**International Journal of Medical and Pharmaceutical Research**

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Available online on: https://ijmpsr.in/

Original Article

# Evaluation of Healthcare Professionals Knowledge, Attitude, and Practice towards the P-Drug Concept in a Tertiary Care Teaching Hospital of North-West Maharashtra: A Cross-Sectional Study

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*Received: 20-06-2026*
*Accepted: 01-07-2026*
*Available online: 11-07-2026*



## ABSTRACT

**Background**: Rational use of medicines is essential for effective healthcare delivery and optimal patient outcomes. The Personal Drug (P-drug) concept, advocated by the World Health Organization, promotes rational prescribing through structured drug selection based on efficacy, safety, suitability, and cost. However, awareness and implementation of the P-drug concept among healthcare professionals remain variable.

**Aim**: To evaluate the knowledge, attitude, and practice (KAP) regarding the P-drug concept among postgraduate residents and teaching faculty in a tertiary care teaching hospital in North-West Maharashtra.

**Materials and Methods:** A hospital-based cross-sectional questionnaire-based digital survey was conducted over six months among healthcare professionals working in a tertiary care teaching hospital in North-West Maharashtra. A total of 110 participants, including postgraduate residents and teaching faculty, were enrolled using convenience sampling. Data were collected using a structured digital questionnaire assessing demographic details and KAP domains related to the P-drug concept. Descriptive statistics were used for analysis, and findings were expressed as frequencies, percentages, and mean ± standard deviation.

**Results**: Among 110 participants, 60 (54.5%) were postgraduate residents and 50 (45.5%) were teaching faculty. Good knowledge regarding the P-drug concept was observed in 48.2% participants, with a mean knowledge score of 4.08 ± 1.21. Positive attitude toward the P-drug concept was observed in 81.8% participants, with a mean attitude score of 4.31 ± 0.58. However, practical implementation remained limited, with only 32.7% demonstrating good practice and a mean practice score of 2.09 ± 1.03. Only 34.5% participants maintained a personal P-drug list. The most commonly reported barriers were lack of awareness or formal training (72.7%) and limited drug availability in hospital supply (66.4%).

**Conclusion**: Healthcare professionals demonstrated satisfactory knowledge and favourable attitudes toward the P-drug concept; however, practical implementation in routine clinical practice remained inadequate. The findings highlight a significant knowledge–attitude–practice gap and emphasize the need for structured educational interventions, competency-based pharmacology training, and institutional support to strengthen rational prescribing practices.

***Keywords***: *P-drug concept; Rational prescribing; Knowledge attitude practice; Healthcare professionals; Rational use of medicines; Personal formulary; Pharmacology education.*

## INTRODUCTION

Rational use of medicines is a fundamental component of effective healthcare delivery and evidence-based clinical practice. According to the World Health Organization (WHO), rational medicine use implies that "patients receive medications appropriate to their clinical needs, in doses that meet their individual requirements, for an adequate duration of time, and at the lowest possible cost to them and the community" [1]. Irrational prescribing practices, however, continue to represent a major global public health concern, leading to increased adverse drug reactions, antimicrobial resistance, therapeutic failure, unnecessary healthcare expenditure, and avoidable morbidity and mortality [2]. Several studies from India have also highlighted persistent deficiencies in rational prescribing practices among medical trainees and healthcare professionals, especially among interns and postgraduate residents working in tertiary care institutions [3–5].

To address these challenges, the WHO introduced the concept of Personal Drugs (P-drugs) through the WHO Guide to Good Prescribing [1]. A P-drug refers to a medicine or a group of medicines that a physician selects for regular use in common clinical conditions encountered in practice, based on careful evaluation of efficacy, safety, suitability, and cost. The P-drug concept encourages clinicians to adopt a systematic and evidence-based approach to prescribing rather than relying on habit, pharmaceutical promotion, or anecdotal experiences. This approach promotes rational prescribing behaviour and enhances therapeutic decision-making in routine clinical settings.

The selection of a P-drug is guided by the STEP criteria, which include Safety, Tolerability, Efficacy, and Price [1]. The WHO recommends that every prescriber should develop a personal formulary tailored to their clinical practice. These formularies may differ among clinicians because of variations in drug availability, affordability, institutional policies, national formularies, and interpretation of scientific evidence. De Vries et al. demonstrated in a multicentre randomized controlled study that medical students trained in personal formulary development acquired significantly improved rational prescribing skills and greater independence in therapeutic decision-making [6]. Similarly, Kara et al. reported that medication cost significantly influences physicians' prescribing choices in addition to evidence-based therapeutic considerations [7]. Development of a personal formulary therefore enhances pharmacological understanding, promotes critical appraisal of therapeutic alternatives, and reduces unnecessary dependence on expensive or newly marketed drugs. Despite differences in individual P-drug selection, the core principles of rational prescribing remain universal and include selecting the correct drug, appropriate dose, suitable dosage form, proper administration schedule, and adequate duration of therapy. The WHO advocates a structured five-step prescribing approach comprising identification of the patient's problem, specification of therapeutic objectives, selection of suitable drug groups, choosing the most appropriate drug based on efficacy and safety, and writing a complete prescription with appropriate patient instructions [1].

