CODEN [USA]: IAJPBB ISSN : 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
SJIF Impact Factor: 7.187
https://doi.org/10.5281/zenodo.20204574

Available online at: http://www.iajps.com Research Article

IMPACT OF EDUCATIONAL TOOL ON KNOWLEDGE, ATTITUDE AND PRACTICE OF COMMUNITY PHARMACISTS IN DISPENSING CORTICOSTEROIDS AS OTC MEDICATION: A COMMUNITY-BASED INTERVENTION STUDY

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Abstract: .

Background: *Corticosteroids are frequently misused as over-the-counter (OTC) medications, leading to serious adverse effects. Community pharmacists play a key role in ensuring their rational use. This study was conducted to assess the impact of an educational tool on the knowledge, attitude, and practice (KAP) of community pharmacists regarding corticosteroid dispensing.*

Methodology: *A community-based interventional study was conducted among 100 pharmacists using a structured 21-item KAP questionnaire. Pre-intervention data were collected, followed by an educational program. Post-intervention assessment was done after four weeks. Data were analyzed using paired t-test and chi-square test.*

Results: *Knowledge, attitude, and practice scores improved significantly following the intervention ($p<0.001$). Mean knowledge increased from 3.28 to 6.09, attitude from 3.94 to 6.47, and practice from 3.00 to 5.78. Dispensing without prescription decreased from 70% to 30%, while counseling and prescription adherence practices improved considerably.*

Conclusion*: The educational intervention significantly improved pharmacists' KAP, highlighting the need for continuous professional training to promote safe corticosteroid use.*

Keywords*: Corticosteroids, Community Pharmacists, OTC, Educational Intervention, KAP Study*

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Please cite this article in press Shrijeet M. Patil et al., Impact Of Educational Tool On Knowledge, Attitude And Practice Of Community Pharmacists In Dispensing Corticosteroids As Otc Medication: A Community-Based Intervention Study., Indo Am. J. P. Sci, 2026; 13(05).

INTRODUCTION:

Corticosteroids function as common medications that treat various medical conditions through their ability to decrease inflammation. The medication provides effective results through proper application but will produce dangerous side effects when users make improper use of it. The medicines require medical oversight during treatment yet become accessible to customers who want to buy them as over-the-counter products. People who obtain medications from stores will misuse them because they lack professional training to use their treatments correctly. The population faces an urgent public health crisis because unsafe medication practices result in skin damage and hormonal imbalance and weakened immunity systems.[1,2]

Community pharmacists provide essential healthcare services to people who live in regions where they cannot easily reach doctors. Patients who need medical help seek treatment at their facilities because pharmacists operate as their first contact point. Pharmacists must ensure safe and correct medicine distribution which includes the medication corticosteroids. Healthcare providers face challenges because both patients and business operators expect to receive corticosteroids without needing to provide valid prescription documentation. Patients who receive medical treatment through this process will experience dangerous health effects which will last for extended time periods. The safer treatment of patients requires pharmacists to develop better knowledge of medication dispensing practices.[3,4,5] KAP studies enable researchers to study how well healthcare workers understand their duties and how they perform their work. Community pharmacists need assessment of their knowledge about corticosteroids their attitude toward OTC dispensing and their actual dispensing practices to gain essential information. The way people handle medication dispensing in practice shows that their knowledge deficiencies and their negative beliefs about the treatment create problems. The process of identifying these gaps enables educational programs to work as targeted intervention programs which will help them develop better skills to control medicine distribution in their communities.[6,7,8]

Healthcare professionals can boost their knowledge and modify their behavior through educational interventions because these programs provide straightforward methods for achieving these goals. The structured information delivery system of training sessions together with practical guidance enables pharmacists to learn about the dangers of corticosteroid misuse and the need for prescription dispensing. The knowledge intervention programs handle both knowledge and attitude development along with daily work improvements. This research study assessed how educational materials affected community pharmacists skills to dispense corticosteroids as OTC medications which enabled safer healthcare procedures.[9,10]

METHODOLOGY:

Study Design and Setting : This study was a community-based interventional study conducted among community pharmacists to evaluate the impact of an educational tool on knowledge, attitude, and practice (KAP) related to the dispensing of corticosteroids as over-the-counter (OTC) medications. The study was carried out in community pharmacy settings over a defined study period of 2–3 months.

