



Original Article

Study of Knowledge, Attitude and Practices of “P-Drug” Concept Among Postgraduate Students and Interns at A Tertiary Care Hospital

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ABSTRACT

Background: Knowledge, attitudes, and practices (KAP) studies are useful in assessing healthcare professionals' awareness and behaviours regarding rational drug use. The World Health Organization (WHO) emphasizes rational prescribing, yet irrational use of medicines remains widespread. The concept of personal drugs (P-drugs) plays a crucial role in ensuring safe, effective, and patient-centered prescribing.

Aim: To assess the knowledge, attitudes, and practices of postgraduates and interns regarding the P-drug concept.

Methods: A cross-sectional study was conducted over one month at Government Medical College & Hospital, Akola. A randomized sample of 200 participants was enrolled after informed consent. Data were collected using a pre-validated questionnaire covering knowledge, attitudes, and practices toward the P-drug concept.

Results: The mean age of participants was 27.60 ± 3.65 years; 52% were males. Most participants (97%) were aware of the term “Rational Use of Medicine,” while 77% and 72% knew about the P-drug concept and treatment, respectively. Half (50%) were familiar with the STEP criteria for P-drug selection, and 88% agreed that P-drugs are important. The majority considered treatment cost (95%), socio-economic status (93%), and comorbidities (93%) while prescribing. Additionally, about 48% supported adding fixed-dose combinations to P-drug lists, and 92% encouraged colleagues to practice rational prescribing.

Conclusion: Although awareness of rational medicine use was high among participants, gaps remained in knowledge and application of the P-drug concept, particularly regarding STEP criteria and structured training. Enhancing institutional training and continuing medical education on P-drugs is crucial for rational prescribing and better patient outcomes.

Keywords: P-drug, Fixed-dose combination, Rational use of medicine.

INTRODUCTION

Knowledge, attitudes, and practices (KAP) studies are a recognized method for assessing people's understanding, beliefs, and behaviors concerning a specific subject. (Singh, 2008) In pharmacology, such studies are particularly important for assessing healthcare professionals' knowledge and practices associated to prescription use, adverse drug reactions, and pharmacovigilance. (Khilnani, 2008).

According to the World Health Organization (WHO), rational use of medicines is achieved when “patients receive medications appropriate to their clinical needs, in doses that meet their requirements, for an adequate period of time, and at the lowest cost to them and their community.” (WHO, 2002). Despite this principle, studies worldwide indicate that over half of all medications are improperly prescribed, dispensed, or sold, and a significant proportion of patients do not use

them correctly. (Kushwaha et al, 2023) Several factors contribute to this irrational use of medicines, including insufficient training of medical graduates, lack of robust drug regulatory systems, aggressive promotional activities, and inadequate access to reliable drug information, polypharmacy, and limited consultation time with patients. (Jyothi & Rathod, 2020)

Prescribing is inherently a complex responsibility that demands knowledge of essential medicines, rational prescribing principles, and the concept of personal or preferred drugs (P-drugs). The term “P-drug” refers to a clinician’s preferred choice of medication for a particular condition, encompassing the drug, its dosage form, dosage schedule, and duration of therapy. This concept is central to rational prescribing as it equips clinicians to make well-informed, consistent, and patient-centered treatment decisions. (Parsode et al, 2024)

The P-drug approach not only enables practitioners to identify effective medications and understand their benefits and limitations but also helps reduce decision-making time during clinical practice. Notably, drug selection must be based on scientific evidence and patient needs rather than external influences such as pharmaceutical promotions or hierarchical pressure from senior physicians. To facilitate rational prescribing, the WHO has outlined a structured six-step process for developing a logical treatment strategy: (Rissmann et al, 2012)

1. Evaluate the patient’s problems
2. Define the therapeutic objectives
3. List available treatment options (indication-oriented)
4. Justify the most appropriate treatment for the patient
5. Formulate a specific therapy plan (prescription)
6. Determine monitoring parameters and arrange follow-up

Adopting the P-drug concept promotes individualized, evidence-based, and rational prescribing. By tailoring drug selection to patient needs, clinicians can improve therapeutic outcomes, minimize healthcare costs, and enhance patient satisfaction. Ultimately, widespread implementation of this concept strengthens the quality of patient care and supports the broader goal of rational medicine use.

