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Original Research Article

Questionnaire-based assessment on knowledge, attitude and practice of fixed-dose combination in medical undergraduates of a tertiary care teaching hospital, Kanpur

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ABSTRACT

Background: Aim was to assess knowledge, attitude and practice of second-year medical undergraduates towards FDC.

Methods: A cross-sectional questionnaire-based study was conducted among second-year medical undergraduates of GSVM, medical college, Kanpur in the form of a pre-test, and after sensitizing the students about FDC, the same questionnaire was given as a post-test.

Results: A total of 251 students, 157 students participated in the pre-test and 140 participated in the post-test. The percentage of male students in pre and post-test were more (58% and 61.4%) compared to female students (42% and 38.6%). After conducting a post-test survey, there is a significant improvement in knowledge and attitude toward FDC.

Conclusions: The inclusion of FDC in the undergraduate curriculum is a good initiative by NMC but there is a need to conduct more CME, symposiums, and workshops in medical colleges to update the knowledge regarding FDC among medical undergraduates.

Keywords: Fixed dose combination, Drug resistance, Pre-test, Post-test

INTRODUCTION

A fixed dose combination (FDC) consists of two or more active drugs in a single dosage form.¹⁻² FDC drugs are acceptable only when the dosage of each ingredient meets the requirement of a defined population.³

FDCs cause increases in the efficacy of individual drugs and decrease the chances of drug resistance (e.g., antimicrobial drugs). It also improves patient compliance and decreases the pill burden on the patients. FDC reduces the risk of medication non-adherence, which is important in patients with chronic diseases.⁴⁻⁵

Disadvantages due to the use of FDCs are irrational prescription, ineffective and unsafe treatment,

prolongation of illness, and higher treatment cost.⁶⁻⁷ The rationality of FDCs should be based on certain aspects such as: The drugs in the combination should act by different mechanisms. The pharmacokinetics must not be widely different. The combination should not have supra-additive toxicity of the ingredients.⁸⁻⁹

FDCs may be used for the treatment of various disorders e.g., cardiovascular diseases, diabetes, infectious diseases (bacterial infections), gastrointestinal infections, orthopedic conditions, cough and cold, HIV infection, tuberculosis (TB), psychiatric disorders, and respiratory diseases and in the ophthalmic practice like glaucoma, FDC shows better effectiveness and adherence than a single drug.^{10,11}

For communicable diseases like TB and human immunodeficiency virus (HIV) infection, FDC products significantly improve clinical outcomes by preventing drug resistance and improving adherence.¹² use of FDCs in chronic diseases (e.g., diabetes and hypertension) improves adherence, increases patient satisfaction, and lower costs.¹³

FDCs must be based on convincing therapeutic rationalization and be carefully justified and clinically relevant. FDCs must be safe and effective for the claimed indications and it cannot be assumed that the benefits of the FDC outweigh its risks. As for any new medicine, the risks and benefits must be defined and compared. Particular attention should be drawn to the doses of each active substance in the FDC.¹⁴

To curb the irrational use of FDC in India, a multistep approach involving all stakeholders, for example, consumers, physicians, regulatory authorities, industry, and academicians, is needed. The enforcement mechanism by the regulators needs to be strengthened. Both the central and state regulators must harmonize their procedures for licensing FDCs.¹⁵⁻¹⁶

A study of knowledge, attitude, and practice is the most important tool to assess the benefits and lacunae on topic FDC among medical undergraduates so that effective steps can be taken to improve the outcome. A large number of FDCs are manufactured annually; hence, knowledge about prescribing FDCs is important for better health outcomes. Thus, the present study was conducted to evaluate the knowledge, attitude, and practices about prescribing FDCs among medical undergraduates at a tertiary care teaching hospital in Kanpur.

METHOD

This is a cross-sectional study. It was conducted by the department of pharmacology, GSVM medical college, Kanpur from 10 April 2023 to 25 April 2023. A questionnaire-based survey assessing the knowledge and attitude and practice of second-year medical undergraduates on topic FDC. A self-designed structured questionnaire has been prepared consisting of 14 questions using Google form and each participant was explained the objective of the study. Consent was taken from the students. The link to the questionnaire has been shared. Firstly, the questionnaire was administered as a pre-test. The pre-test defined the baseline knowledge and attitude and practice of students regarding FDC. After sensitizing the students by taking lectures on FDC. The same pre-test questions were administered in the form of a post-test. Students were given 10 min to give the response. Data were reported as frequencies and percentages.

RESULT

Out of the total of 251 students, 157 students participated in the pre-test and 140 students participated in post-test.

Table 1: Demographic details.

