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Views of postgraduate students and postgraduates with reference to the competency-based postgraduate training programme for MD in pharmacology

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ABSTRACT

Objectives: The curriculum for MD pharmacology was revised by the National Medical Commission in India in 2022. Hence, to know the views of postgraduate (PG) students and PG for the changes done and have future suggestions, this study was conducted.

Materials and Methods: This was a cross-sectional observational study. The questionnaire was shared in the form of a Google link, which was kept open for 1 month, and the candidates were requested to share the message along with a link to the questionnaire with their colleagues in India. The study population was PG students in MD pharmacology and PGs from India. The sample size included all the responses (116) received within a month. The sampling method was Snowball Sampling. The data were collected in the form of a Google sheet and analysed using descriptive statistics.

Results: One hundred and sixteen responses were collected after 30 days of sharing the link of Google Forms. Forty students and 76 PGs participated in the study. It was found that the majority of PG students and PGs believe that most changes from the new curriculum are required, except the inclusion of the District Residency Programme (DRP), Mandatory rotational postings and animal experiments.

Conclusion: A new programme would be adequate, but it would be challenging to implement. DRP, Animal experiments and Mandatory rotational postings (according to the views of PG students) were perceived to be unimportant in the new program. Otherwise, in the views of Pharmacologists, the new programme is a welcome change.

Keywords: Academic, Animal experiments, Curriculum, District residency programme, pharmaceutical industry

INTRODUCTION

MD pharmacology as a specialisation course was established in 1950 in India. Due to the absence of a uniform curriculum, curricula designed by universities were focused on traditional learning and not competency-based skill development.[1] In 2018, a common curriculum was devised by the Medical Council of India (MCI). This curriculum was competency-based which included knowledge, skills (practical, clinical, writing and communication), research and professionalism.[2]

This curriculum focused on making pharmacologists competent not only in academics, but also pharmaceutical industry, clinical research, governmental institutions and scientific writing. The animal experiment component has been curtailed with clear guidelines. Teaching skills and clinical pharmacology skills have been given proper place.[2] The desirable shift from animal-based studies to more relevant clinical exercises was taken into consideration.[3]

This curriculum was revised as the revised guidelines for the competency-based postgraduate (PG) training programme for MD in pharmacology published by the PG Medical Education Board, National Medical Commission in 2022.[4] There has been a major revision in the curriculum, which will be implemented in the near future.

The objective of the present study was to study the opinions of PG students and medical teachers with reference to the revised programme for MD in pharmacology.

MATERIALS AND METHODS

It was a descriptive cross-sectional questionnaire-based study conducted at S.B.K.S. Medical Institute and Research Centre, Sumandeep Vidyapeeth, Piparia, Vadodara. The study was initiated after obtaining ethical approval from the Institutional Ethics Committee.

All PG Students in MD pharmacology, PGs in MD pharmacology, and other medical pharmacology teachers of Medical Colleges in India, irrespective of their job profile, were included in the study. PG students and PGs in medical fields other than pharmacology were excluded from the study.

The differences in the guidelines for the curriculum of 2018 and 2022 were studied and summarised. Based on these differences, a questionnaire was designed. In the introductory part of the questionnaire, the individuals were informed regarding the confidentiality of the study and individuals who responded were included considering their implied consent to participate in the study. The summary of differences in the older and newer guidelines was shared for ready reference, along with links to the guidelines [Annexure 1].

The questionnaire consisted of 13 questions containing the designation, experience in years and place of employment [Annexure 2]. The other questions (closed-ended) were divided on the basis of domains of Research, Clinical Pharmacology, Assessment, Postings and overall impression. Two open-ended questions asked for pros and cons/ suggestions for the better implementation of the guidelines. The questionnaire was validated internally as well as externally by pharmacologists.

The questionnaire was shared in the form of a Google link, which was sent by WhatsApp, Facebook, Gmail and SMS. The link for the Google form was kept open for 1 month, and the candidates were requested to share the message along with a link to the questionnaire with their colleagues. The snowball sampling technique was applied for the collection of data.