Several educational studies have emphasized the importance of structured training in promoting rational prescribing practices. Parmar and Jadav highlighted the usefulness of incorporating P-drug exercises into undergraduate pharmacology practical teaching [8]. Devi demonstrated that training in P-drug selection significantly improved decision-making abilities among Indian medical students [9]. Problem-based and question-oriented learning methods have also been shown to enhance understanding of rational prescribing concepts among undergraduate learners [10]. Mohan et al. observed that medical students perceived personal drug selection exercises positively and considered them beneficial in developing rational prescribing habits [11]. Palappallil et al. further demonstrated that case-based and task-based learning methods were significantly superior to conventional didactic lectures in teaching the P-drug concept effectively [12]. Furthermore, competency-based medical education programs incorporating P-drug exercises have shown substantial improvement in prescribing competencies and therapeutic reasoning skills among medical students [13]. Studies evaluating attitudes toward P-drug selection have similarly reported that structured exposure enhances confidence and positively influences future prescribing behaviour [14,15].Although multiple studies have evaluated the knowledge, attitude, and practice (KAP) related to the P-drug concept among undergraduate medical students and residents in different regions of India [16–25], there remains limited evidence regarding awareness and practical implementation of the P-drug concept among postgraduate residents and teaching faculty in tertiary care teaching hospitals of Maharashtra. Moreover, a gap often exists between theoretical understanding and actual prescribing practice in clinical settings. Therefore, the present study was undertaken to assess the knowledge, attitude, and practice regarding the P-drug concept among healthcare professionals working in a tertiary care teaching hospital in North-West Maharashtra.

## MATERIALS AND METHODS

A hospital-based, cross-sectional, questionnaire-based digital survey was conducted over a period of six months to evaluate the knowledge, attitude, and practices (KAP) of healthcare professionals regarding the Personal Drug (P-drug) concept. The study was carried out in a tertiary care teaching hospital located in the North-West Maharashtra region. The study included healthcare professionals comprising postgraduate residents and teaching faculty working in the tertiary care teaching hospital during the study period. A total of 110 participants were enrolled in the study.

### Inclusion Criteria

1. Postgraduate residents and teaching faculty working in the tertiary care teaching hospital during the study period.
2. Participants who voluntarily agreed to participate and provided informed consent.

**Exclusion Criteria**

1. Incomplete, duplicate, or blank questionnaire responses.
2. Healthcare professionals who were on long-term leave or unavailable during the period of data collection.

**Sampling Technique**

Convenience sampling was used for participant recruitment. Eligible healthcare professionals were invited to participate through a structured digital questionnaire circulated via institutional communication platforms. Participation was entirely voluntary, and electronic informed consent was obtained prior to questionnaire completion. Responses identified as incomplete or duplicate were excluded from the final analysis.

**Study Tool and Data Collection**

Data were collected using a structured digital questionnaire specifically designed for the study. The questionnaire consisted of sections assessing demographic characteristics and domains related to knowledge, attitude, and practice regarding the P-drug concept. The attitude domain included Likert scale-based questions to assess participants' perceptions and attitudes toward rational prescribing and P-drug selection. The practice domain included items assessing self-reported prescribing behaviour and the perceived application of the P-drug concept in routine clinical practice. The survey link was disseminated through institutional platforms, hospital WhatsApp groups, and direct messaging applications to maximize participant reach. Gentle reminders were periodically sent to improve response rates. All collected data were stored in a password-protected database accessible only to the principal investigator to ensure confidentiality and data security.

**Scoring of the KAP Questionnaire**

The questionnaire consisted of three domains: knowledge, attitude, and practice. The knowledge domain comprised six multiple-choice questions. Each correct response was awarded one mark, while incorrect responses received zero marks, resulting in a total knowledge score ranging from 0 to 6. The attitude domain consisted of five statements assessed using a five-point Likert scale, with responses ranging from Strongly Agree (5) to Strongly Disagree (1). Higher total scores indicated a more favourable attitude towards the P-drug concept. The practice domain consisted of four self-reported practice-related questions. Each favourable response was awarded one mark and each unfavourable response received zero marks, resulting in a total practice score ranging from 0 to 4. The barrier-related question was analysed separately and was not included in the practice score.

**Statistical Analysis**

Data were compiled using Microsoft Excel and analysed using appropriate statistical methods. Descriptive statistics were applied to summarize the collected data. Demographic variables were presented as frequencies and percentages. KAP-related responses were expressed as percentages, mean ± standard deviation (SD), wherever appropriate. The study findings were represented using suitable tables and graphical illustrations.

