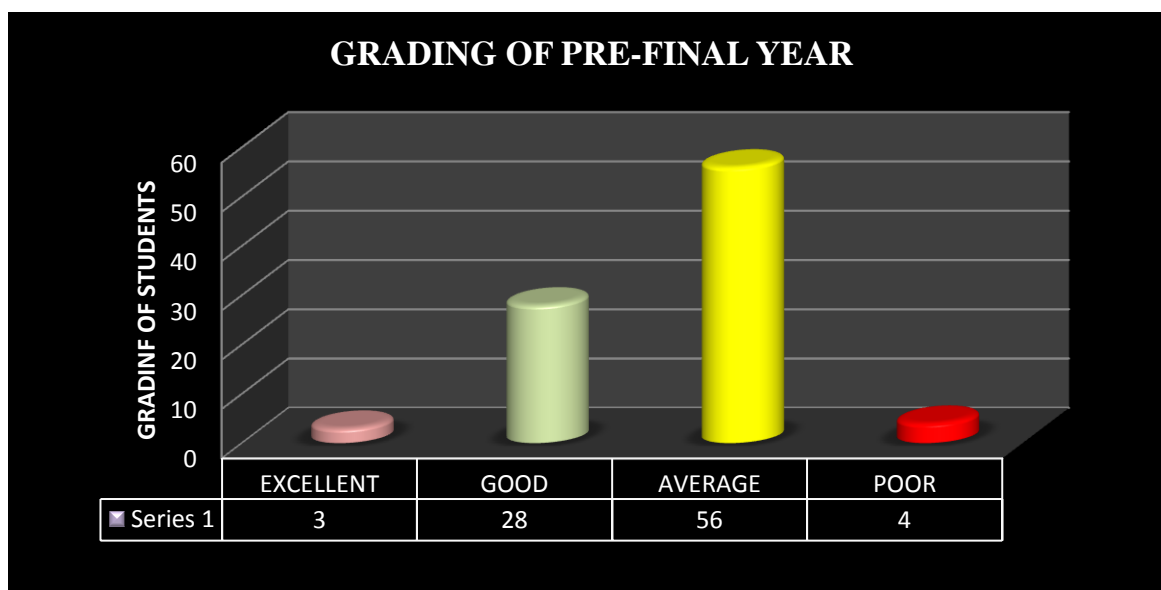


Fig.3. Response of final year students

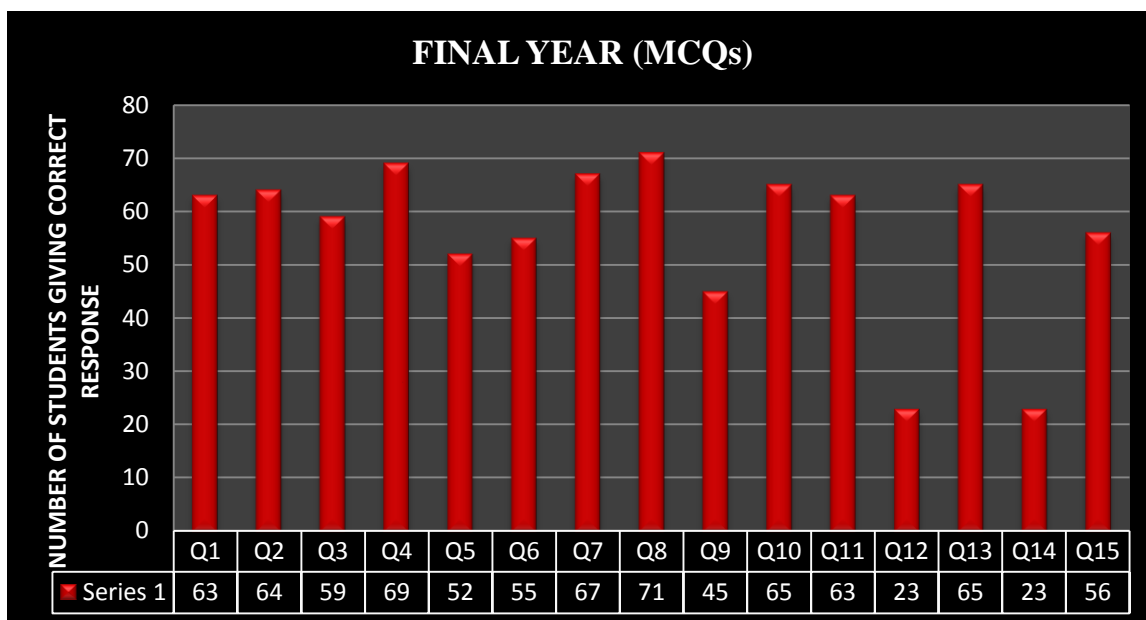
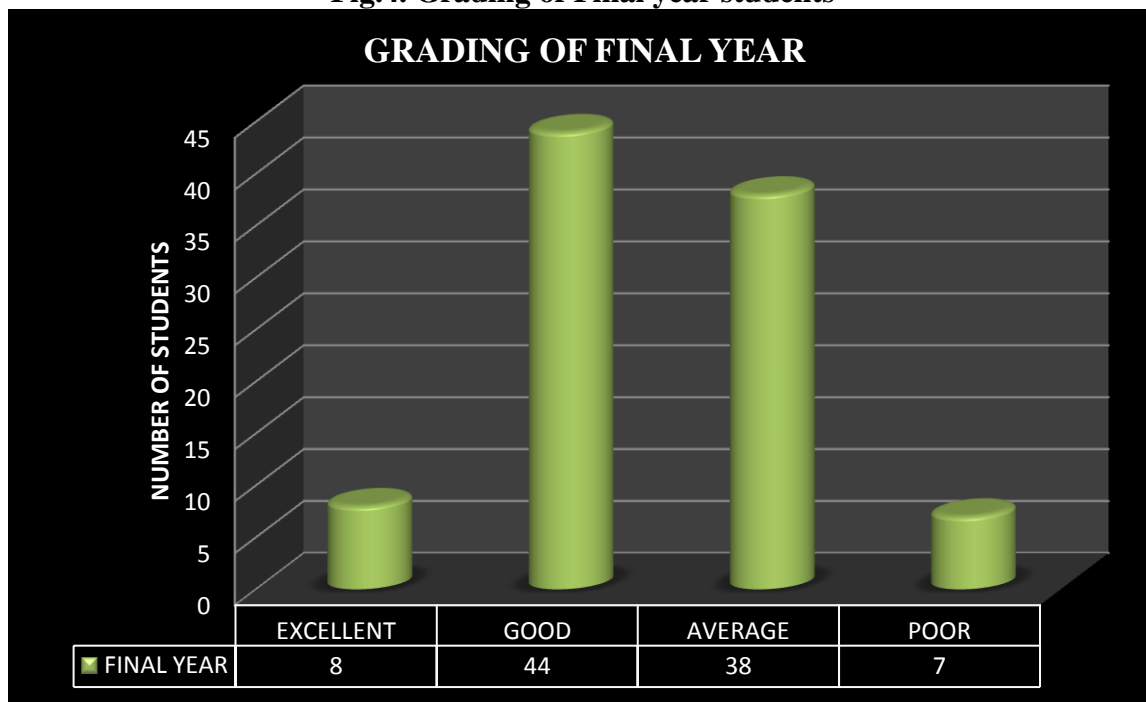