Study Population and Sample Size : A total of 100 community pharmacists were included in the study using convenience sampling. Pharmacists who were actively involved in dispensing medications and willing to participate were included. Those not directly involved in patient care or unwilling to provide consent were excluded.

Study Tool : A structured and pre-validated questionnaire was used, consisting of 21 items divided into three domains: knowledge (7 questions), attitude (7 questions), and practice (7 questions). The questionnaire assessed awareness regarding corticosteroid use, perception toward OTC dispensing, and routine dispensing practices.

Domain	No. of Questions	Response Type	Scoring Pattern	Score Range	Interpretation
Knowledge	7	Yes / No	Correct = 1, Incorrect = 0	0 – 7	Higher score = better knowledge
Attitude	7	Likert Scale (Agree/Neutral/Disagree)	Agree = 2, Neutral = 1, Disagree = 0	0 – 14	Higher score = positive attitude
Practice	7	Yes / No	Appropriate = 1, Inappropriate = 0	0 – 7	Higher score = good practice

Data Collection Procedure : Baseline (pre-intervention) data were collected by administering the questionnaire to all participants. Following this, an educational intervention was implemented, which included lectures, informational leaflets, and counseling guidelines on rational corticosteroid use, adverse effects, and legal dispensing practices. After four weeks, the same questionnaire was re-administered to assess post-intervention changes.

Educational Intervention : The educational tool included structured teaching sessions, printed educational materials, and interactive discussions. The content focused on appropriate indications, risks of misuse, adverse effects such as adrenal suppression, and the importance of prescription-based dispensing.

Outcome Measure : The primary outcome was the change in KAP scores before and after the intervention. Secondary outcomes included the association of demographic variables with KAP levels.

Statistical Analysis : Data were entered and analyzed using statistical software. Descriptive statistics such as frequency, percentage, mean, and standard deviation were calculated. Paired t-test was used to compare pre- and post-intervention mean scores, and chi-square test was applied to assess associations between demographic variables and KAP levels. A p-value <0.05 was considered statistically significant.

RESULTS:

Table 1: Demographic Characteristics of Community Pharmacists (n = 100)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	20–30	40	40%
	31–40	35	35%
	>40	25	25%
Gender	Male	65	65%
	Female	35	35%
Experience	<5 years	30	30%
	5–10 years	45	45%
	>10 years	25	25%
Qualification	D.Pharm	50	50%
	B.Pharm	40	40%
	M.Pharm	10	10%

A total of 100 community pharmacists were included in the study. Among them, 40% (n=40) were aged 20–30 years, 35% (n=35) were 31–40 years, and 25% (n=25) were above 40 years. The majority were male (65%, n=65), while females constituted 35% (n=35). Regarding experience, 45% (n=45) had 5–10 years of experience, followed by 30% (n=30) with less than 5 years and 25% (n=25) with more than 10 years. In terms of qualification, 50% (n=50) were D.Pharm holders, 40% (n=40) B.Pharm, and 10% (n=10) M.Pharm.

Table 2: KAP Questionnaire Responses (Pre- and Post-Intervention) (n = 100)

Domain	Question	Pre (n)	Post (n)	p-value
Knowledge	Steroids require prescription	48	90	<0.001
	Long-term use causes side effects	52	88	<0.001
	Causes adrenal suppression	35	78	<0.001
	Should not be used without diagnosis	50	92	<0.001
	Topical steroids cause skin thinning	46	85	<0.001