**Ethical Considerations**

The study was conducted after obtaining approval from the Institutional Ethics Committee (IEC) of the medical college attached to the tertiary care teaching hospital in Maharashtra. The structured digital questionnaire was reviewed and validated by the Institutional Ethics Committee before initiation of data collection. Institutional Ethics Committee approval was obtained (Approval No. GMCJ/IEC/133/2025).

**RESULTS**

A total of 110 healthcare professionals participated in the present study, including 60 (54.5%) postgraduate residents and 50 (45.5%) teaching staff. The distribution of participants according to designation is shown in Fig. 1.

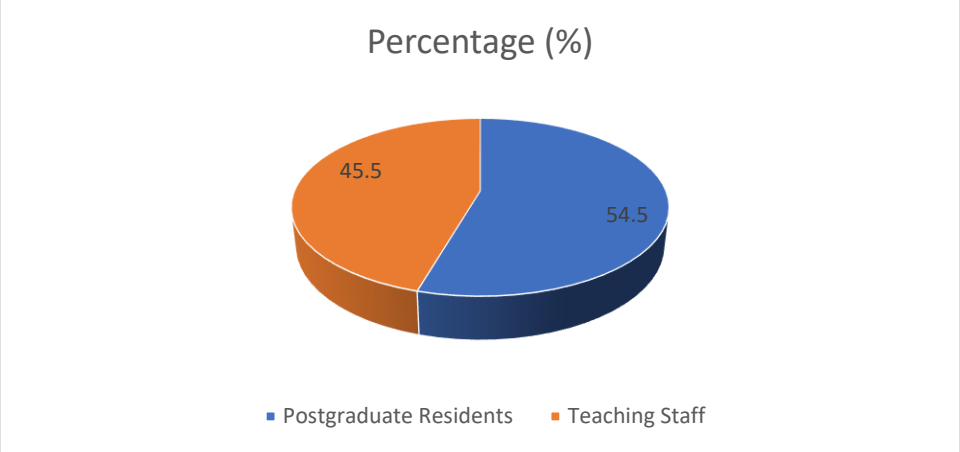


**Figure 1: Distribution of Study Participants by Designation (n=110)**

**Knowledge Domain**
Assessment of knowledge regarding the P-drug concept revealed that 53 participants (48.2%) had good knowledge, 37 (33.6%) demonstrated moderate knowledge, and 20 (18.2%) showed poor knowledge. The mean knowledge score was 4.08 ± 1.21 (Table 1).

Question-wise analysis demonstrated that the highest proportion of correct responses was observed for the definition of rational use of medicine, with 98.2% of participants answering correctly. Similarly, 90.0% correctly identified the primary focus of the P-drug concept. However, awareness regarding the STEP criteria was comparatively poor, with only 33.6% identifying the correct full form. Knowledge regarding the first step of the five-step P-drug selection process was lowest, with only 25.5% responding correctly. Furthermore, only 40.0% of participants correctly recognized that P-drug selection may vary among clinicians and settings (Table 2; Fig. 3).

**Attitude Domain**
The majority of healthcare professionals demonstrated a favourable attitude toward the P-drug concept. Overall, 90 participants (81.8%) exhibited a positive attitude, while 15 (13.6%) showed a neutral attitude and only 5 (4.6%) demonstrated a negative attitude. The mean attitude score was 4.31 ± 0.58 (Table 1).

Item-wise analysis revealed that 76.4% of participants agreed that the P-drug concept promotes rational prescribing practices. A total of 78.2% believed that following the P-drug concept minimizes patient harm and reduces unnecessary treatment costs despite being time-consuming. The highest positive response rate (80.0%) was observed for the statement that developing a personal P-drug list improves prescribing confidence and consistency. Additionally, 79.1% agreed that P-drug selection should be included in both undergraduate and postgraduate medical training. Notably, none of the attitude-related questions received negative responses individually (Table 3; Fig. 4).

**Practice Domain**
Practice-related findings demonstrated comparatively lower implementation of the P-drug concept in routine clinical practice. Only 36 participants (32.7%) demonstrated good practice, while 31 (28.2%) showed moderate practice and 43 (39.1%) exhibited poor practice. The mean practice score was 2.09 ± 1.03 (Table 1).

Only 38 participants (34.5%) reported maintaining a personal P-drug list for commonly treated clinical conditions. More than half of the participants (55.5%) stated that following the P-drug concept improved their understanding of drug benefits and adverse effects and helped minimize adverse drug reactions. Similarly, 55.5% believed that adherence to STEP criteria improves patient compliance. A comparatively higher proportion of participants (66.4%) reported that the P-drug concept helped avoid repeated searches for appropriate drugs during daily clinical practice (Table 4; Fig. 5).

