Original Research

A pseudo-customer cross-sectional study to evaluate the community pharmacist's management of migraine in pregnant women

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Abstract

Background: To the best of our knowledge few published studies have been conducted to evaluate customer's care services in community pharmacies in the United Arab Emirates (UAE) using the pseudo-customer model. This further indicates that there is a paucity of information available about the current care services provided by the community pharmacists particularly for pregnant women with migraine. **Objective:** The main objective was to evaluate, the effectiveness of the pseudo-customer method on the care services (counseling, advice, and management) provided by the community pharmacists for migraine during pregnancy. **Methods:** This was a cross-sectional study conducted in community pharmacies with a cluster sampling of pharmacists. A sample of 200 community pharmacists was recruited from three emirates in the United Arab Emirates. Pregnant woman-related migraine management was assessed using the pseudo-customer model. The used script is not of a real patient but a fake/scripted used to describe the study. **Results:** No association was found between the gender and nationality of community pharmacists and the ability to be proactive (P =0.5, 0.568) and between the utilization of source of information and gender (P =0.31). The ability to prescribe by community pharmacists without probing or only after a probe was independent of job title (P =0.310); gender (P =0.44) and nationality (P =0.128). The community pharmacists who have offered written information have had significantly higher odds to dispense medication compared to those who have not (OR =45.547, 95% CI: 2.653 - 782.088, P =0.008). Furthermore, the pharmacists who have been reported to ask for precipitating factors of migraine had significantly higher odds to dispense medication compared to those who have not (OR =11.955, 95% CI: 1.083-131.948, P =0.043). The main outcome was the responses of the community pharmacists to the pseudo-customer visit (pregnant woman with migraine). **Conclusions:** The community pharmacist's care services (counseling, advice, and management) offered to the pseudo-customer visits was effective for dealing with migraine during pregnancy.

Keywords: community pharmacist; community pharmacy; migraine; pseudo-customer; pregnant woman

INTRODUCTION

Approximately 25% of females of reproductive age are affected by migraine.[1] Several pregnant females suffering from migraine reported an improvement in the symptoms of migraine, and almost one third experience complete remissions.[2,3] A common symptom for which customers may seek pharmacist advice for self-medication is headache, as global burden disease.[4] Migraine symptoms must be differentiated from other types of headaches due to the fact that different treatment options may be required. Additionally, a severe headache, which is not a migraine, because of its distinctive character, may indicate a more serious underlying condition.[5] In order to recommend the right type of treatment or to advice for further medical care, community pharmacists must be able to differentiate migraine from typical headaches. The medical literature sets clear differentiations between these symptoms.[6,7] These distinctions refer to the character of the pain, pain location, the frequency of pain, the intensity of the pain and accompanying symptoms.[6-8] Treating these conditions has also been linked to most reported cases of toxicological effects due to overdose of medications taken by patients.[9,10] Nowadays, the delivery of appropriate patient counseling is considered as an integral part of healthcare provision.[11] The community pharmacists are the primary source of drug supply, permitting potential opportunities for interventions to address the risk of irrational drug use and therefore reduce the financial burden of health care costs. Quality assurance of the services provided by community pharmacists has been a major concern in many countries.[12,13] Guidelines of pharmacy practice usually recommend that pharmacists provide patient's counseling

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regarding the appropriate use, potential risks, and cautions of drugs as well as promote drug adherence.[14-16] Nevertheless, these guidelines are not fully implemented in day-to-day pharmacy practice.[17,18]

Rationale

The current study has adopted the pseudo-customer model due to its validity and occurrence in the real world practice. Nevertheless, to the best of our knowledge few published studies have been conducted to evaluate customer's care services in community pharmacies in the United Arab Emirates (UAE) using the pseudo-customer model. This further indicates that there is a paucity of information available about the current care services provided by the community pharmacists particularly for pregnant women with migraine. Therefore, there was a necessity to cover the gap of knowledge in the care service provided by the community pharmacies in the UAE.

Aim

The main aim was to evaluate, the effectiveness of the pseudo-customer model on the care services (counseling, advice and management) for migraine during pregnancy provided by community pharmacists in the UAE.

Ethics approval

Ethics approval was granted by the College of Pharmacy at Ajman University-UAE, (Reference number: D-F-H-19-4-21 on 1/06/2019).