METHODOLOGY

A cross-sectional study was conducted over one month, from July 2024 to August 2024, at Government Medical College & Hospital. A randomized sample of 200 postgraduates and interns was recruited. Participation was voluntary, and informed consent was secured from all individuals before enrollment. Additionally, ethical approval was also obtained.

Data Collection:

Data were obtained through a pre-validated questionnaire designed and evaluated by subject matter experts. The questionnaire considered participants’ knowledge of the P-drug concept, their attitudes toward the use of P-drugs in the management of diseases, and their prescribing practices related to P-drugs.

Statistical Analysis:

All collected data were recorded in a computerized database and analyzed using descriptive statistical methods. Categorical data were expressed as numbers and percentages, while continuous data were summarized as mean values with their corresponding standard deviations.

RESULTS

Table-1: Distribution According to Age and Gender

Features	Intern	Postgraduate Student	Total
Age (Mean ± SD)	24.72 ± 2.46	28.97 ± 3.32	27.60 ± 3.65
Gender			
Female, n (%)	34 (53.13%)	62 (45.59%)	96 (48.00%)
Male, n (%)	30 (46.87)	74 (54.41%)	104 (52.00%)
Total, n (%)	64 (32.00%)	136 (68.00%)	200 (100.00%)

The study included 200 participants: 64 interns and 136 postgraduates, with a mean age of 27.60 ± 3.65 years. Females made up 48% and males 52% of the sample.

Table-2: Distribution of Postgraduate Students by Specialty

Specialty of Postgraduate Student	No of cases	Percentage
Anesthesia	10	7.35%
Biochemistry	2	1.47%

Community Medicine	12	8.82%
ENT	4	2.94%
Family Medicine	2	1.47%
General Medicine	12	8.82%
General Surgery	6	4.41%
Pharmacology / MD Pharmacology	62	45.59%
OBGY	8	5.88%
Orthopedics	2	1.47%
Pediatrics	2	1.47%
Pathology	10	7.35%
Physiology	2	1.47%
Radiology	2	1.47%
Total	136	100.00%
Intern		
None	64	100.00%

Among the 200 participants, all 64 interns had no specialty, while postgraduate students (n=136) were distributed across various specialties, with the majority in Pharmacology (45.59%). Other notable specialties included Community Medicine and General Medicine (each 8.82%), Anesthesia and Pathology (each 7.35%), and OBGY (5.88%), with the remaining specialties represented by 1–4% of postgraduates.

Table-3: Responses to Knowledge-Related Questions on P-Drug Concept and Rational Use of Medicines

Knowledge Related Questionnaire	Intern	Postgraduate	Total	
	No of cases	No of cases	No of cases	Percentage
1. Have you heard about the term Rationale use of medicine?				
No	6	0	6	3.00%
Yes	58	136	194	97.00%
2. Do you know about P-Drug concept?				
No	14	32	46	23.00%
Yes	50	104	154	77.00%
3. Do you know about P-Drug Treatment?				
No	18	38	56	28.00%
Yes	46	98	144	72.00%
4. Does P-Drug varies among Physicians?				
No	12	28	40	20.00%
Yes	52	108	160	80.00%
5. Did your undergraduate studies include teaching on the P-Drug concept?				
No	14	82	96	48.00%
Yes	50	54	104	52.00%
6. Do you Know Parts of Prescription?				
No	6	6	12	6.00%
Yes	58	130	188	94.00%
7. Do you know about the National list of Essential Medicine?				
No	18	12	30	15.00%
Yes	46	124	170	85.00%

The majority of participants (97%) were aware of the term “Rational Use of Medicine.” Knowledge of the P-Drug concept and P-Drug treatment was reported by 77% and 72% of participants, respectively, while 80% acknowledged that P-Drugs may vary among physicians. About half (52%) had been taught the P-Drug concept in their undergraduate course. Most participants (94%) knew the parts of a prescription, and 85% were aware of the National List of Essential Medicines.