The sample size included all the responses (116) received within a month. The responses received were screened for the above selection criteria, and relevant responses were included in the study. The data were collected in the form of a Google sheet and analysed using descriptive statistics.

RESULTS

Table 1 displays responses of participants with regards to the changes in Research, Clinical Pharmacology domain and assessment. The inclusion of requirement of additional research project, training in Good publication practices and additional CMEs were considered essential by the responders. Similarly, inclusion of topics like functioning of the Drugs and Therapeutics Committee, Hospital formulary development, Drug information services, Medication error detection and mitigation advice, Antimicrobial resistance and antibiotic stewardship, Drug counselling as well as Emergency drugs used in crash cart/ resuscitation were opined to be necessary. Also changes suggested in summative assessment were welcomed by majority of responders. The responses were similar irrespective of qualification of responders.

Responses of participants to other questions are displayed in Table 2. Addition of Case presentation, case work up, case handling/management in the Formative assessment were considered beneficial by the responders. The revised student appraisal form, although appraised by majority, scored lesser (78, 67.2%) as compared to responses to other questions. Similarly, mandatory rotational postings were considered not beneficial by half of Undergraduate responders (20), while 52 (68.4%) Postgraduates were in favour of the postings. Training in MEU and DOME were considered impactful in students overall growth by most of the responders. Inclusion of in vivo/in vitro animal experiments as desirable instead of mandatory was considered to be in alignment with present scenario by most of the responders. Most of the responders were not in the favour of DRP. It was opined by the majority that the revised programme was necessary and at the same time challenging to implement.

DISCUSSION

Due to non-uniformity, the older pharmacology curriculum devised by Universities in India was more oriented toward academics. However, there have been many advances in the subject and changes in guidelines for animal and human experimentation for both academics as well as research, which necessitated changes in the teaching curriculum of pharmacology. The focus of practical teaching in pharmacology has been shifted from animal and pharmacy-based studies

Table 1: Responses of participants with regard to the changes in research, clinical pharmacology domain and assessment.