Characteristics	Pre-test, (n=157) (%)	Post test, (n=140) (%)
Gender		
Male	91 (58)	86 (61.4)
Female	66 (42)	54 (38.6)
Age (In years)		
18-21	102 (64.9)	86 (61.3)
22-27	55 (35)	54 (38.5)

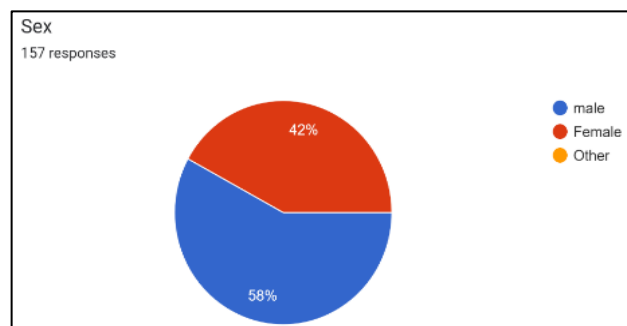


Figure 1: Male: female ratio pre-test.

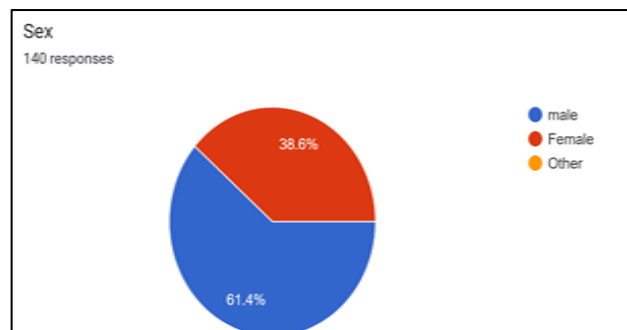


Figure 2: Male: female ratio post-test.

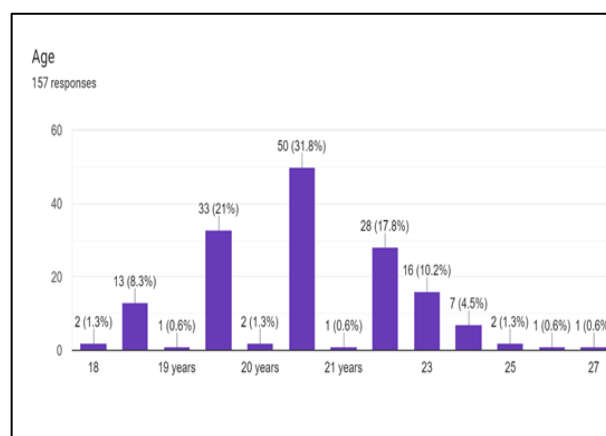


Figure 3: Age distribution pre-test.

Total female participants in pre and post-test were 42% and 38.6% respectively. While male participants were 58% and 61.4% in pre and post-test respectively. Most of

the students are between 20 and 21 years old in both pretest (31.8%) and post-test (27.9%).

Demographic details and assessment of student's knowledge and attitude towards FDC in both pre-test and post-test have been shown below

Table 2: Responses of students on the KAP-based pre-test and post-test questions.

S. no.	Questions			
	Knowledge-based questions			
Q. 1	Have you heard abbreviation FDC?			
	Yes	No		
Pre-test	139 (88.5%)	18 (11.5%)		
Post test	135 (96.4%)	5 (3.6%)		
Q. 2	If yes then source of knowledge is			
	Academic books	Internet	Research article	Others
Pre-test	58.5%	23.1%	0	15.6%
Post-test	89.1%	10%	0	0.9%
Q.3	FDC stands for			
	FDC	Full dose combination	FDC	None
Pre-test	156 (99.4%)	0%	1(0.6%)	0%
Post-test	140 (100%)	0%	0%	0%
Q. 4	What is the FDC?			
	Correct answer	Wrong answer		
Pre-test	126 (80.3%)	31 (19.7%)		
Post-test	126 (90%)	14 (10%)		
Q. 5	What are the advantages of FDC?			
	Correct answer	Wrong answer		
Pre-test	133 (84.7%)	24 (15.3%)		
Post-test	131 (93.6%)	9 (6.4%)		
Q. 6	What are the disadvantages of FDC?			
	Correct answer	Wrong answer		
Post-test	101 (64.7%)	55 (35.3%)		
Pre-test	123 (88.5%)	16 (11.5%)		
Q. 7	Examples of fixed combinations are			
	Correct answer	Wrong Answer		
Pre-test	129 (82.5%)	27 (17.5%)		
Post-test	122 (87.8%)	17 (12.2%)		
Q. 8	Which FDC is banned in India?			
	Correct answer	Wrong answer		
Pretest	99 (64.7%)	34 (35.3%)		
Post-test	102 (73.9%)	36 (26.1%)		
	Attitude and practice-based questions			
Q. 9	Do you think that FDC is better than a single drug?			
	Yes	No		
Pre-test	91.7%	8.3%		
Post-test	96.4%	3.6%		
Q. 10	Do you think that FDC should be increased in India?			
	Yes	No		
Pre-test	93%	7 %		
Post-test	97.1%	2.9%		
Q. 11	Do you think government initiatives are necessary to promote FDC in India?			
	Yes	No		
Pre-test	92.3%	7.7%		
Post-test	96.4%	3.6%		
Q. 12	Have you experienced any interaction while taking FDC?			
	Yes	No		
Pre-test	56.4%	43.6%		

Continued.