Table-4: Responses to Attitude-Related Questions on P-Drug Concept and Rational Use of Medicines

Attitude Related Questionnaire	Intern	Postgraduate	Total	
	No of cases	No of cases	No of cases	Percentage

1. Are you attentive about the STEP criteria for choice of P-Drug?				
No	30	70	100	50.00%
Yes	34	66	100	50.00%
2. Is P-Drug Important?				
No	12	12	24	12.00%
Yes	52	124	176	88.00%
3. Do you use your P-Drug list at the Workplace?				
No	20	72	92	46.00%
Yes	44	64	108	54.00%
4. Does P-Drug varies among Physicians?				
Internet	10	28	38	19.00%
Medical textbooks	34	62	96	48.00%
NLEM or Hospital Drug Formularies	20	46	66	33.00%
5. Are P-drug and P-Treatment Same?				
No	46	114	160	80.00%
Yes	18	22	40	20.00%
6. Is cost of treatment a considerable factor while prescribing medicine?				
No	4	6	10	5.00%
Yes	60	130	190	95.00%
7. Is Socio-Economical background a considerable factor while prescribing medicine?				
No	6	8	14	7.00%
Yes	58	128	186	93.00%
8. Are Co-morbidities a considerable factor while prescribing medicine?				
No	8	6	14	7.00%
Yes	56	130	186	93.00%
9. Which is more important-				
Cost of Treatment	44	104	148	74.00%
Unit price of a particular Drug	20	32	52	26.00%
10. Does A Physician Decides a P-drug for the patient?				
No	12	24	36	18.00%
Yes	52	112	164	82.00%

Attitude-related responses indicated that half of the participants (50%) were aware of the STEP criteria for choosing a P-Drug, and a majority (88%) considered P-Drugs important. Over half (54%) reported using their P-Drug list at the workplace. Regarding sources of variation among physicians, 48% relied on medical textbooks, 33% on NLEM or hospital formularies, and 19% on the internet. Most participants (95%) considered treatment cost, 93% considered socio-economic background, and 93% considered comorbidities as important factors while prescribing. While 74% prioritized overall treatment cost over unit drug price, 82% affirmed that a physician decides the P-Drug for a patient. Additionally, 80% recognized that P-Drug and P-Treatment are not the same.

Table-5: Responses to practice-Related Questions on P-Drug Concept and Rational Use of Medicines

Practice Related Questionnaire	Intern	Postgraduate	Total	
	No of cases	No of cases	No of cases	Percentage
1. Is it necessary to include Fixed Dose Combination (FDC) in the P-Drug list?				
No	18	42	60	30.00%
Yes	46	94	140	70.00%
2. Are there any advantages of using P-Drug for Prescription?				
No	6	8	14	7.00%
Yes	58	128	186	93.00%
3. Do you think an Institutional teaching Program about P-Drug list is regularly needed after the MBBS course?				
No	6	10	16	8.00%
Yes	58	126	184	92.00%
4. Have you taken part in any educational sessions or workshops on the P-Drug list?				
No	46	110	156	78.00%
Yes	18	26	44	22.00%
5. Have you seen studies conducted earlier on the P-Drug concept?				
No	42	110	152	76.00%

Yes	22	26	48	24.00%
6. Would you promote and guide your colleagues in practicing evidence-based medication use?				
No	10	16	26	13.00%
Yes	54	120	174	87.00%

The responses to practice-related questions on the P-Drug concept and rational use of medicines indicated that most participants agreed on including FDCs in the P-Drug list (70%), recognized the advantages of using P-Drugs (93%), and supported regular institutional teaching programs (92%). However, only 22% had attended any CME or teaching program on P-Drugs, and 24% were aware of similar studies. Most respondents (87%) stated they would encourage colleagues to promote rational use of medicines.

DISCUSSION

The present study included 200 participants, comprising 64 interns and 136 postgraduates, with a average age of 27.60 ± 3.65 years. The gender distribution was 48% females and 52% males. All interns had no specialty, while postgraduates represented various disciplines, with the highest proportion from Pharmacology (45.59%). Other specialties included Community Medicine and General Medicine (8.82% each), Anesthesia and Pathology (7.35% each), and Obstetrics & Gynecology (5.88%), with the remaining branches contributing 1–4%. In comparison, **Singh et al, 2022** reported a mean age of 27.1 ± 2.4 years among residents, while **Malhotra et al. 2023** observed 55% females and 45% males, with maximum representation from General Medicine (14%) and Obstetrics & Gynecology (13%).

