ASSESSMENT OF KNOWLEDGE OF OVER-THE-COUNTER DRUGS DISPENSATION AT PHARMACIES IN SUDAN

Abu-Bakr Yagoub Ibrahim Mohammed

Elrazi University, Sudan

E-mail: khierat@hotmail.com

ABSTRACT

Objectives: To assess the knowledge and attitude of community pharmacists and their adherence to OTC guidelines.

Methods: Descriptive cross-sectional non-interventional community-based study, conducted in Jabra locality, a locality that includes two cities, Jabra and Alsahafa. According to the Khartoum state Directorate of Pharmacy report, there are 80 pharmacies distributed throughout the area. This study had total coverage of the area (n=80). The data were collected using a closed-ended self-administered questionnaire for pharmacists; the questions were designed to indicate their knowledge about dispensing OTC drugs. Eighty community pharmacists were visited and questionnaires were collected. All questions were coded and then imported for SPSS (Statistical Package for the Social Sciences) Version (20) for Windows in order to perform a proper analysis.

Results: The research was aimed at assessing the knowledge of over-the-counter drugs dispensing at pharmacies. There were more female than male pharmacists, 59% and 41% respectively. The majority of respondent community pharmacists range in age between 21-30 years (79%). Only 20% of respondent community pharmacists were found to have post-graduate degrees. Pharmacists with 1-5 years of experience represent 54% of the studied population, with less than a third (23%) having less than 1 year's experience. Of the total number of community pharmacists, 32.5% are aware of the OTC list. In relation to the age groups, 27.5% of the younger age group has knowledge about the availability of the list. Regarding qualifications, 52.5% of pharmacists holding bachelor degrees did not know the

availability of the OTC list. However, this group had the best knowledge regarding the availability list compared with those holding other qualifications (27.5%). Regarding their knowledge in dispensing without prescription, 79% and 81% of community pharmacists dispensed prescription only drugs without prescription (Hyosine and Profen respectively). At the same time, 85% dispensed Amyilin DM, although it is a category P OTC drug. The classification of pharmacists according to their knowledge regarding dispensing over-the-counter drugs as Poor/less acceptable/acceptable are 11.3%, 23.8% and 65.0% respectively showing an acceptable percentage.

Conclusions: the knowledge of community pharmacists was acceptable.

INTRODUCTION

Over the last 40 years, the pharmacist's role has changed from that of compounder or dispenser to one of 'drug therapy manager'. This involves the responsibility of ensuring that wherever medicines are provided and used, quality products are selected, procured, stored, distributed, dispensed and administered so that they contribute to the health of patients.

The knowledge base of pharmacy graduates is changing. As these graduates move into practice, so pharmacy practice itself will change to reflect the new knowledge base. However, pharmacists already in practice were mainly educated on the basis of the old paradigm of pharmaceutical product focus. If these pharmacists are to contribute effectively to the new patient-centred pharmaceutical practice, they must have the opportunity to acquire the new knowledge and skills required for their new role. As discussed by Widenmayer (2006) and others, to do this they must become life-long learners, one of the roles of the new pharmacist.

As stated by Al-Ghamdi (2001), the ability of pharmacists to perform basic physical assessment in the community pharmacy, therefore effectively managing patients' health status, was considered to be a vital tool in implementing this new concept.

Over-the-counter (OTC) medicines are drugs you can buy without a prescription. Some OTC medicines relieve aches, pains and itches. Some prevent or cure diseases, such as tooth decay and athlete's foot. Others help manage recurring problems, such as migraines. This is discussed further in over-the-counter medicines at http://www.nlm.nih.gov/medlineplus/overthecountermedicines.html.

The United States Food, Drugs and Cosmetics Act defines a non-prescription drug as a drug for which directions for safe use by the public can be written down; it does not necessarily mean that these drugs are without danger. As discussed by Bawazir (1992), like prescription drugs, OTC drugs may produce serious adverse effects, lead to allergic reactions, interact with other drugs, produce physical and psychological dependence, and mask serious medical disorders that may require immediate attention.

PROBLEM STATEMENT

Incomplete and inadequate information leads to an inappropriate use of drugs that leads to serious health and economic problems for both individuals and the community as large.

On the other hand, many pharmacists are known to dispense drugs without prescription. In addition there is a low level of awareness among pharmacists about the classification of drugs as OTC. In order to assure quality of dispensing of medicines, it is crucial to assess the magnitude of the problem.