Overall, the study findings demonstrated satisfactory knowledge and a predominantly positive attitude toward the P-drug concept among healthcare professionals; however, practical implementation remained suboptimal, indicating a significant knowledge–attitude–practice gap (Table 1; Fig. 2).

**Barriers to Adoption of the P-Drug Concept**
The most commonly reported barrier to implementation of the P-drug concept was lack of awareness or formal training, reported by 80 participants (72.7%). Limited availability of drugs in the hospital supply chain was identified by 73 participants (66.4%). Influence of pharmaceutical promotional activities was reported by 48 participants (43.6%), whereas inadequate time during busy clinical practice was the least commonly reported barrier, identified by only 9 participants (8.2%) (Table 5; Fig. 6).

**Table 1. Distribution of Knowledge, Attitude, and Practice Levels with Mean Scores (n=110)**

| Component | Category | Frequency (n) | Percentage | Mean ± SD |
|---|---|---|---|---|
| Knowledge | Good | 53 | 48.2% | 4.08 ± 1.21 |
| | Moderate | 37 | 33.6% | |
| | Poor | 20 | 18.2% | |
| Attitude | Positive | 90 | 81.8% | 4.31 ± 0.58 |
| | Neutral | 15 | 13.6% | |
| | Negative | 5 | 4.6% | |
| Practice | Good | 36 | 32.7% | 2.09 ± 1.03 |
| | Moderate | 31 | 28.2% | |
| | Poor | 43 | 39.1% | |

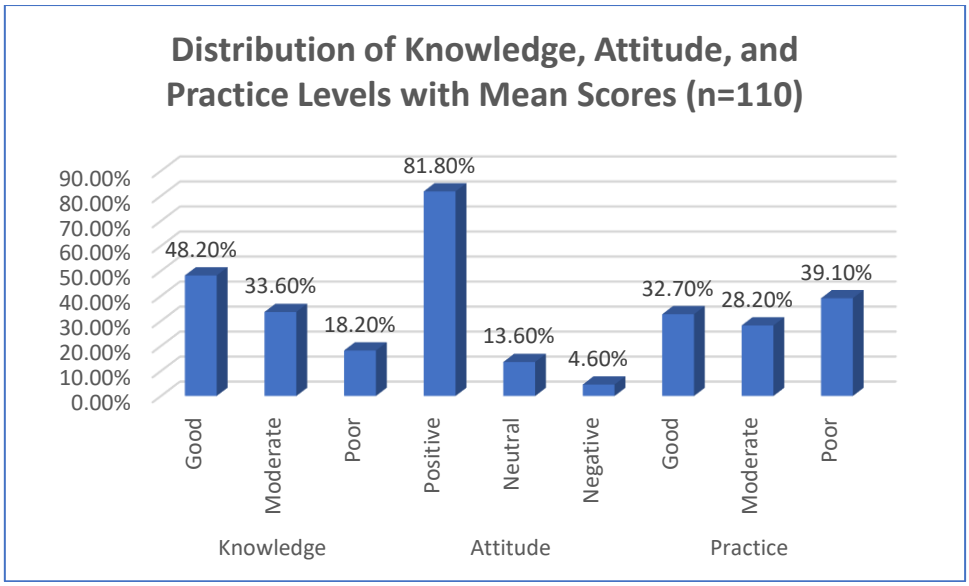


**Figure 2: Distribution of Knowledge, Attitude, and Practice Levels with Mean Scores (n=110)**

**Table 2. Response Rates for Knowledge Regarding the P-Drug Concept Among Healthcare Professionals**

| Knowledge-related Questions | Correct Responses | Incorrect Responses |
|---|---|---|
| Rational use of medicine means selecting the most appropriate drug according to standard treatment protocols/guidelines | 98.2% | 1.8% |
| Correct definition of a P-drug | 79.1% | 20.9% |
| Full form of STEP criteria | 33.6% | 66.4% |
| Main focus of the P-drug concept | 90.0% | 10.0% |
| First step in the five-step P-drug selection process | 25.5% | 74.5% |
| P-drug for a given condition is same everywhere | 40.0% | 60.0% |