In the current study, most participants (97%) were aware of the term “Rational Use of Medicine.” Knowledge about the P-Drug concept and P-Drug management was reported by 77% and 72% of participants, respectively, while 80% acknowledged that P-Drugs may vary among physicians. About half (52%) had been taught the concept during their undergraduate curriculum. Awareness of prescription components was high (94%), and 85% were familiar with the National List of Essential Medicines.

Findings from other studies show varying levels of knowledge. **Ghazala & Vardhamane, 2023** reported that residents were more likely than interns to prescribe drugs from the Essential Medicines List, were better aware of adverse effects, and more often prescribed new drugs, though both groups preferred older drugs. **Syed et al, 2019** found that only 16.98% of residents were aware of Rational Drug Use and 43.39% could name the parts of a prescription. The level of knowledge regarding the P-Drug concept was 36.32% between residents and 22.75% among interns. Similarly, **Kanthi GR & Prayaga UK, 2020** (42%), **Tanuja et al, (2017)** (63.2%), and **Bajait et al, 2017** (35%) reported moderate awareness of the P-Drug concept.

In the current study, a majority of participants (97%) demonstrated understanding with the term judicious use of medicines. Awareness regarding the P-Drug concept and P-Drug treatment was observed in 77% and 72% of the respondents, respectively. About half (52%) had been taught the P-Drug concept during undergraduate training. Awareness of prescription components was high (94%), and 85% were familiar with the National List of Essential Medicines. In comparison, **Parsode et al, 2024** reported considerably lower awareness, with 45% of participants familiar with the term “rational use of medicines,” 48% aware of prescription components, and only 33% correctly identifying what P-Drug stands for. Awareness that P-Drugs may vary among physicians was 27%, while 39% were familiar with the STEP criteria. Similarly, only 42% recalled undergraduate teaching on P-Drugs, highlighting gaps in structured training.

Attitude-related responses in the present study showed that 50% of participants were aware of the STEP criteria, and 88% considered P-Drugs important. More than half (54%) reported actively using their P-Drug list at the workplace. The most common sources of P-Drug knowledge were textbooks (48%), NLEM or hospital formularies (33%), and the internet (19%). Patient- and cost-related considerations were also highly prioritized, with 95% considering treatment cost, 93% socio-economic background, and 93% comorbidities while prescribing. A majority (74%) placed emphasis on overall treatment cost rather than unit drug price, 82% agreed that the physician decides the P-Drug, and 80% recognized that P-Drug and P-Treatment are not the same.

In contrast, **Kumar & Swetha et al, 2024** reported that only 33% of clinicians considered treatment cost while prescribing, while higher proportions incorporated fixed-dose combinations (67.8%), generic drugs (70.9%), and essential medicines (69.6%) into their P-Drug lists. About 36.5% admitted being influenced by pharmaceutical promotions, while only 30.4% and 37% considered patients’ socio-economic background and comorbidities, respectively. Despite these limitations, 65.2% were familiar with the importance of drugs and 87.8% recognized common adverse effects of drugs prescribed, reflecting overall positive attitudes toward rational prescribing.

Additionally, in this study, responses to practice-related questions on the P-Drug concept and rational medicine use showed that 70% of participants favored including FDCs in the P-Drug list, 93% acknowledged clinical value of using P-Drugs,

and 92% supported regular institutional training programs. However, only 22% had participated in any CME or teaching session on P-Drugs, and 24% were aware of similar research. A majority (87%) reported that they would encourage colleagues to practice rational prescribing.

CONCLUSION

The present study highlights that while awareness of the Judicious *Rational Use of Medicines* and the concept of the p drug was relatively high among participants, gaps remain in knowledge of specific components such as STEP criteria and differentiation between P-Drug and P-Treatment. Attitudes toward rational prescribing were generally positive, with most clinicians recognizing the importance of cost, socio-economic background, and comorbidities in drug selection. However, practice-related responses revealed limited participation in CME programs and inconsistent use of P-Drug lists in routine practice. These findings emphasize the need for structured training, regular institutional teaching programs, and continuous professional development to strengthen the knowledge–attitude–practice (KAP) framework for rational prescribing.