JUSTIFICATION

There is little research into whether those who work in this field have acceptable knowledge and awareness of over-the-counter (OTC) drugs, or the dispensation of counter drugs without prescription at pharmacies.

METHODS AND MATERIALS

Study design:

This study was undertaken using a descriptive cross -sectional non-interventional community-based study.

Study Area and Study population:

The study was conducted in Jabra locality, one of localities of Khartoum state, which is one of 15 states of Sudan. Khartoum state has an area of 22,122 km^2 and an estimated population of approximately 7,152,102 (2008); this is nearly one-fifth of the total population of Sudan (33.5 million).

Jabra locality includes two cities, Jabra and Alsahafa, which, according to the Khartoum State directorate of Pharmacy report, contains 80 pharmacies.

Inclusion criteria:

✓ Gender: male or female.

✓ Age group: > 18 years, < 60 years

✓ Pharmacy graduates (B.Pharm/D.Pharm/ Higher degree in Pharmacy)

✓ Pharmacies are located in Jabra locality.

Exclusion criteria:

✓ Age group: < 18 years, > 60 years.

✓ Helpers who are working in community pharmacies without a pharmacy qualification.

✓ Pharmacies not located in Jabra locality.

Sample size:

Formula: $n=Z^2*PQ/D^2$. The sample size in this study was total coverage (n=80).

Data collection:

The data were collected using a closed-ended self-administered questionnaire for pharmacists; the questions were designed to indicate knowledge regarding dispensing OTC drugs. The questionnaire was scrutinised for misunderstandings in terms of wording, sentence construction and ambiguity; at that point modification to the questionnaire was undertaken. After minor modifications in some words and language contained in the questions, the questionnaire was well structured to its final format. Only at that point were 80 community pharmacists visited and the questionnaires collected.

Data management and analysis plan:

All questions were coded and then imported to SPSS (Statistical Package for the Social Sciences) Version (20) for Windows in order to perform a proper analysis. Descriptive statistics were used to analyse direct questions and demographic data obtained from the research (i.e. frequency distribution, percentile, mean, and standard deviation). The Chi square test and Fisher's test were used to measure possible associations. Results were presented in the form of tables and figures as shown below.
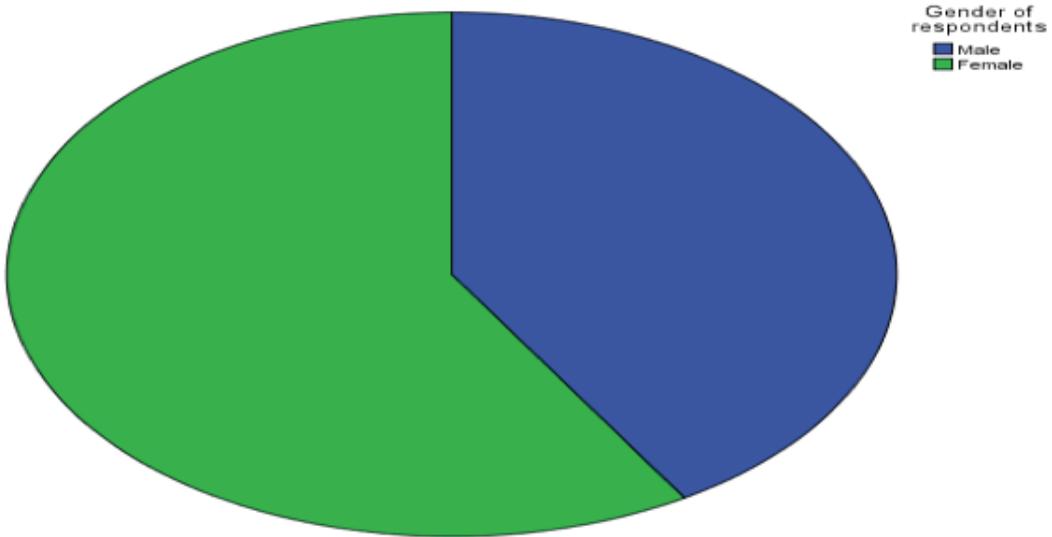
Limitation of study:

The sample type is total coverage due to small number of pharmacies.
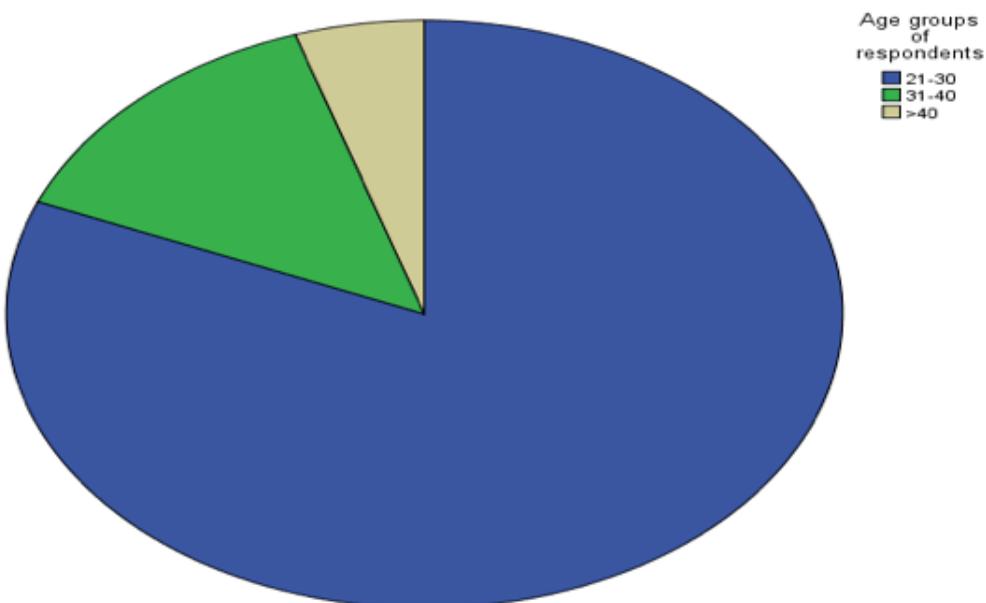
RESULTS

1. Personal information

The results obtained are illustrated in Figures 1-4

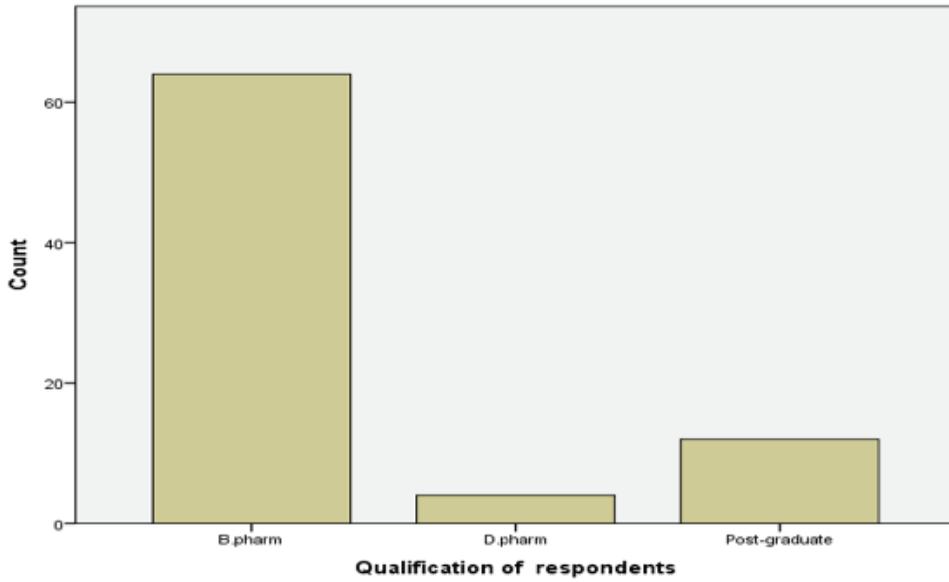**Figure 1**   Showing Gender distribution of community pharmacists

Source: Produced by author.