Question	Response	PG student (%)	PG (%)	Total (%)
1. With respect to the research domain, give your opinion regarding the following requirement added in the programme:				
a. Students are required to conduct additional research projects outside of their thesis work	No comment	4 (10)	3 (3.9)	7 (6)
	Not required	4 (10)	19 (25)	23 (19.8)
	Required	32 (80)	54 (71.1)	86 (74.1)
b. Training in Good Publication practices	No comment	1 (2.5)	1 (1.3)	2 (1.7)
	Not required	2 (5)	3 (3.9)	5 (4.3)
	Required	37 (92.5)	72 (94.7)	109 (94)
c. Two presentations at national level conference and one research paper in an indexed journal	No comment	6 (15)	8 (10.5)	14 (12.1)
	Not required	7 (17.5)	13 (17.1)	20 (17.2)
	Required	27 (67.5)	55 (72.4)	82 (70.7)
d. Attend scientific meetings, CME programme (at least two each)	No comment	1 (2.5)	4 (5.3)	5 (4.3)
	Not required	4 (10)	4 (5.3)	8 (6.9)
	Required	35 (87.5)	68 (89.5)	103 (88.8)
2. With due respect to the expanding scope of pharmacology, is it necessary to include the following topics under clinical pharmacology:				
a. Functioning of the Drugs and Therapeutics Committee	No comment	3 (7.5)	2 (2.6)	5 (4.3)
	Not required	3 (7.5)	4 (5.3)	7 (6)
	Required	34 (85)	70 (92.1)	104 (89.7)
b. Hospital formulary development	No comment	5 (12.5)	3 (3.9)	8 (6.9)
	Not required	6 (15)	6 (7.9)	12 (10.3)
	Required	29 (72.5)	67 (88.2)	96 (82.8)
c. Drug information services	No comment	5 (12.5)	5 (6.6)	10 (8.6)
	Not required	4 (10)	4 (5.3)	8 (6.9)
	Required	31 (77.5)	67 (88.2)	98 (84.5)
d. Medication error detection and mitigation advice	No comment	0 (0)	1 (1.3)	1 (0.9)
	Not required	1 (2.5)	3 (3.9)	4 (3.4)
	Required	39 (97.5)	72 (94.7)	111 (95.7)
e. Antimicrobial resistance and antibiotic stewardship	No comment	1 (2.5)	1 (1.3)	2 (1.7)
	Not required	3 (7.5)	1 (1.3)	4 (3.4)
	Required	36 (90)	74 (97.4)	110 (94.8)
f. Drug counselling	No comment	2 (5)	6 (7.9)	8 (6.9)
	Not required	3 (7.5)	7 (9.2)	10 (8.6)
	Required	35 (87.5)	63 (82.9)	98 (84.5)
g. Emergency drugs used in crash cart/resuscitation	No comment	2 (5)	5 (6.6)	7 (6)
	Not required	3 (7.5)	3 (3.9)	6 (5.2)
	Required	35 (87.5)	68 (89.5)	103 (88.8)
3. In the summative assessment, give your opinion regarding the following requirement added/modified in the programme:				
a. Demonstration of effects of drugs/interpretation of results in human in short exercise	No comment	7 (17.5)	7 (9.2)	14 (12.1)
	Not required	5 (12.5)	9 (11.8)	14 (12.1)
	Required	28 (70)	60 (78.9)	88 (75.9)
b. OSPE exercises which includes exercises previously under short and long exercises	No comment	7 (17.5)	9 (11.8)	16 (13.8)
	Not required	6 (15)	9 (11.8)	15 (12.9)
	Required	27 (67.5)	58 (76.3)	85 (73.3)
c. OSPE of selecting a P-drug and writing rational prescriptions	No comment	2 (5)	7 (9.2)	9 (7.8)
	Not required	4 (10)	3 (3.9)	7 (6)
	Required	34 (85)	66 (86.8)	100 (86.2)
d. OSPE of identifying ethics related dilemmas/mistakes in clinical trial documents	No comment	5 (12.5)	5 (6.6)	10 (8.6)
	Not required	5 (12.5)	1 (1.3)	6 (5.2)
	Required	30 (75)	70 (92.1)	100 (86.2)
e. Assessment of teaching/presentation skills have been separated from Viva voce	No comment	5 (12.5)	5 (6.6)	10 (8.6)
	Not required	7 (17.5)	10 (13.2)	17 (14.7)
	Required	28 (70)	61 (80.3)	89 (76.7)

PG: Postgraduate, CME: Continuing medical education, OSPE: Objective structured practical examination

to clinically pertinent pharmacology exercises.[5] Various job profiles are expected from a pharmacologist in hospitals, the pharmaceutical industry and drug regulatory bodies.[6] A pharmacologist has a varied role to play in academics, industry and research.[7] The older curriculum did not include these requirements of the budding pharmacologist.

The present study was conducted to take the opinion of PG students and PGs in pharmacology with regard to the changes in the curriculum in MD pharmacology. Figure 1 shows distribution of participants with respect to their place of work and Figure 2 shows distribution of participants with respect to their qualification.

The inclusion of various requirements with respect to research, clinical pharmacology and assessment was considered essential by most of the participants [Table 1]. With regard to research, the inclusion of mandatory publication was likened to more exposure to research by some participants, while it was regarded by others as a non-productive task and could have benefitted more from Continued Medical Education. It was suggested that the overall focus on therapeutics, exposure to proceedings of ethics committees and research analysis was missing. Some participants felt that it would incur a financial burden on the students (not included in the table). Thus, although the changes in the curriculum for research were welcome, the opinions on mandatory publication and other requirements in research varied.