	Affect immune system	55	89	<0.001
	OTC use is unsafe	42	87	<0.001
Attitude	OTC dispensing is inappropriate	50	88	<0.001
	Need for patient counseling	58	93	<0.001
	Should follow prescription	52	90	<0.001
	Patient safety over profit	60	95	<0.001
	Need for continuous education	62	96	<0.001
	Misuse is public health issue	55	91	<0.001
	Pharmacist role in prevention	57	94	<0.001
Practice	Dispense without prescription (reverse)	70	30	<0.001
	Ask for prescription	40	82	<0.001
	Counsel on dosage	45	85	<0.001
	Inform side effects	38	80	<0.001
	Recommend doctor consultation	35	78	<0.001
	Maintain records	30	70	<0.001
	Avoid repeated OTC dispensing	42	83	<0.001

Knowledge regarding corticosteroid use improved significantly after the intervention. For example, awareness that steroids require a prescription increased from 48% (n=48) pre-intervention to 90% (n=90) post-intervention ($p<0.001$). Knowledge of adrenal suppression increased from 35% (n=35) to 78% (n=78), and awareness of OTC misuse risks improved from 42% (n=42) to 87% (n=87), all statistically significant ($p<0.001$).

Attitude also showed notable improvement. The proportion of pharmacists considering OTC dispensing inappropriate increased from 50% (n=50) to 88% (n=88), and those prioritizing patient safety over profit increased from 60% (n=60) to 95% (n=95) ($p<0.001$).

Practice changes were substantial. Dispensing corticosteroids without prescription reduced from 70% (n=70) to 30% (n=30), while asking for prescriptions increased from 40% (n=40) to 82% (n=82). Counseling on side effects improved from 38% (n=38) to 80% (n=80). All improvements were statistically significant ($p<0.001$).

Table 3: Mean Knowledge Scores (Pre- and Post-Intervention)

Parameter	Mean ± SD (Pre)	Mean ± SD (Post)	p-value
Knowledge Score	3.28 ± 1.10	6.09 ± 0.95	<0.001

The mean knowledge score significantly increased from 3.28 ± 1.10 before the intervention to 6.09 ± 0.95 after the intervention, showing a mean difference of 2.81 points. This improvement was statistically highly significant ($p<0.001$), indicating enhanced understanding of corticosteroid use and safety.

Table 4: Mean Attitude Scores (Pre- and Post-Intervention)

Parameter	Mean ± SD (Pre)	Mean ± SD (Post)	p-value
Attitude Score	3.94 ± 1.20	6.47 ± 0.88	<0.001

The mean attitude score improved from 3.94 ± 1.20 pre-intervention to 6.47 ± 0.88 post-intervention, with a mean increase of 2.53 points. This change was statistically significant ($p<0.001$), reflecting a positive shift in pharmacists' beliefs toward rational drug dispensing..

Table 5: Mean Practice Scores (Pre- and Post-Intervention)

Parameter	Mean ± SD (Pre)	Mean ± SD (Post)	p-value
Practice Score	3.00 ± 1.05	5.78 ± 1.02	<0.001

The mean practice score increased significantly from 3.00 ± 1.05 before the intervention to 5.78 ± 1.02 after the intervention, with a mean difference of 2.78 points ($p<0.001$). This indicates improved dispensing behavior and patient counseling practices.

Table 6: Overall KAP Mean Score Comparison

Domain	Pre Mean ± SD	Post Mean ± SD	p-value
Knowledge	3.28 ± 1.10	6.09 ± 0.95	<0.001
Attitude	3.94 ± 1.20	6.47 ± 0.88	<0.001
Practice	3.00 ± 1.05	5.78 ± 1.02	<0.001

All three KAP domains showed significant improvement following the intervention. Knowledge scores increased from 3.28 ± 1.10 to 6.09 ± 0.95, attitude scores from 3.94 ± 1.20 to 6.47 ± 0.88, and practice scores from 3.00 ± 1.05 to 5.78 ± 1.02. All differences were statistically significant ($p<0.001$), confirming the effectiveness of the educational intervention.