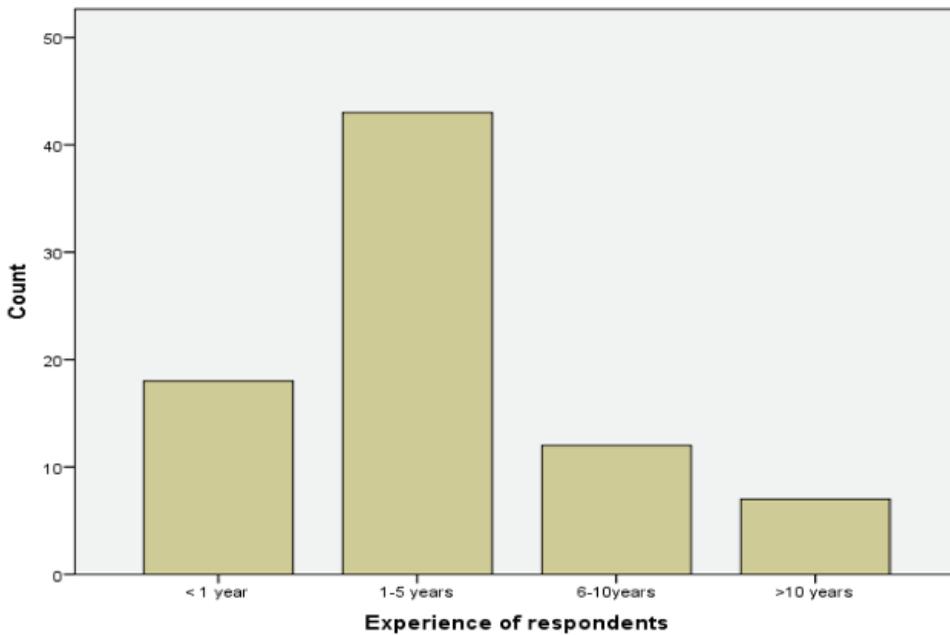**Figure 2**   Showing age group distribution of community pharmacists (n=80)

Source: Produced by author.

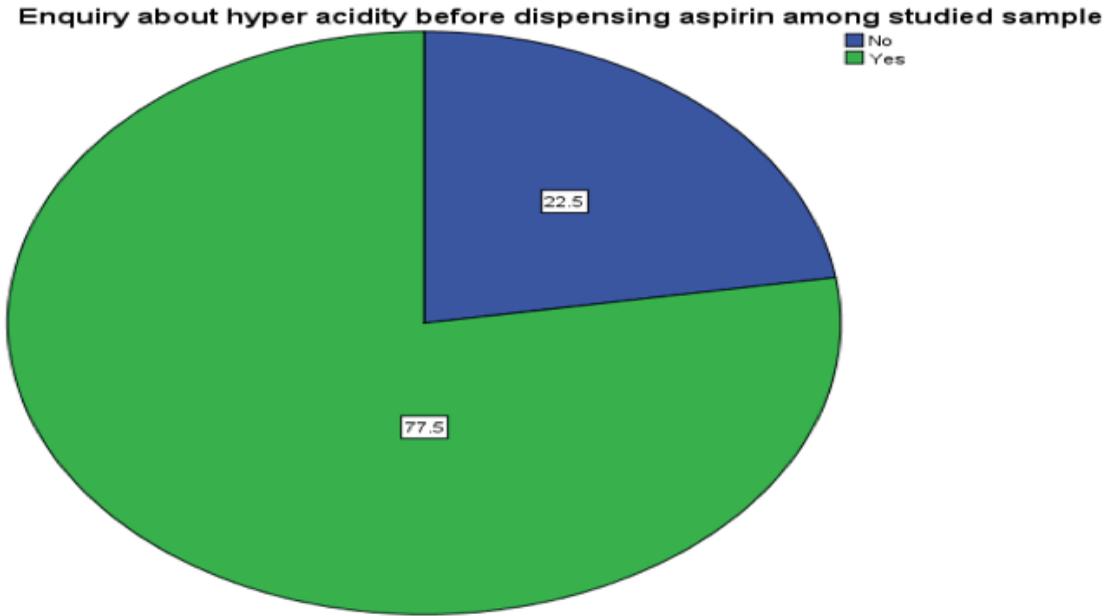**Figure 3** Showing qualification of community pharmacists (n=80)

Source: Produced by author.