REFERENCES

1. Bajait, C. S., Pimpalkhute, S. A., Sontakke, S. D., Dakhale, G. N., Jaiswal, K. M., & Urade, C. S. (2014). Evaluation of knowledge, attitude and practice of rational use of medicines among clinicians in a tertiary care teaching hospital. *International Journal of Nutrition, Pharmacology, Neurological Diseases*, 4(3), 153–157.
2. Ghazala, Z., & Vardhamane, S. H. (2024). A cross-sectional study of knowledge, attitude and practice of rational use of drugs among young health care professionals in a teaching hospital of North Karnataka. *Global Journal for Research Analysis*, 13(2). <https://doi.org/10.36106/gjra>
3. Garg, D. P., Hoysala Kumar, & Swetha, K. (2024). A cross-sectional survey of knowledge, attitude and practice of P-drug in a teaching hospital. *International Journal of Current Pharmaceutical Research*, 16(4), 68–71. <https://doi.org/10.22159/ijcpr.2024v16i4.5013>
4. Jyothi, D. B., & Rathod, N. (2020). Knowledge, awareness, and practice of P-drug concept among postgraduate students in a tertiary care hospital. *National Journal of Physiology, Pharmacy and Pharmacology*, 10(3), 253–253.
5. Kanthi, G. R., & Prayaga, U. K. (2020). A questionnaire-based survey among clinicians and postgraduates regarding knowledge, awareness and practice of P-drug in Government General Hospital, Rangaraya Medical College, Kakinada. *International Journal of Basic & Clinical Pharmacology*, 9(1), 77–81.
6. Khilnani, G. (2008). The concept of personal drugs in the undergraduate pharmacology practical curriculum. *Indian Journal of Pharmacology*, 40(3), 131–132.
7. Kushwaha, V., Agrawal, P., & Khan, N. F. (2023). Analysing second-year medical students' knowledge, attitude, and practice regarding the “P-Drug” concept: A KAP analysis. *European Journal of Biomedical*, 10(7), 268–275.
8. Malhotra, N., & Shivaswamy, M. S. (2023). Knowledge, attitude, and practices of rational use of medicines among the postgraduate residents of a tertiary care teaching hospital in North Karnataka: A facility-based cross-sectional study. *Indian Journal of Health Sciences and Biomedical Research*, 16(1), 71–78.
9. Parsode, R. B., Chandaliya, K. C., & Deshmukh, J. B. (2024). Knowledge, attitude, and practice of ‘P-drug concept’ among postgraduate residents and interns in a tertiary care teaching hospital in Maharashtra.
10. Rissmann, R., Dubois, E. A., Franson, K. L., & Cohen, A. F. (2012). Concept-based learning of personalized prescribing. *British Journal of Clinical Pharmacology*, 74(4), 589–596.
11. Singh, N. R. (2008). P-drug concept and the undergraduate teaching. *Indian Journal of Pharmacology*, 40(6), 285.
12. Singh, S., Yadav, A. K., Pichholiya, M., Kamlekar, S. K., & Gupta, S. (2022). Evaluation of knowledge, attitude, and practice about the rational use of medicines among junior residents in a tertiary care hospital in India. *Pharmacol Clin Pharm Res*, 7, 126–133.
13. Syed, S. H., Tabasum, R., Nazir, T., & Bhat, M. Y. (2019). Rational prescribing practice assessment among resident doctors in a tertiary care teaching hospital: A questionnaire based observational study. *International Journal of Basic & Clinical Pharmacology*, 8(11), 2371.
14. Tanuja, V. H., Somashekara, S. C., & Suraj, B. (2017). Knowledge, attitude, practice of rational use of medicines among junior residents in a tertiary care hospital. *International Journal of Basic & Clinical Pharmacology*, 6(8), 2001–2005.
15. World Health Organization. (2002). *Promoting rational use of medicines: Core components*.