Fig.4. Grading of Final year students



SECTION-1. RESPONSE OF INTERNS

Fig.5. Responses of Interns

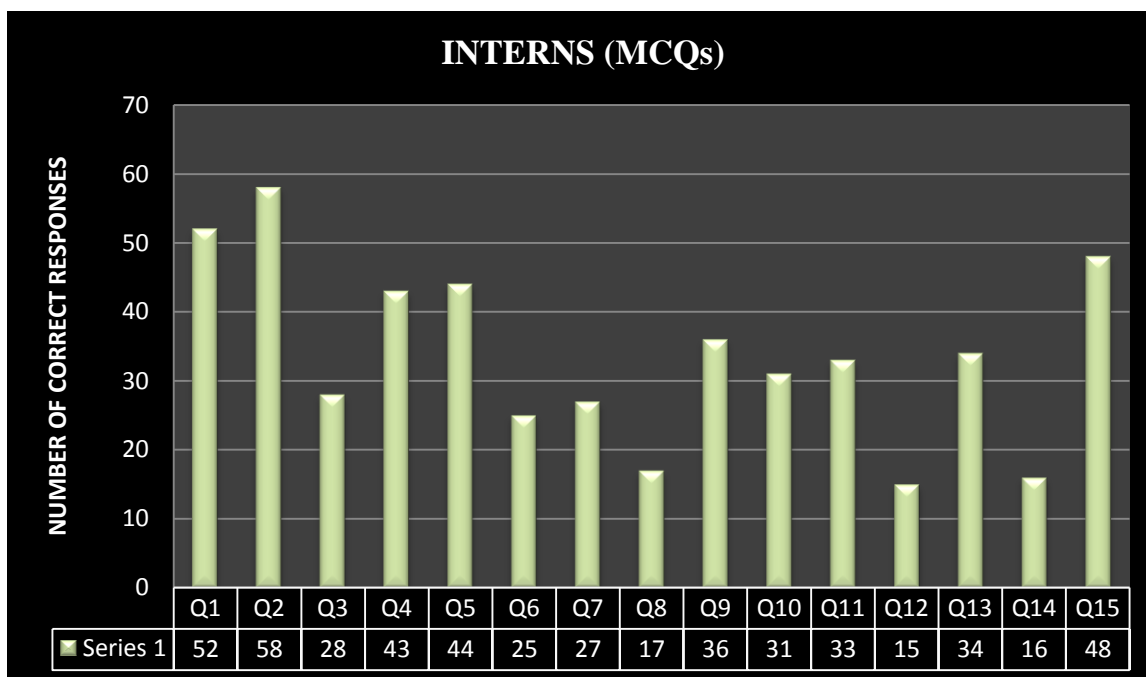