Figure 4 Showing experience of community pharmacists (n=80)

Source: Produced by author.
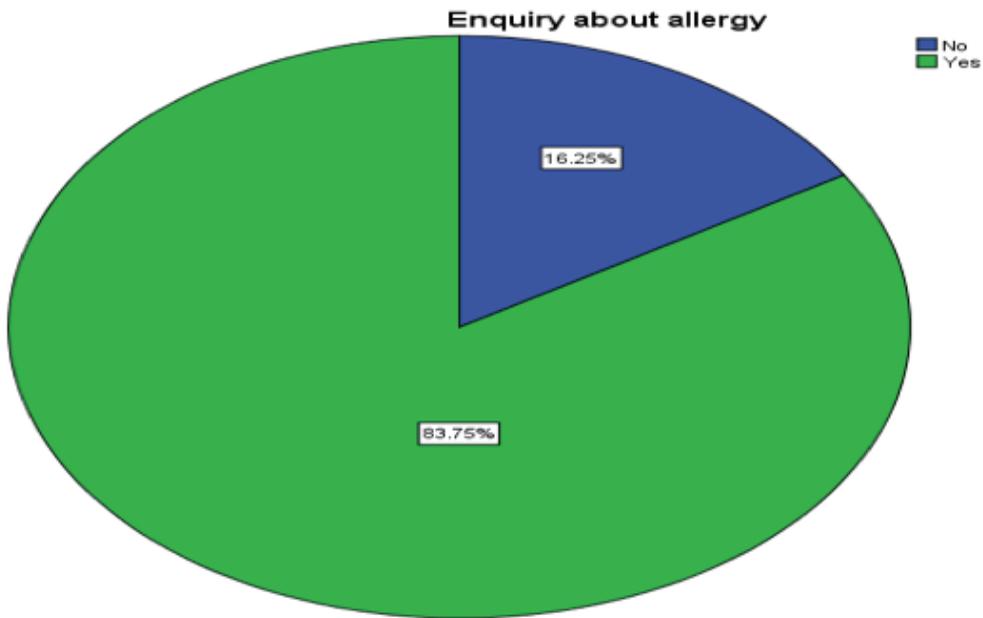
Figure 5 Showing enquiry about hyeracidiy (n= 80)

Enquiry about hyper acidity before dispensing aspirin among studied sample

Source: Produced by author.

Figure 6 Showing enquiry about hyperacidity (n= 80)

Enquiry about hyper acidity before dispensing aspirin among studied sample
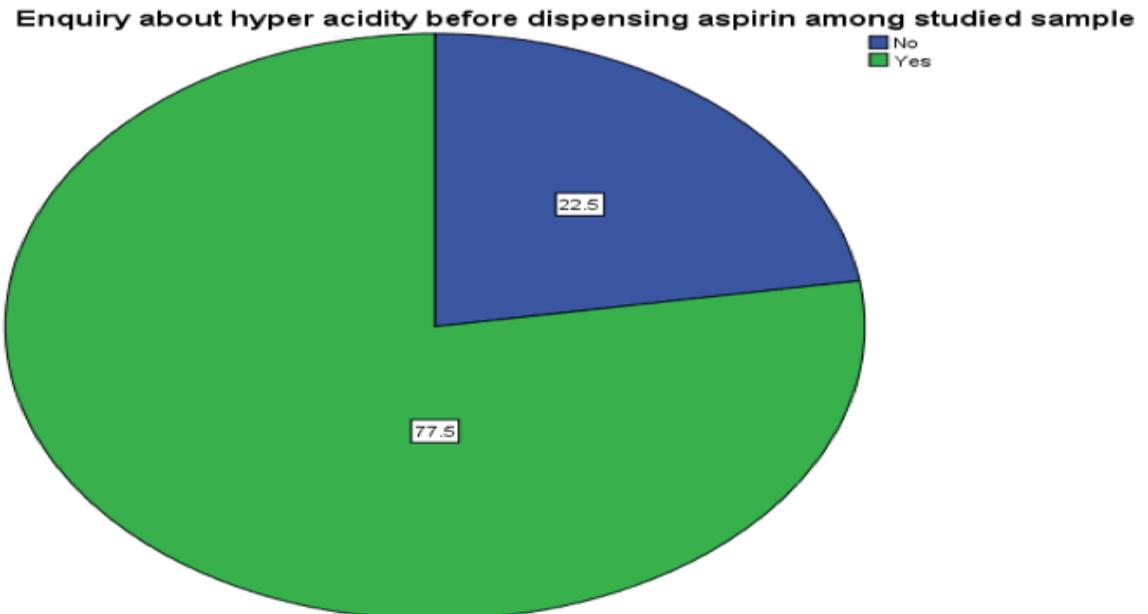
Source: Produced by author.