METHODS

This was a cross-sectional study, conducted in community pharmacy (between June 2019 and September 2019) in three main cities in the UAE: Dubai (regulated by the Dubai Health Authority), Sharjah, and Ajman (both regulated by the Ministry of Health). A sample of 200 community pharmacists was recruited from the above-mentioned community pharmacies. We have used cluster sampling of community pharmacists where sub-groups of the community pharmacies population were used as the sampling unit. The community pharmacist population was derived from three clusters (Ajman [49], Dubai [388] and Sharjah cities [287]. The yellow pages were used to obtain the contact details and locations of community pharmacies in the above-mentioned three cities. Stratified sampling of every 4th pharmacy on the list of each of the three cities was used to ensure representativeness. Community pharmacies were stratified by city then pharmacies from each city (stratum) were sampled. The final sample of community pharmacists (200) was represented as (99) for the Emirate of Dubai, (75) for the Emirate of Sharjah and (26) for the Emirate of Ajman. We have obtained the consent of community pharmacists working at the specified community pharmacies in order to participate in the study. Prior to participation, the head mangers of each potential participating pharmacy was visited by the main researcher and was informed about the objectives of the study and that a pseudo- customer will visit their pharmacies in a given period of time (within 6 weeks'

period). The head managers were informed of the pseudo-customer scenario which will be used. They were assured that all results of the model of interaction would be kept strictly confidential.

The pseudo-customer role has been conducted by three trained research assistants (who have visited the 200 community pharmacies) from the College of Pharmacy, Ajman University-UAE. We have tested the pseudo-customer model for a pregnant woman with symptoms of migraine. The pseudo-customer was waiting for any prescribed or offered medication and then if the community pharmacist offered paracetamol then the pseudo-customer replied that she already had it but with no benefits. We have used a pre-defined structured scenario with questions to obtain the relevant information for the management of migraine in pregnant women, (Appendices 1 and 2). The scenario script is not of a real patient but a fake/ scripted used to describe the study.

A pilot study of 10 visits to community pharmacies was conducted. Depending on the feedback from this pilot study, the scenario was refined, items on the data collection form were adjusted to suit the scenario, and the coding scheme (including inter-rater coding) for the type of provided information by the community pharmacist was discussed and further refined. Results obtained in the pilot were excluded from data analysis.

Statistical analysis

Descriptive statistical analyses were used to summarize the result (mean standard deviation [SD]). Analysis of association (Chi-squared test χ^2) and Binary logistic regression were used to analyze data using statistical package for social science software (SPSS version 23). The odds ratio (OR) and 95% confidence interval (CI) were executed to assess the independent risk factors for the outcome variables. P-value <0.05 was considered statistically significant.

The accuracy of data entry was checked during an initial screening. Errors in data entry were minimized by employing cleaning and validation procedures and using frequency tables and random checks of data entry for the questions. The data was also rechecked after the completion of this process. Using frequency tables enabled the identification of data entry errors. For example, variables that were coded with two numbers (i.e. gender), thus having only two possible answers, were in some cases noted to display a third value. Manual location and correction of errors were conducted in this case.

RESULTS

Among the 200 participants (163, 81.5%) were in-charge community pharmacists, nearly half were males (139, 46.3%), and two third were non-Arab (150, 75.0%). The majority of participating pharmacists were under 31 years of age (158, 79%). The mean age of the sample was 27.5 ±4.4. The work experience as a community pharmacist was above 5 years for more than three quarters (153, 76.5%). Regarding the educational level, more than half of participated pharmacists

hold Bachelor of Pharmacy (112, 56%) versus (88, 44.0%) holds Doctor of Pharmacy (Pharm-D). The vast majority of community pharmacists work between 8 to 10 hours a day (192, 96%). Below half of community pharmacists have had guidelines for migraine management to use during their work (88, 44%). Average client waiting time (in minutes) was between 6 to 10 minutes for below three quarters of participated pharmacies (143, 71.5%, Table 1).

The respective recorded questions asked by the contacted community pharmacist to the pseudo-customer have reported ten items. The first question was about the symptoms (5 questions) described by the pseudo-customer, whereby (101, 50.5%) of the contacted pharmacists have persuaded them. Below three quarters of the community pharmacists (143, 71.5%) ask about duration of symptoms without a probe. The majority of the community pharmacists (172, 86.0%) have enquired about other conditions that might co-exist with the migraine such as sinusitis, cold, hay fever, nausea, vomiting, and photophobia. Conversely, the majority of community pharmacists (166, 83.0%) did not enquired but only after have been probe about the potential factors that could trigger the attack of migraine such as type of food, alcohol, stress, and hormonal change or eye problems (denoted the aura as neurological signs of migraine). Almost nearly half of community

pharmacists (96, 48.0%) were proactive to ask if the pseudo-customer has taken any treatment to resolve the pain. Another example of the questions asked by the community pharmacists was relevant to recent fall of faint, which was reported only after the pseudo-customer probed them (196, 98.0%). The details of the questions relevant to initial symptoms were presented in, (Table 2).