Fig.6. Grading of Interns

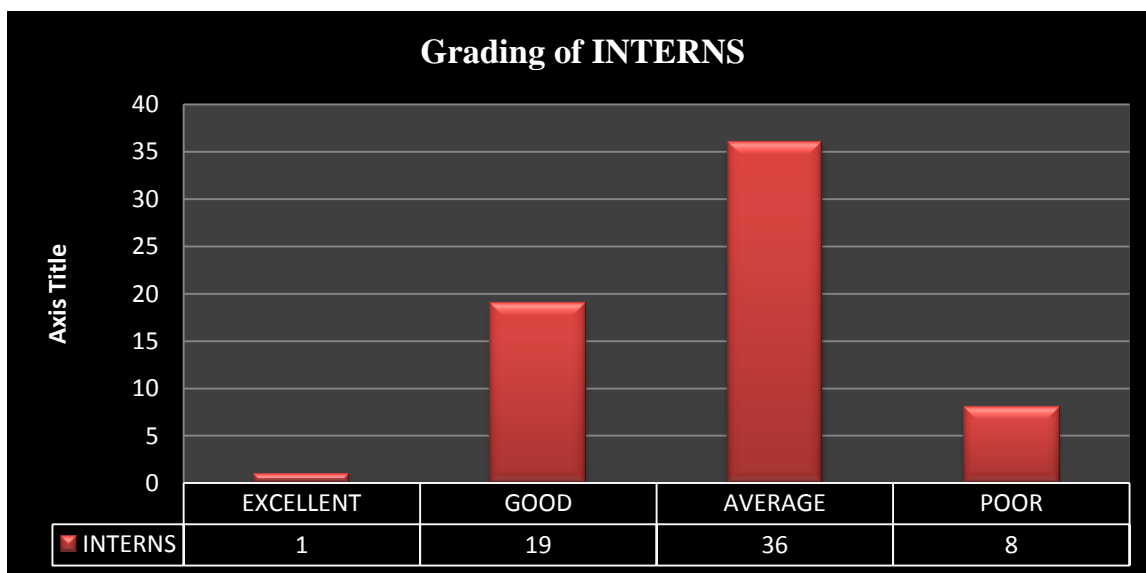
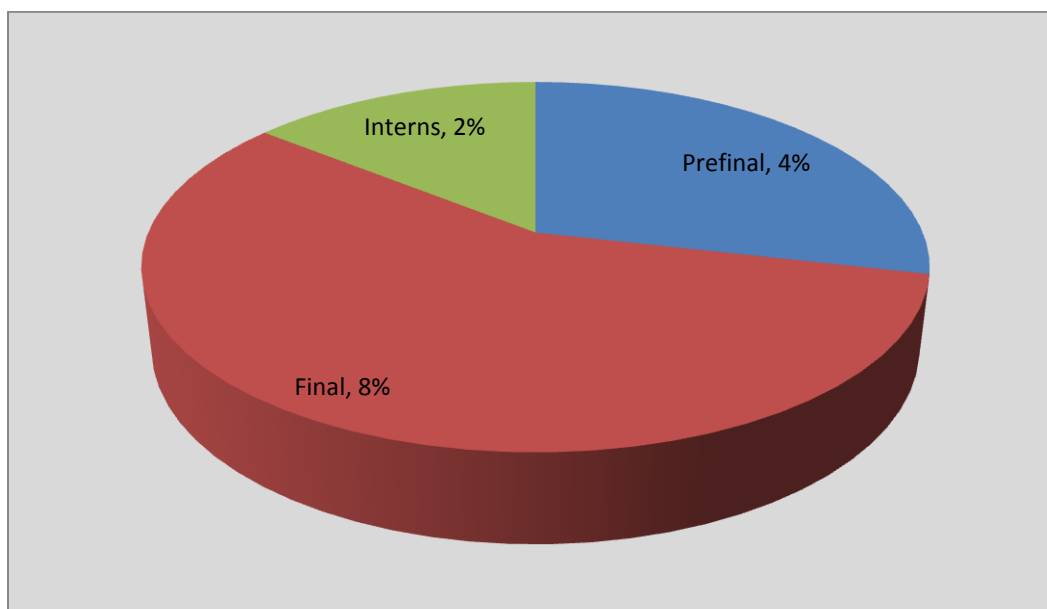
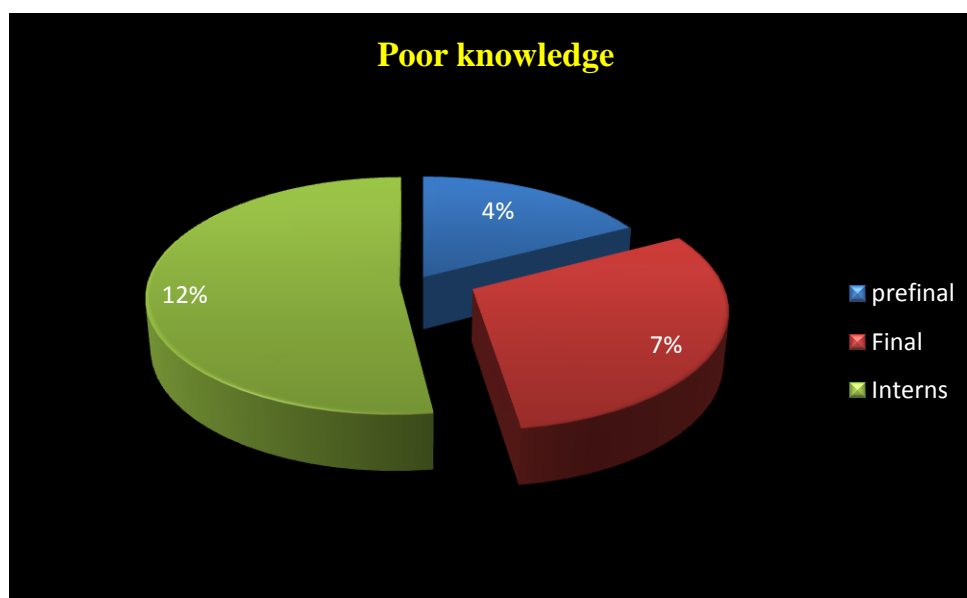