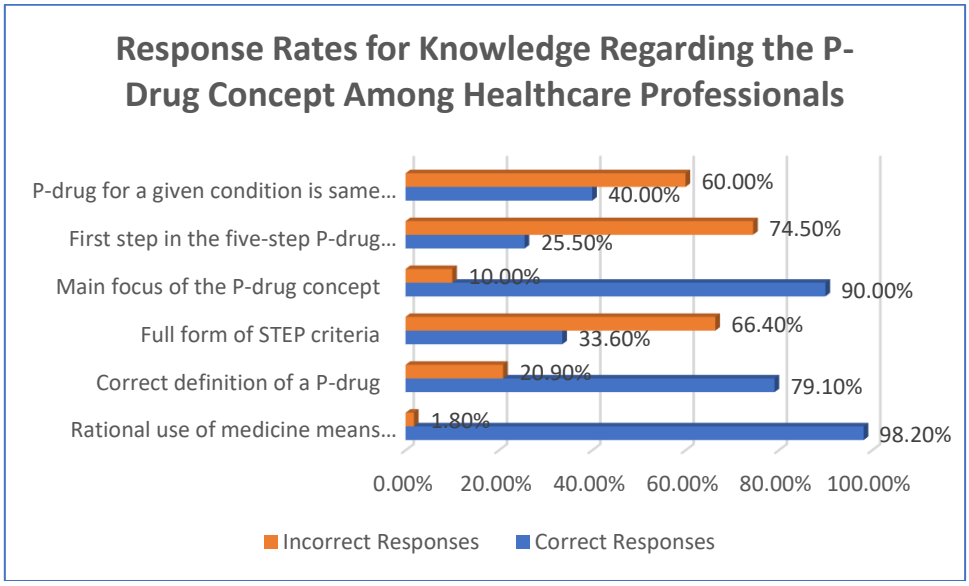


**Figure 3: Response Rates for Knowledge Regarding the P-Drug Concept Among Healthcare Professionals**

**Table 3. Response Rates for Attitude Regarding the P-Drug Concept Among Healthcare Professionals**

| Attitude-related Questions | Positive | Neutral | Negative |
|---|---|---|---|
| P-drug concept promotes rational prescribing | 76.4% | 23.6% | 0% |
| Following P-drug concept minimizes patient harm and treatment cost | 78.2% | 21.8% | 0% |
| Suitability means assessing whether a drug is appropriate for a specific patient or population in terms of its safety, tolerability, efficacy, and price considerations | 66.4% | 33.6% | 0% |
| P-drug selection should be taught during undergraduate and postgraduate training | 79.1% | 20.9% | 0% |
| Developing a personal P-drug list improves prescribing confidence | 80.0% | 20.0% | 0% |

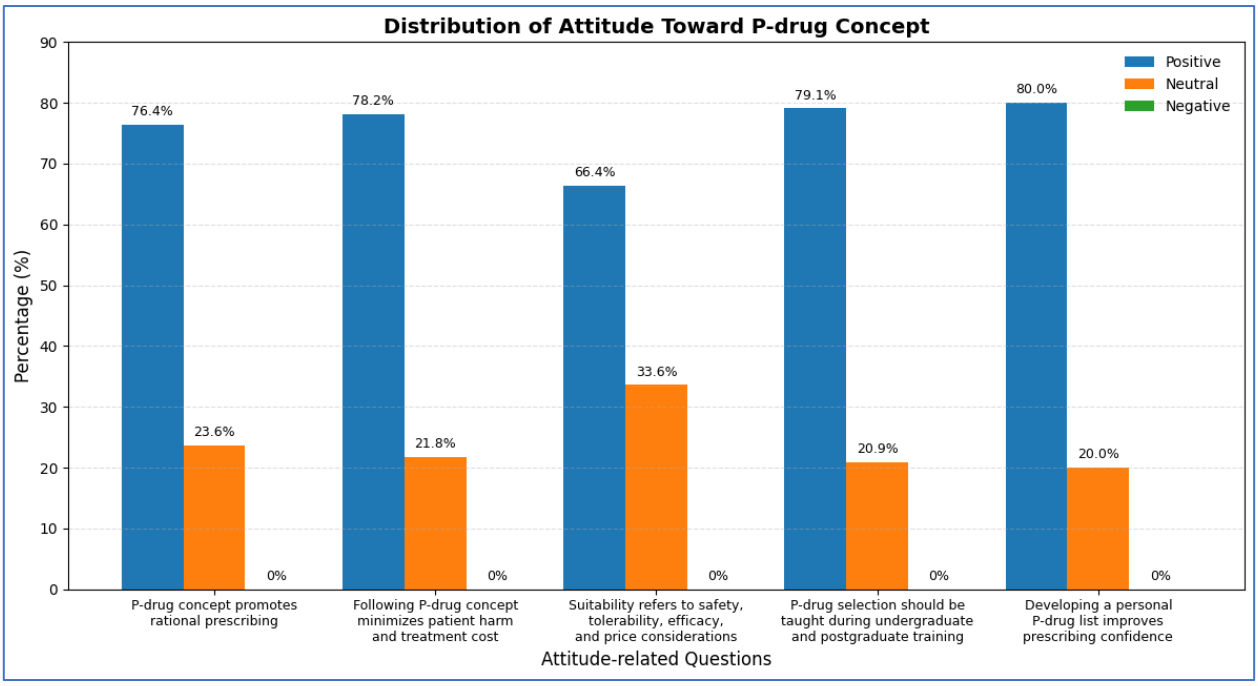


**Figure 4 : Response Rates for Attitude Regarding the P-Drug Concept Among Healthcare Professionals**

**Table 4. Response Rates for Practice Regarding the P-Drug Concept Among Healthcare Professionals**

| Practice-related Questions | Yes | No |
|---|---|---|
| Maintain a personal P-drug list for common conditions | 34.5% | 65.5% |
| P-drug concept improves understanding of drug benefits and adverse effects | 55.5% | 44.5% |
| P-drug concept helps avoid repeated drug searches in practice | 66.4% | 33.6% |
| Following STEP criteria improves patient compliance | 55.5% | 44.5% |