Figure 7 Showing enquiry about allergy (n= 80)

Source: Produced by author.

Figure 8 Showing dispensing of refill requests (n= 80)
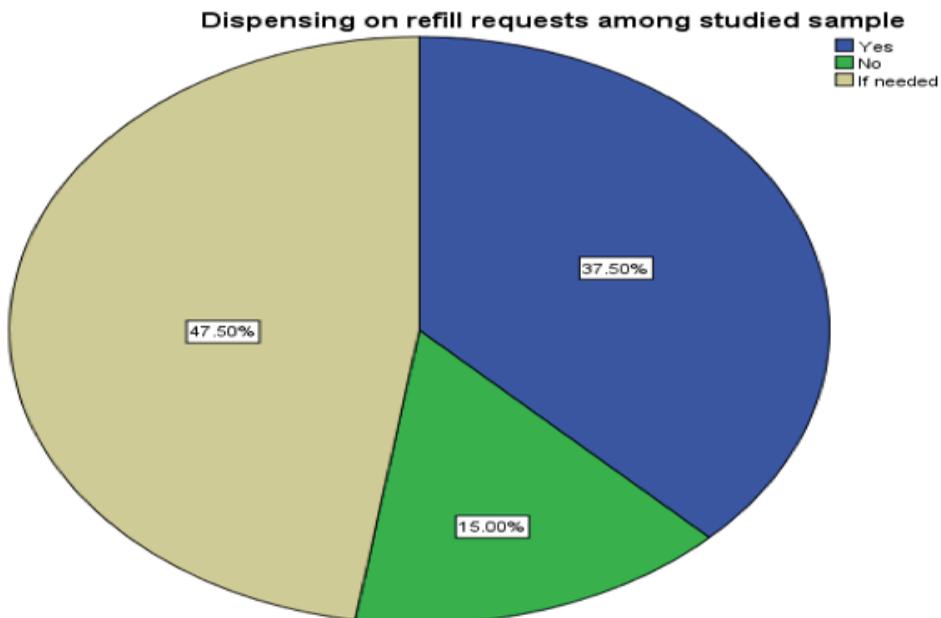
Source: Produced by author.

Table 1: Showing knowledge of the availability of the OTC list according to age group (n=80)

Age group	Availability of OTC-list		
	No	Yes	Total
21-30	(43) 42.5%	(22) 27.5%	(65) 81.2%
31-40	(8) 10.0%	(3) 3.75%	(11) 13.8%
>40	(3) 3.75%	(1) 1.2%	(4) 5.0%
Total	**(54) 67.5%**	**(26) 32.5%**	**(80) 100.0%**

P value = .o14
Significant P value less than .05

Source: Produced by author.

Table 2: Showing knowledge of the availability of the OTC list according to qualification (n=80)

Qualification	Availability of OTC-list		
	No	Yes	Total
D.pharmacy	2 2.5%	2 2.5%	5%
B.pharmacy	42 52.5%	22 27.5%	64 80.0%
B.pharmacy	10 12.5%	2 2.5%	4 5.0%
Total	**54 67.5%**	**26 32.5%**	**80 100.0%**

P value = .o14
Significant P value less than .05

Source: Produced by author.

Table 3: Showing knowledge of the availability of the OTC list according to experience (n=80)

Experience	Availability of OTC-list		
	No	Yes	Total
< 1 year	12 15.0%	6 7.5.0%	18 22.5%
1-5 years	26 32.5%	17 21.2%	43 53.7%
6-10years	10 12.5%	2 2.5%	12 15.0%
>10 years	6 7.5%	1 1.2%	7 8.8%
Total	**54** **67.5%**	**26** **32.5%**	**80** **100.0%**

P value = .o14
Significant P value less than .05

Source: Produced by author.

Table 4: Showing enquiry about hyperacidity before dispensing aspirin-related to their experience (n=80)

Experience	Enquiry about hyperacidity		
	No	Yes	Total
< 1 year	9 11.2%	9 11.2%	18 22.4
1-5 years	35 43.8%	8 10.0%	43 53.8%
6-10years	11 13.8%	1 1.2%	12 15.0%
>10 years	7 8.8%	0 0.0%	7 8.8%
Total	**62** **77.5%**	**18** **22.5%**	**80** **100.0%**

P value = .o14
Significant P value less than .05

Source: Produced by author.