S. no.	Questions	
Post-test	58.3%	41.7%
Q. 13	Will you prescribe FDC while prescribing clinically	
	Yes	No
Pre-test	89.7%	10.3%
Post-test	97.1%	2.9%
Q. 14	Will you spread awareness about FDC among patients?	
	Yes	No
Pre-test	94.9%	0.4%
Post-test	97.9%	2.1%

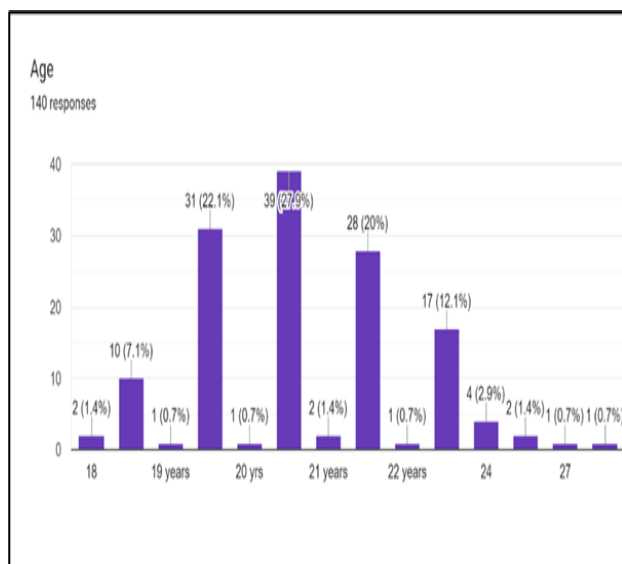


Figure 4: Age distribution post-test.

From the above table, we concluded that most negative responses are converted into positive ones during the post-test. In our study, 88.5% of study participants in pre-test and 96.4% of study participants in post-test were aware of FDC. In our study source of knowledge is academic books (58.5%) in pretest and 89.1% in post-test, Internet (23.1%) in pretest, and 10% in post-test.

In pretest 84.7% of students and in post-test 93.6% of students Have knowledge of advantages. So, the students are convinced that FDC should be an integral part of their curriculum.

DISCUSSION

This KAP (knowledge, attitude, and practice) study provides the basic perception of matter, prejudiced ideas, and interest in the subject. This study gives an idea about the current understanding of FDCs and where we need to strengthen the cord. In practice, most physicians and specialists prefer FDCs, but our study's concern is to give a clear picture of whether the present medical graduates are aware of the FDC. In this study, most students have an average or poor score in KAP. Among them, the post-test score is better than the pre-test score.

The findings of the study suggest a huge scope for improving the awareness and knowledge about the fixed drug combination among the students who will be the backbone of health care delivery in the future. For this, it should also be included in their curriculum as part of their study.

In a study conducted by Ravichandran et al among medical practitioners in tertiary care hospital, 99% of study participants were aware of the FDC while in our study 88.5% of study participants in pre-test and 96.4% of study participants in post-test were aware of FDC. In their study, source of knowledge was the Internet (58%), followed by textbooks (42%) and colleagues (37%), while in a study conducted by Gupta et al among doctors, the source of knowledge is textbooks followed by journals.^{17,18} In our study source of knowledge is academic books (58.5%) in pretest and 89.1% in post-test, internet (23.1%) in pretest and 10% in post-test.

In a study conducted by Vinnakota et al among dental postgraduate students, 45.6% of students are unaware of FDC while in our study 11.5% in the pretest and 3.6% in the post-test are unaware of FDC.¹⁹

According to the study participants advantages of FDC are increased patient compliance, less cost, enhanced drug effect, and decreased chance of adverse drug reactions that is similar to the study conducted by Goswami et al.²⁰

Limitations

This topic is new in curriculum in medical undergraduate so there is not more questionnaire-based study.

CONCLUSION

The study is assessing the knowledge, attitude and practice of second-year medical undergraduates towards FDC which has significantly improved from the pre-test to the post-test. We have tried to explore their point of view towards different learning methods on this key topic. However, after the implementation of FDC in the hospital and the involvement of students in day-to-day FDC prescribing activity without making it a burden, we can say our educational interventions have become efficiently successful. FDC has benefits for a healthcare organization that requires a careful review of the evidence, practicality,

and cost. Indications of improved outcomes, reduced costs, safety, and convenience to patients are important considerations. There should be a thorough and structured review process before approving the addition of an FDC product to a healthcare organization's formulary.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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