With respect to clinical pharmacology, the inclusion of topics of upcoming importance, such as drugs and therapeutic committee, hospital formulary development, drug information services, medication error detection and mitigation advice, antimicrobial resistance and antibiotic stewardship and drug counselling and emergency drugs, have been given importance [Table 1]. Some participants perceived that the curriculum is oriented to pharmaceutical jobs. However, others felt that it did

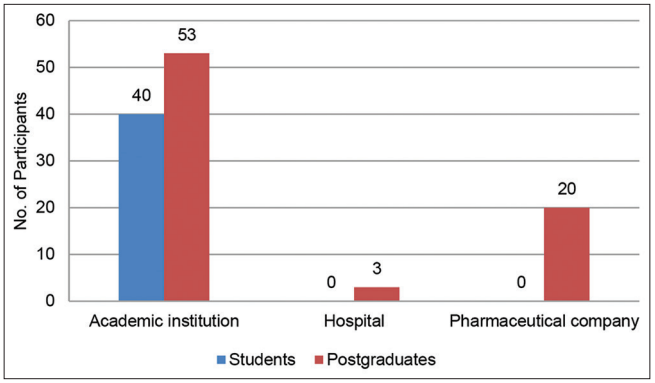

Figure 1: Distribution of participants with respect to place of work.

Table 2: Responses of participants to other questions.

Question	Response	PG Student	PG	Total
4. Case presentation, case work up, case handling/management have been newly added to the Formative assessment. Will these changes be beneficial for the overall academic growth of the Students?	Don't know	5 (12.5)	5 (6.6)	10 (8.6)
	No	8 (20)	4 (5.3)	12 (10.3)
	Yes	27 (67.5)	67 (88.2)	94 (81)
5. The revised student appraisal form has been elaborated with elements (Scholastic aptitude and learning, Work related to training, Professional attributes and Disposition) and subelements. Will this pattern help in overall assessment of the students?	Don't know	8 (20)	21 (27.6)	29 (25)
	No	6 (15)	3 (3.9)	9 (7.8)
	Yes	26 (65)	52 (68.4)	78 (67.2)
6. Is there a potential benefit in the mandatory rotational postings in relevant departments/units/institutions for MD pharmacology trainees?	Don't Know	4 (10)	9 (11.8)	13 (11.2)
	No	20 (50)	14 (18.4)	34 (29.3)
	Yes	16 (40)	53 (69.7)	69 (59.5)
7. Will training in teaching skills provided by the MEU or DOME for students have a significant impact on Student's overall growth?	Don't know	5 (12.5)	17 (22.4)	22 (19)
	No	6 (15)	10 (13.2)	16 (13.8)
	Yes	29 (72.5)	49 (64.5)	78 (67.2)
8. Do you think that inclusion of in vivo/in vitro animal experiments as desirable instead of mandatory is need of the hour?	Don't know	6 (15)	4 (5.3)	10 (8.6)
	No	10 (25)	19 (25)	29 (25)
	Yes	24 (60)	53 (69.7)	77 (66.4)
9. The Posting under 'DRP' of 3 months in District Hospitals/District Health System as a part of the PG Programme is mandatory for all postgraduate students. The posting will ensure that students acquire expected competencies. Do you suppose the inclusion of DRP as an important aspect of revision?	Don't know	3 (7.5)	11 (14.5)	14 (12.1)
	No	27 (67.5)	33 (43.4)	60 (51.7)
	Yes	10 (25)	32 (42.1)	42 (36.2)
10. Overall, do you think the new revision of MD Pharmacology programme was necessary?	Don't Know	10 (25)	6 (7.9)	16 (13.8)
	No	10 (25)	5 (6.6)	15 (12.9)
	Yes	20 (50)	65 (85.5)	85 (73.3)
11. Will the implementation of the new Programme be a challenging task for the teaching faculty?	Don't Know	3 (7.5)	9 (11.8)	12 (10.3)
	No	6 (15)	18 (23.7)	24 (20.7)
	Yes	31 (77.5)	49 (64.5)	80 (69)

PG: Postgraduate, MEU: Medical education unit, DOME: Department of medical education, DRP: District residency programme