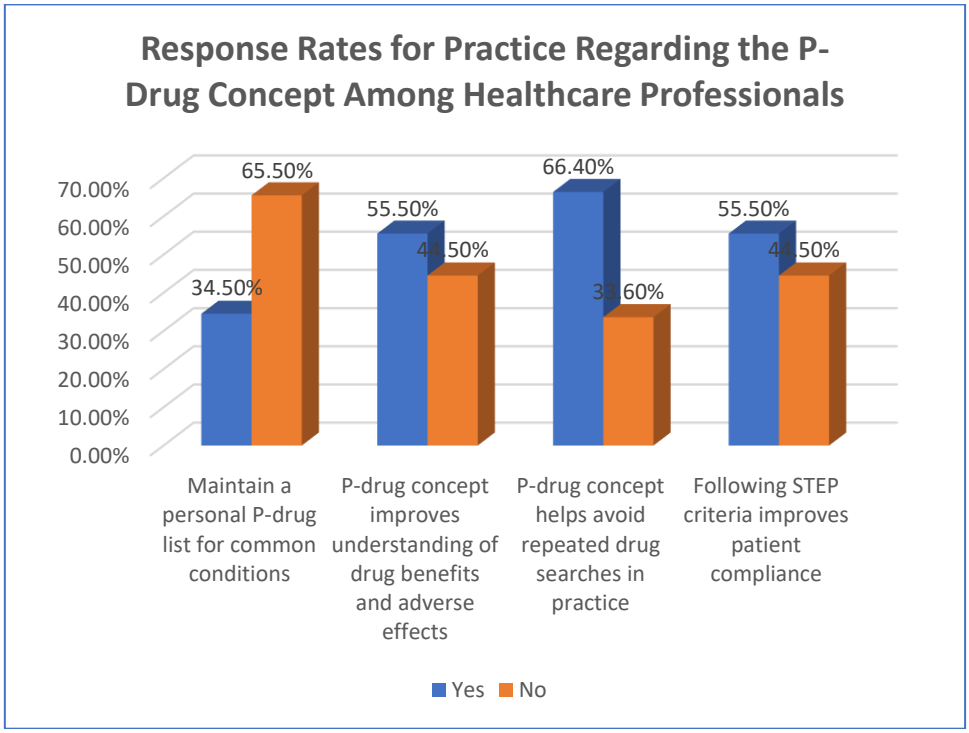


**Figure 5: Response Rates for Practice Regarding the P-Drug Concept Among Healthcare Professionals**

**Table 5. Reported Barriers to Adoption of the P-Drug Concept Among Healthcare Professionals**

| Reported Barrier | Frequency (n) | Percentage |
|---|---|---|
| Lack of awareness/formal training | 80 | 72.7% |
| Limited drug availability in hospital supply chain | 73 | 66.4% |

| | | |
|---|---|---|
| Influence of pharmaceutical promotional activities | 48 | 43.6% |
| Inadequate time during busy clinical practice | 9 | 8.2% |