Fig.7.Percentage of students with excellent knowledge**Fig.8.Percentage of students with poor knowledge**

Discussion

Considering the burden of teratogenic defect on patients, their family and the preventable nature of these defects, awareness regarding teratogenicity among the medical students is necessary. In our study, 24% of pre-final year students, 67% of final year students and 48% of interns exhibited good knowledge about FDA pregnancy category A. In our study, 38% of pre-final year students, 65% of final

year students and 51% of interns exhibited good knowledge about FDA pregnancy category X.

Among interns, the knowledge was found to be excellent in 2% of the respondents, 30% were good, 56% were average and the remaining 12% exhibited a poor knowledge.. In another study conducted by Tantradi et al, it was found out that 80% of the students knowledge were average, a finding similar to our study¹.

Among final year students, the knowledge was found to be excellent in 8% of the respondents, 46% were good, 39% were average and the remaining 7% exhibited a poor knowledge. Esra et al reported a similar outcome where only 2.5% of the participating students were considered to have good knowledge about medicine use during pregnancy⁶. Among pre-final year students, the knowledge was found to be excellent in 3% of the respondents, 31% were good, 62% were average and the remaining 4% exhibited a poor knowledge. Students' learning in their final year and pre-final year tend to be more directed towards what they expect to meet in the examinations than what they will meet later in clinical applications.

The result of our study throws light on the lacunae of knowledge in the assessed interns. Most of the students are lacking in-depth knowledge of likely incidence or prevalence of harms and benefits of commonly used medications and so made highly inaccurate assumptions. Medical students need to contextualize facts, evidence, and ethical information and consider patient individual factors before arriving at decisions. However, the difference in scoring among interns, final and prefinal year students in their confidence levels could be due to the different amount of exposure to patients. In addition the results of this study may not have external validity

Conclusion

A confident doctor can provide treatment more effectively and electively. Many under graduates and graduates feel under-prepared to take on prescribing responsibilities after graduation. Confidence in the profession is achieved from the training. Additionally medical undergraduate students and interns must be trained efficiently to treat a pregnant woman. These findings strongly suggested expanding the knowledge about prescribing drugs among under graduates and interns. This can be made possible by giving adequate exposure to clinical pharmacology in prefinal, final and internship phase. Thus in prefinal, final year and internship phase, clinical pharmacology postings can be implemented along with other clinical postings.

Limitations

Single centre study

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Declarations

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Conflict of interest: None declared

Ethical approval: This study was registered with Institutional Human Ethical Committee.

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