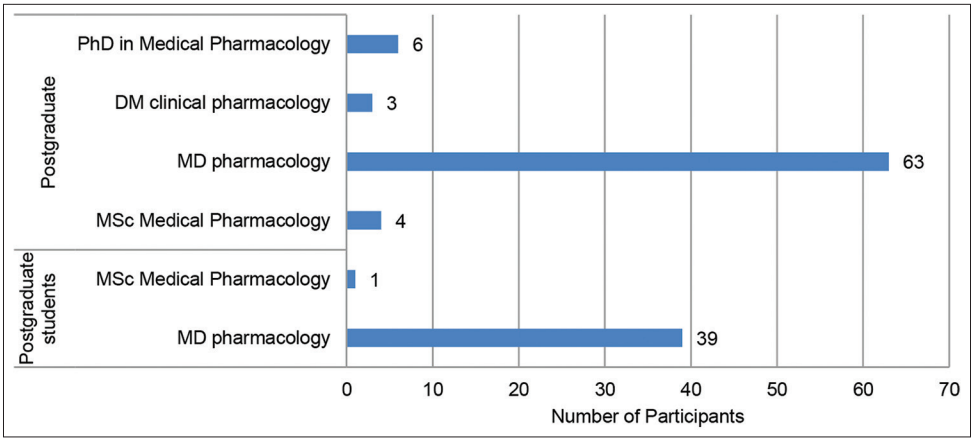

Figure 2: Distribution of participants with respect to their qualification.

not include Industry internship and lags job-oriented approach. Participants suggested a focused approach to Pharmacovigilance, Clinical Trial Exposure and Medical Marketing. The curriculum should focus on developing soft skills, including presentations, communication skills, decision-making, conflict resolution, project management, etc. Thus, although there have been changes in curriculum to include pharmaceutical requirements, these were perceived as insufficient by the PGs who worked in pharmaceutical industries.

Most of the participants supported the inclusion of training in the Medical Education Unit (MEU) in the curriculum. The training of medical teachers of India in MEU is mandatory for overall development as an academician. The PG students are future teachers and their training in MEU during postgraduation is a welcome sign. The uniformity in the summative and formative assessment was favoured by most of the participants [Table 2]. It was also suggested to include a common examination pattern for practical evaluation.

Most of the participants replied that animal experiments should be desirable and not mandatory [Table 2]. The use of simulation software and human studies instead of *in vitro* and *in vivo* studies in animals was supported by the participants. These opinions are in line with the changes in regulations of the use of animals for educational and training purposes by the Committee for the Purpose of Control and Supervision of Experiments on Animals and University Grants Commission[8,9] while a few suggested not to exclude experimental pharmacology, while it is believed that one cannot learn pharmacology completely without animal experiments,[10] The PG students may get acquainted with the essence of experimental pharmacology through simulation studies and save animals from unnecessary harm.

The majority of PG students were against Mandatory Rotational Postings as against the PGs. However, most of them opined that the 3 months District Residency Programme (DRP) was not necessary [Table 2].

These postings were perceived as a break in the teaching, and students with an inclination toward pharmaceutical jobs should instead be provided rotation duties to Pharmaceutical Companies. A few participants supporting these postings opined that it would give clinical exposure, promote active participation and help in practical application to the students. The participants opined that the structure of current health care needs to be modified to include the pharmacologist's view in therapy. Thus, the inclusion of flexible postings as per the interest of the PG students instead of the stress of mandatory rotational postings and DRP may be more welcome.

To summarise, the participants felt the necessity of the new programme, but also opined that implementation of the new programme will be a challenging task. The pros of the new curriculum, as perceived by the participants, were that it is centred around personal performance growth, focused on teaching and clinical skills. The implementation of the new curriculum was perceived as challenging, and the need for guidelines for proper execution and summative assessment was felt. It also gives less importance to preclinical studies.

Limitations of the study

The present study was conducted within a study period of 1 month. Although opinions from participants with various job profiles and experiences were recorded, the sample of the present study was small. However, complete anonymity was ensured to capture the unbiased opinions of the participants. No similar studies could be found from a comparison of the data of the present study.

CONCLUSION

DRP, Mandatory rotational postings (by PG students) and Animal experiments were perceived to be unimportant in the new programme. The new programme requires more focus on job requirements in Pharmaceutical Industries.

Otherwise, in the views of Pharmacologists, the new Curriculum is a welcome change.

Ethical approval

The research/study was approved by the Institutional Review Board at Sumandeep Vidyapeeth Institutional Ethics Committee (SVIEC), number SVIEC/ON/Medi/SRP/June/23/95, dated 21 June 2023.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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