The management section refers to the care services (counseling, advice and management) action taken by the community pharmacist to manage migraine headache which has included nine questions to check pharmacist's action if he/she prescribes medication. In addition to, advising the patient about the dose, frequency, duration of treatment and potential adverse effect, drug-drug/ drug-food interactions and the advice about the use of non-pharmacological approach. About two third of the pharmacists (126, 63.0%) was able to prescribe medication to the pseudo- patient without a probe. Patient education about the dose of the prescribed medication and the frequency of the treatment were offered to the pseudo-patient without any probe (114, 57.0% and 107, 53.5% respectively). None of the community pharmacists have informed the patient about the possible potential drug-drug and drug-food interactions. Almost (80, 40.0%) of community pharmacists have advised the pseudo-customer for non-pharmacological

Table 1. The demographic characteristics of the participants		
Socio-demographic characteristics of community pharmacists	Frequency (%)	P-value
Age (years) 22–30 31–40 >40	158 (79.0) 42 (21.0) 0	0.833
Gender Female Male	61(20.3%) 139(46.3%)	0.447
Nationality Arab Non-Arab	50 (25.0) 150 (75.0)	0.500
Job title Not in-charged pharmacist In-charge pharmacist	37 (18.5) 163 (81.5)	0.513
Work experience in (years) <1 years 1–5 years >5 years	8 (4.0) 39 (19.5) 153 (76.5)	0.00
Length of working time (in hours) 1–8 h 8–10 h	8 (4.0) 192 (96.0)	0.487
Average client waiting time (in minutes) 1–5 min 6–10 min	57 (28.5) 143 (71.5)	0.00
Educational qualification of community pharmacists Bachelor of pharmacy (B-Pharm) Doctor of pharmacy (Pharm-D)	112 (56.0) 88 (44.0)	0.00
Community pharmacists who had guidelines for headache management Yes No	88 (44.0) 112 (56.0)	0.00

%: percent

Table 2. The medical information relevant to the pseudo-customer's symptoms provided by the community pharmacist (n =200)		
Information relevant to counselling	Frequency (%)	P-value
The community pharmacist asked the pseudo-costumer for the symptoms Yes No, only after a probe	101 (50.5) 99 (49.5)	0.487
The community pharmacist asked the pseudo-costumer for the age Yes No, only after a probe	114 (57.0) 86 (43.0)	0.487
The community pharmacist asked the pseudo-costumer for the duration of symptoms Yes No, only after a probe	143 (71.5) 57 (28.5)	0.477
The community pharmacist asked the pseudo-costumer for time of the symptoms Yes No, only after a probe	15 (7.5) 185 (92.5)	0.477
The community pharmacistasked the pseudo-costumer about how often the symptoms occur Yes No, only after a probe	69 (34.5) 131 (65.5)	0.491
The community pharmacist asked the pseudo-costumer about previous history of similar symptoms Yes No, only after a probe	70 (35.0) 130 (65.0)	0.411
The community pharmacist asked the pseudo-costumer about a recent fall or faint Yes No, only after a probe	4 (2.0) 196 (98.0)	0.447
The community pharmacist asked the pseudo-costumer about other medical problems Yes No, only after a probe	172 (86.0) 28 (14.0)	0.426
The community pharmacist asked the pseudo-costumer about precipitating factors Yes No, only after a probe	34 (170) 166 (83.0)	0.447
The community pharmacist asked the pseudo-costumer if an action taken by pseudo-costumer Yes No, only after a probe	96 (48.0) 104 (52.0)	0.447

%: percent

treatment. The most commonly prescribed medication for migraine headache was paracetamol (102, 80.9%). A minority of community pharmacists have prescribed Ibuprofen (9, 7.1%) and mefenamic acid (5, 3.9%). Vitamin C and magnesium effervescent tablets were prescribed with paracetamol, (3, 2.3% and 7, 5.5%) respectively. Using vicks® **vapour rub, hot and cold towels, ice pack, rest in dark room, aromatherapy, tiger® balm and yoga are the most recommended non-pharmacological treatment. Referral questions clarifies if the pharmacist did not offer a treatment and refers the pseudo-customer to the physician, which was the act for almost three quarters (74, 37.0%) as shown** in table 3.