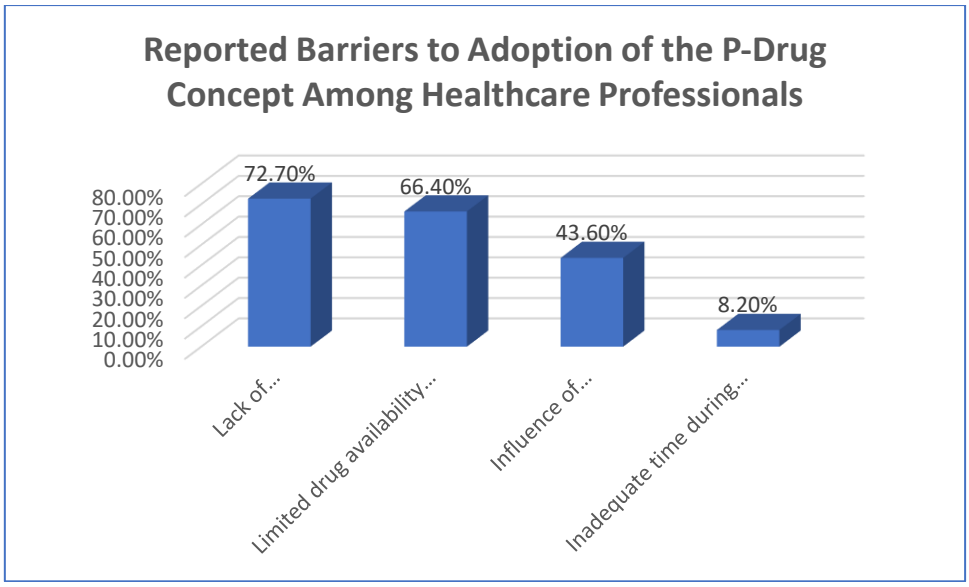


**Figure 6: Reported Barriers to Adoption of the P-Drug Concept Among Healthcare Professionals**

## DISCUSSION

The present cross-sectional study evaluated the knowledge, attitude, and practice (KAP) regarding the P-drug concept among postgraduate residents and teaching faculty working in a tertiary care teaching hospital in North-West Maharashtra. The findings demonstrated that although healthcare professionals possessed satisfactory knowledge and a predominantly positive attitude toward the P-drug concept, practical implementation remained comparatively limited, thereby revealing a substantial knowledge–attitude–practice gap. Similar observations have been reported in several studies conducted across tertiary care teaching institutions in India and neighbouring countries [16–22].In the present study, 48.2% of participants demonstrated good knowledge regarding the P-drug concept, while 33.6% had moderate knowledge and 18.2% showed poor knowledge, with an overall mean knowledge score of 4.08 ± 1.21. Almost all participants (98.2%) correctly identified the concept of rational use of medicines, and 90.0% correctly recognized the primary focus of the P-drug concept. However, major conceptual deficiencies were identified in understanding the STEP criteria and the structured five-step process of P-drug selection. Only 33.6% correctly identified the full form of STEP criteria, and merely 25.5% knew the correct first step of the P-drug selection process. These findings indicate that although participants were familiar with the general concept of rational prescribing, detailed procedural understanding remained inadequate.

Comparable findings have been reported in previous educational studies. De Vries et al. demonstrated that students trained in personal formulary development showed significantly improved rational prescribing abilities and greater independence in therapeutic decision-making [6]. Parmar and Jadav reported that incorporation of structured P-drug exercises into undergraduate pharmacology teaching improved conceptual clarity and prescribing skills among medical students [8]. Devi similarly observed that structured P-drug training improved therapeutic decision-making and rational prescribing competence among undergraduate students [9]. Palappallil et al. found that case-based and task-based teaching methods were significantly superior to conventional didactic lectures in improving understanding of the P-drug concept [12]. Manjhi et al. further demonstrated that competency-based P-drug educational interventions significantly improved prescribing competence and rational therapeutic selection among medical students [13]. Kumar et al. and Khadka et al. also reported that structured P-drug exercises positively influenced conceptual understanding and prescribing confidence among undergraduate learners [14,15]. The persistence of conceptual gaps in the present study despite satisfactory overall knowledge scores suggests that postgraduate-level reinforcement of structured rational prescribing training may still be inadequate. Similar deficiencies in detailed conceptual understanding were also reported by Kushwaha et al., who observed improvement in knowledge scores only after structured educational intervention programs [23,25].

Attitude assessment in the present study revealed overwhelmingly favourable perceptions toward the P-drug concept. A positive attitude was observed in 81.8% of participants, while only 4.6% demonstrated a negative attitude. The mean attitude score was 4.31 ± 0.58, reflecting strong acceptance of rational prescribing principles. The highest positive response (80.0%) was observed for the statement that developing a personal P-drug list improves confidence and consistency in prescribing, while 79.1% agreed that P-drug selection should be taught during both undergraduate and postgraduate training. Additionally, 78.2% believed that following the P-drug concept helps reduce patient harm and unnecessary treatment costs.

These findings are consistent with those of Jyothi et al., who reported favourable attitudes toward rational prescribing despite inadequate clinical implementation among postgraduate trainees [16]. Hoysala Kumar and Swetha similarly observed that healthcare professionals generally possessed positive perceptions regarding the usefulness of the P-drug concept in promoting rational prescribing practices [17]. Khadka et al. reported that undergraduate medical students in Nepal demonstrated highly favourable attitudes toward personal drug selection exercises and considered them useful for future prescribing practice [14]. Kumar et al. also observed improved confidence and positive attitudinal responses among students exposed to structured P-drug educational exercises [15]. Gowda et al. and Suryaprakash et al. similarly reported positive attitudinal trends toward the P-drug concept among both undergraduate and postgraduate populations [21,22]. Parise et al. found that even though actual clinical implementation remained suboptimal, postgraduate students and interns largely acknowledged the importance and usefulness of the P-drug concept in rational therapeutics [20]. The consistency of these findings across studies indicates that resistance toward the P-drug concept itself is minimal; rather, the challenge lies in translating favourable perceptions into sustained routine clinical practice.