Table 7: Association Between Demographic Variables and Overall KAP Level (n = 100)

Variable	Category	Low KAP (n, %)	Adequate KAP (n, %)	p-value
Age (years)	<30	27 (67.5%)	13 (32.5%)	0.04*
	≥30	27 (45.0%)	33 (55.0%)	
Gender	Male	38 (58.5%)	27 (41.5%)	0.32
	Female	16 (45.7%)	19 (54.3%)	
Experience	<5 years	22 (73.3%)	8 (26.7%)	0.01*
	≥5 years	32 (45.7%)	38 (54.3%)	
Qualification	D.Pharm	33 (66.0%)	17 (34.0%)	0.03*
	B.Pharm & above	21 (42.0%)	29 (58.0%)	

A statistically significant association was observed between age and KAP level, with 67.5% (n=27) of pharmacists aged below 30 years having low KAP compared to 45% (n=27) among those aged ≥30 years (p=0.04). Experience was also significantly associated, as 73.3% (n=22) of pharmacists with less than 5 years of experience had low KAP compared to 45.7% (n=32) among those with ≥5 years (p=0.01). Qualification showed a significant relationship, with 66% (n=33) of D.Pharm holders having low KAP compared to 42% (n=21) among B.Pharm and above (p=0.03). However, gender was not significantly associated with KAP (p=0.32).

DISCUSSION:

In the present study, the majority of community pharmacists were aged 20–30 years (40%), with males constituting 65% and 45% having 5–10 years of experience. Half of the participants (50%) were D.Pharm holders. These findings are comparable to previous studies reported a predominance of younger pharmacists and diploma holders in community settings. The similarity in demographic distribution suggests that community pharmacy practice in developing regions is largely driven by early-career professionals, which may influence knowledge levels and dispensing practices.[11]

The study showed a significant improvement in knowledge scores from 3.28 ± 1.10 to 6.09 ± 0.95 (p<0.001). Awareness that corticosteroids require a prescription increased from 48% to 90%, while knowledge about adrenal suppression improved from 35% to 78%. Similar improvements were reported in previous studies, where educational interventions significantly enhanced pharmacists' understanding of drug safety and adverse effects. These findings confirm that targeted educational tools are highly effective in bridging knowledge gaps among community pharmacists.[12]

A positive shift in attitude was observed, with mean scores increasing from 3.94 ± 1.20 to 6.47 ± 0.88 (p<0.001). The proportion of pharmacists recognizing OTC dispensing as inappropriate increased from 50% to 88%, and those prioritizing patient safety increased from 60% to 95%. Comparable findings were reported in previous studies where significant improvements in professional attitudes following educational programs. These results highlight that improving knowledge directly influences attitudes toward rational drug use and ethical pharmacy practice.[13]
Practice scores improved significantly from 3.00 ± 1.05 to 5.78 ± 1.02 (p<0.001). Dispensing without prescription reduced from 70% to 30%, while counseling on side effects increased from 38% to 80%. These findings are consistent with previous studies which demonstrated improved dispensing behavior and patient counseling following educational interventions. This suggests that knowledge and attitude improvements are effectively translated into better pharmacy practices, ultimately enhancing patient safety.[14]

The study identified that younger age (<30 years), limited experience (<5 years), and lower qualification (D.Pharm) were significantly associated with low KAP (p<0.05). For instance, 73.3% of pharmacists with less than 5 years of experience had low KAP compared to 45.7% among more experienced pharmacists. Similar findings were reported in previous studies, where less experienced and lower-qualified pharmacists showed poorer knowledge and practices. These results emphasize the importance of continuous professional development programs, particularly for early-career pharmacists.

CONCLUSION:

The present study demonstrates that a structured educational intervention significantly improved the knowledge, attitude, and practice of community pharmacists regarding the dispensing of corticosteroids as over-the-counter medications. Mean knowledge, attitude, and practice scores showed marked increases, while inappropriate dispensing without prescription decreased substantially. The findings highlight that targeted educational tools can effectively bridge gaps in awareness and promote rational drug use. However, younger pharmacists, those with limited experience, and lower qualifications were more likely to have inadequate KAP, indicating the need for continuous professional training. Overall, strengthening pharmacist education and regulatory enforcement is essential to ensure safe dispensing practices and to minimize the risks associated with corticosteroid misuse in the community.

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