Communicative skill section describes the overall impression about the care service, eye contact and attention of community pharmacists towards the pseudo-customer. The overall impression as reported by the two pseudo-customer of the perceived care service (later confirmed by the investigator) was either highly satisfied (75, 37.5%) or satisfied (63, 31.5%). On feed-back eye contact during consultation was ranked very highly satisfied for almost a quarter of the participating

pharmacists (47, 23.5%). Attention of the community pharmacist was ranked at very highly satisfied and highly satisfied categories (54, 27.0% and 83, 41.5% respectively) (Table 4).

The information provided during the counselling process enquires if the community pharmacist utilized other source of information than his/her knowledge, such as computer/data base, reference books, package insert and others. The majority of the community pharmacists were not using any source of information during the counseling process other than their own knowledge (165, 82.5%). Sources of information used during the counseling process were the internet, package insert and calling the physician [14, (10.5%), 15 (8.5%) and 3, (2.0%)]. Putting a sticker/remark/label on the insert-package of the medication was the most used approach to educate the pseudo-customer by the community pharmacists (37, 36.5%), (Table 5).

There was no enough evidence to suggest an association between being in-charge community pharmacist or not in-

Table 3. Information relevant to pharmaceutical care element offered by the pharmacist (n =200)

Information relevant to pharmaceutical care offered	Frequency (%)	P-value
The community pharmacist asked the pseudo-costumer if he/she has allergies to medication (n=200) Yes No, only after a probe	22 (11.0) 178 (89.0)	0.447
The community pharmacist dispensed medication (n=200) Yes No, only after a probe	126 (63.0) 74 (37.0)	0.447
The community pharmacist provided the dose of dispensed medication (n=126) Yes No, only after a probe	72 (57.0) 54 (43.0)	0.447
The community pharmacist provided frequency of the medication (n=126) Yes No, only after a probe	107 (53.5) 19 (46.5)	0.447
The community pharmacist provided the duration of the treatment (n=126) Yes No, only after a probe	73 (36.5) 54 (63.5)	0.447
The community pharmacist mentioned the common side effects (n=126) Yes No, only after a probe	15 (7.5) 111 (92.5)	0.447
The community pharmacist did inform patient about drug interactions (n=126) Yes No, only after a probe	0 126 (100.0)	0.447
The community pharmacist provided other non-pharmacological treatment (n=200) Yes No, only after a probe	79 (39.5) 121 (60.5)	0.447
The community pharmacist referred the patient to the physician (n=200) Yes No, only after a probe	74 (37.0) 126 (63.0)	0.488

%: percent

Table 4. Overall satisfaction of the pseudo-customer about the pharmacist (n =200)

Variables	Frequency (%)	P-value
Overall satisfaction		
Very highly satisfied		0.484
Highly satisfied	75 (37.5)	0.446
Satisfied	63 (31.5)	0.414
Less satisfied	31 (15.5)	0.468
Not satisfied	14 (7.0)	0.436
The eye contact of the pharmacist with the pseudo-customer		
Very highly satisfied	47 (23.5)	0.447
Highly satisfied	88 (44.0)	0.468
Satisfied	46 (23.0)	0.459
Less satisfied	15 (7.5)	0.468
Not satisfied	4 (2.0)	
The attention of the community pharmacist with the pseudo-customer		
Very highly satisfied	54 (27.0)	0.410
Highly satisfied	83 (41.5)	0.412
Satisfied	45 (22.5)	0.466
Less satisfied	15 (7.5)	0.489
Not satisfied	3(1.5)	

%: percent

charge community pharmacist (*P* =.0399) against the ability to be proactive to ask the patient about the description of the symptoms. We did not observe any association between the gender of pharmacists against the ability to be proactive to ask the patient about the description of the symptoms (*P* =0.5). Furthermore, there is no relationship between the pharmacist's nationalities and the capability to be a proactive to ask the pseudo-customer about the description of the symptoms (*P* =0.568). There is no enough evidence to suggest an association between the utilization of source of information and gender (*P* =0.31). The proportions of community pharmacists utilizing other source of information was not significantly associated with their nationality (*P* =0.162). There was no relationship between job titles of the community pharmacists and the capability of utilizing other sources of information, (*P* =0.236). The ability of prescribing community pharmacists without probing or only after a probe was independent of job title (*P* =0.310); gender (*P* =0.44) and nationality (*P* =0.128).