Despite satisfactory knowledge and highly positive attitudes, the practice domain demonstrated comparatively poorer performance in the present study. Only 32.7% of participants demonstrated good practice regarding the P-drug concept, while 39.1% exhibited poor practice, with an overall mean practice score of $2.09 \pm 1.03$. Notably, only 34.5% of participants maintained a personal P-drug list for commonly treated conditions, indicating limited routine application of the concept in actual clinical settings. Although 55.5% reported that using the P-drug concept improved understanding of drug benefits and adverse effects, and an equal proportion believed that STEP criteria improve patient compliance, actual structured application remained inconsistent.

Similar knowledge–practice discrepancies have been repeatedly documented in previous studies. Rao et al. observed that although healthcare professionals demonstrated moderate awareness regarding rational prescribing principles, regular maintenance of personal formularies and structured drug selection remained inconsistent [18]. Kanthi and Prayaga also reported satisfactory theoretical awareness but limited implementation of the P-drug concept in daily clinical practice [19]. Jyothi et al. identified postgraduate dependence on senior consultants, workload pressures, and lack of independent prescribing opportunities as major contributors to poor practice-related outcomes [16]. Parise et al. similarly found that postgraduate trainees and interns often failed to apply the P-drug concept consistently despite possessing adequate knowledge and positive attitudes [20]. Gowda et al. and Suryaprakash et al. further confirmed the persistence of a substantial knowledge–practice gap in tertiary care teaching settings [21,22]. Kumar et al. additionally noted that lack of continuous reinforcement and overreliance on empirical prescribing patterns limited long-term implementation even among students who had received formal P-drug education [24]. Collectively, these studies support the findings of the present study and suggest that inadequate clinical reinforcement and institutional barriers may play a major role in limiting practical application of rational prescribing principles. The study findings indicate that satisfactory knowledge and favourable attitudes towards the P-drug concept did not consistently translate into its routine clinical implementation, highlighting a significant knowledge–attitude–practice gap among healthcare professionals. As the practice domain was based on self-reported responses, the findings should be interpreted as reflecting participants reported prescribing behaviour and perceived application of the P-drug concept rather than objectively observed clinical practice. Barrier analysis in the present study demonstrated that lack of awareness or formal training was the most commonly reported obstacle (72.7%), followed by limited drug availability within the hospital supply chain (66.4%). Pharmaceutical promotional influence was identified by 43.6% of participants, whereas inadequate time during busy clinical practice was reported by only 8.2%. These findings are consistent with previously published literature evaluating barriers to rational prescribing.

Kara et al. demonstrated that drug availability, affordability, and economic considerations significantly influence physicians' prescribing behaviour alongside evidence-based considerations [7]. Kushwaha et al. reported that inadequate exposure to the P-drug concept during undergraduate and postgraduate training was a major factor contributing to irrational prescribing practices among junior doctors, and they further demonstrated significant improvement in awareness and prescribing competence following structured educational interventions [23,25]. Similar institutional and structural limitations, including formulary restrictions, dependence on senior prescribing habits, and pharmaceutical marketing influence, have been identified in other Indian studies evaluating rational prescribing behaviour [16–22]. The findings of the present study therefore suggest that barriers to implementation are primarily systemic and educational rather than attitudinal.

Overall, the findings of the present study indicate that although healthcare professionals possess adequate theoretical understanding and favourable attitudes toward the P-drug concept, practical implementation remains insufficient. Merely improving theoretical awareness may not be adequate to bridge the knowledge–practice gap. Structured educational reinforcement through regular workshops, competency-based pharmacology training, case-based learning, departmental prescribing discussions, and periodic prescription audits may help improve practical implementation of rational prescribing principles. Incorporation of structured P-drug selection exercises into undergraduate and postgraduate medical curricula, along with institutional support for rational prescribing practices, may ultimately help translate favourable attitudes into consistent evidence-based clinical practice and improve overall patient care outcomes.

## CONCLUSION

The present study demonstrated that healthcare professionals possessed satisfactory knowledge and a positive attitude toward the P-drug concept; however, its practical implementation in routine clinical practice remained limited. A significant knowledge–attitude–practice gap was identified, particularly in maintaining personal P-drug lists and applying structured prescribing principles. Lack of formal training and institutional barriers were the major obstacles to effective implementation. Strengthening competency-based pharmacology training, case-based learning, regular workshops, and institutional support may help improve rational prescribing practices and promote effective utilization of the P-drug concept in clinical practice.

### Limitations

The present study was conducted at a single tertiary care teaching hospital with a relatively limited sample size, which may affect the generalizability of the findings. The study was based on self-reported questionnaire responses and therefore may be subject to response and recall bias. Additionally, actual prescribing practices were not objectively assessed through prescription audits or direct clinical observation. Furthermore, some items included in the attitude and practice domains assessed participants' perceptions regarding the usefulness of the P-drug concept, which may have resulted in a degree of conceptual overlap between the KAP domains.

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