The community pharmacists who have being reported to offer written information have had significantly 45 times higher odds to dispense medication compared to those who have not (OR =45.547, 95% CI: 2.653 - 782.088, *P* =0.008). Furthermore, the pharmacists who have being reported to ask for precipitating factors of migraine had significantly 11.955 times higher odds to dispense medication compared to those pharmacists who have not (OR =11.955, 95% CI: 1.083-131.948, *P* =0.043), (Table 6).

DISCUSSION

The main objective of the current study was to evaluate, the effectiveness of the pseudo-customer model on the care services (management, counseling and advice) provided by the community pharmacists in UAE for migraine during pregnancy. The main finding of the current study was the effective applicability of the pseudo-customer model in our population. The second finding was relevant to the community pharmacist involved in the care model concerning their proactive role to ask the pseudo-customer about the description of the migraine symptoms, other conditions that might co-exist with the migraine, the potential factors that could trigger the attack of migraine and respective management to resolve the pain.

The current study has evaluated the headache management practices of community pharmacists in the UAE. The results obtained from the pseudo-customer visits have revealed important discrepancies regarding the frequency of information provided to the pseudo-customer. Furthermore, the pseudo-customer method that was used to assess the effectiveness of community pharmacist counselling procedures was a viable tool. This approach has focused on assessing the interaction between the pharmacist and the pseudo-customer, and the counselling process from management perspective. In our study, more than half of responded community pharmacists hold bachelor of pharmacy (B. Pharm). This was contrary to other study carried out in Saudia Arabia,[19] which has shown that over three quarters of participated pharmacists have had B. Pharm. Although not tested precisely, but it might have indicated that more community pharmacists with Pharm-D were represented in our sample which might have improved the care services offered to the pseudo-customer. In the current study, less than half of the community pharmacists have had guidelines for migraine management. This was encouraging as compared to earlier study,[20] which has reported that the vast majority of community pharmacists have not had such guidelines.

Table 5. The source and type of information offered by the community pharmacist to the pseudo-customer		
Parameter measured	Frequency (%)	P-value
Has the community pharmacist utilized other source of information during counselling process? Yes No	35 (17.5) 165 (82.5)	0.447
Has the community pharmacist offered any written information to the pseudo-customer? Yes No	39 (19.5) 161 (80.5)	0.447
Community pharmacist utilized package insert (patient information/brochures)	16 (9.0)	0.586
Community pharmacist utilized the internet	14 (10.5)	0.680
Individual customer-information (computer printout)	2 (1.0)	
Other ways used to respond to provision of information (call the doctor)	3 (2.0)	

%: percent

Table 6. Multivariate model for associations with being proactive and ask the pseudo-customer for the description of her symptoms (n=200)				
Variables	Response	OR	95% CI	P-value
Gender (ref-male)	Female	1.155	0.596 – 2.239	0.669
Nationality (ref-Arab)	Non-Arab	0.939	0.475 – 1.859	0.858
Job-title (ref-in charge Pharmacist)	Not –in charge Pharmacist	0.631	0.296 – 1.345	0.233
Utilization of other source of information (ref-yes)	No	3.514	1.533 – 8.054	0.003*

CI: confidence interval, OR: odds-ratio

Our study shares several similarities with the study conducted by Netere and associates,[20] comprising questions and pseudo-customer histories required by the community pharmacist during the encounter. For instance, our results have showed that half of pharmacists asked about the symptoms described by the pseudo-customer. These results build on existing evidence by Netere who found that below half of community pharmacist ask about types of typical signs/symptoms of headache. Additionally, Netere has shown that almost three quarters of the pharmacists asked about the duration of headache. Our results support and augment these findings by showing less than three quarters of the community pharmacists asked about duration of symptoms without a probe. In line with our finding that the majority of community pharmacists did not enquired but only after have been probed about the potential factors that could trigger the attack of migraine. Similarly, Netere reported that the vast majority of participated pharmacists did not enquire about exacerbating or relieving factors of headache. Conversely, our results contradict with the findings of Netere that the vast majority of participated pharmacists neither enquired about previous or current medical condition nor enquired about the type of past medication history.

In our study, patient education about the dose and frequency of the prescribed medication were offered to the pseudo-customer without any probe by more than half of the community pharmacists. The results do not fit much with that of Alfadl,[21] who found that below third of community pharmacist provided information about dose, frequency and the duration. Nevertheless, both studies revealed that none of the community pharmacists informed the patient about potential drug-drug and drug-food interaction of prescribed medication. Recent research conducted in UAE found that almost one third of participated pharmacists refer the pseudo-customer to the physician,[22] however; our current study reported higher rate.

Our results have indicated that the overall impression as reported by the two pseudo-customers of the perceived care services was either highly satisfied or satisfied. This was positive result as compared with one previous study.[23] Communication was found to be a barrier to patient counselling in various studies.[24-26] This imbeds the care services, even if the reported patient's satisfaction was high with management of disease. The studies reporting poor communication skills as a barrier to effective patient counselling also urge for improvement of communications skills of pharmacists. In our study, the majority of community pharmacists were not using any source of information during the counseling process other than their own knowledge. Boardman and Heeley[27] have noted that when pharmacists do not have sufficient knowledge of symptomatology and drug side-effects, this subsequently impacts on the counselling process.

In the current study, when community pharmacists actively sought out other sources of information, they were also 3.5 times more likely to enquire about symptomatology. This may indicate that when community pharmacists are aware of a lack of knowledge in a certain area, they seek out the information needed and corroborate it with patient symptomatology, which may result in an improved of the counselling. Nonetheless, pharmacist's lack of awareness over knowledge gaps may impact the likelihood of seeking information and subsequently the rate of proactive behaviour. Some studies carried in the Arab nations,[28-30] have reported that a portion of pharmacists do not feel confident in their knowledge. Hence, it is unclear to what extent community pharmacists in this situation would seek out additional information.

As argued by these authors, the vast majority of studies carried out in Arab nations used male samples. Hence, it cannot be determined if these results can be generalized to the female population. In the present study, although the majority of the community pharmacist sample were males (139), there was no differences reported based on gender in terms of being proactive, utilizing other sources of information or prescribing medication. However, although the results did not reach the threshold for statistical significance, males were more likely to seek information from other sources. This type of behavior was a statistically significant predictor (3.5 times more likely) of proactive behavior.

Limitations of the current study

The main two limitations in the current study, firstly, this study used a sample of pseudo-customers who had previous health science knowledge. The pseudo-customers trained in the use of the assessment tool may provide more objective evaluations and eliminate professional subjective bias. Another limitation of the current study is the number of scenarios used. The data resulted from this study indicated that a significant portion of pharmacists did not ask about symptom duration or coexisting conditions, which may have revealed underlying conditions or potential drug-drug interactions.

CONCLUSION

The study has revealed that the community pharmacist's care services (counseling, advice, and management) offered to the pseudo-customer visits was effective for dealing with migraine during pregnancy. The findings of this study support the development of pharmacy guidelines for patient counselling. We highly recommended future research to be carried out in order to assess the evidence-based for developing such a guide. Further, other investigations using the pseudo-customer method can be applied in the UAE to assess the community pharmacist's management of migraine during pregnancy in people with complex conditions and poly-pharmacy. Additional differences between the results in this study and previous literature noted an increased rate of proactive behavior by the community pharmacists.

What is already known on this subject?

- Pseudo-customer is well known model for improvement of quality of patient's care.

- The use of pseudo-customer in community pharmacy

is not well defined particularly in pregnant women with migraine.

What our article adds to the literature?

- The pseudo-customer method to assess the effectiveness of management, counseling and advice provided by community pharmacists is a viable tool that improves current practice.

- The findings of this study support the development of community pharmacy guidelines for the care of pregnant women with migraine.

- Providing educational interventions and continuous clinical training about migraine management in pregnancy may improve the community pharmacy practice.

CONFLICTS OF INTEREST

All authors declare no conflicts of interest.

AVAILABILITY OF DATA AND MATERIAL (DATA TRANSPARENCY)

No data available.

CODE AVAILABILITY (SOFTWARE APPLICATION OR CUSTOM CODE)

Not applicable.

CONSENT TO PARTICIPATE

Not applicable.

CONSENT FOR PUBLICATION (INCLUDE APPROPRIATE STATEMENTS)

All author consented for publication of this manuscript.

AUTHOR'S CONTRIBUTIONS

K Alk, SH, NAH and A A Elnour, were responsible for the study concept, design, data analysis, have contributed equally to the preparation of the whole manuscript, literature review, developing and proof reading. The authors have not published or submitted any related papers from the same study. This article is not under consideration or submission for any other journals.

ABBREVIATIONS

CI	confidence interval
NSAIDs	non-steroidal anti-inflammatory drugs
OR	odds ratio
Pharm-D	Doctor of Pharmacy
SD	standard deviation
SPSS	statistical package for social science software
UAE	United Arab Emirates

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