Table 5: Showing knowledge of the respondents to the content OTC drugs (n=80)

Drugs	Enquiry about hyperacidity		
	No	Yes	Total
Aspirin Tabs	15 19%	65 81%	80 100%
Aldomet Tabs	69 86%	11 14%	80 100%
Hyosine Tabs	17 21%	63 79%	80 100%
Profen Tabs	14 18%	66 82%	80 100%
Amoxicillin Tabs	45 56%	35 44%	80 100%
Tegretol Tabs	80 100%	0 0%	80 100%
Penicillin G Tabs	67 84%	13 16%	80 100%
Mestril mouth wash	7 9%	73 91%	80 100%
Otrovin nasal drops	48 60%	32 40%	80 100%
Amilyin DM	68 85%	12 15%	80 100%

P value = .o14
Significant P value less than .05

Source: Produced by author.

Table 6: Classification of pharmacists according to their knowledge in dispensing OTC (n=80)

Age group	Frequency	Percent
Poor	9	11.3
Less acceptable	19	23.8
Acceptable	52	65.0
Total	**80**	**100.0**

Classification grade:
(3-4) acceptable knowledge
(1-2) less acceptable knowledge
< 1 poor knowledge

P value = .o14
Significant P value less than .05

Source: Produced by author.

DISCUSSION

This research aimed at assessing the knowledge of over-the-counter drug dispensing at pharmacies.

As shown in Figure 1, there are more female pharmacists than male (59%). This may be because males prefer working for companies rather than pharmacies. In Pakistan, all workers were males due to cultural and social barriers. In some countries females are not encouraged to work in community pharmacies as they are not permitted to interact directly with males (Rabbani *et al*., 2001) In Oman and UAE the majority of pharmacists are males (66% and 64% respectively) (Rabbani *et al*., 2001; Duraz and Khan, 2011).

The majority of respondent community pharmacists are aged between 21-30 years old (79%), indicating the young age of pharmacists working at community pharmacies (see Figure 2). Only 20% of respondent community pharmacists were found to have post-graduate degrees. This low percentage is attributed to the attitude of community pharmacists towards higher education. Higher qualifications do not satisfy their needs since they do not improve their status at work; neither does it improve their financial outcome working in community pharmacies (see Figure 3).

Pharmacists with 1-5 years of experience represent 54% of the studied population;, less than a third (23%) have less than 1 year's experience. This category consists of recent graduates who should work under supervision (see Figure 4).

Of the total number of community pharmacists, 79% enquired about a patient's employment before dispensing antihistamine. Antihistamines are known to cause sedation and drowsiness, so pharmacists should always ask about employment that might require awareness of such effects (see Figure 5).

As shown in Figure 6, 78% of pharmacists asked about hyperacidity before dispensing aspirin; this reflects good knowledge and awareness about contraindication with regard to this simple drug. It does not necessarily imply the same knowledge about other conditions.

Of the total number of community pharmacists studied, 83% enquired about allergies, which reflects a high percentage of knowledge that may help customers in the appropriate selection of OTC drugs (see Figure 7).

As seen in Figure 8, 79% of community pharmacists dispensed drugs on receiving refill requests; this reflects a lack of knowledge about the classification of registered drugs.

As seen in Table 1, 32.5% of the total number of community pharmacists know about the OTC list. However, in relation to age groups, only 27.5% of the younger pharmacists have any knowledge about the availability of the list. It was found that the Sudan OTC list was not published on the Federal Pharmacy and Poisons Board website, or in the Sudan Medical Journal (National Medicines and Poisons Board in Sudan, 2009). In Pakistan, 11.1% of respondents were found to know about drugs that can be sold without prescription (Duraz and Khan, 2011.

According to the qualification of community pharmacists, 52.5% of pharmacists holding bachelor's degrees did not know about the availability of the OTC list, although they were the highest regarding knowledge of the availability of the list among other qualifications (27.5%) (see Table 2).

Regarding the length of experience of community pharmacists, 32.5%of those with 1-5 years' experience did not know about the availability of the OTC list, although they were the best in knowledge of the availability of the list among other duration of experience (21.2%) (see Table 3).

It can be seen from Table 4 that a total of 77.5% of community pharmacists asked about hyperacidity before dispensing aspirin. Related to their experience, the group with 1-5 years of experience are the group with the highest percentage of those who ask before dispensing hyperacidity drugs (43.8%).

Table 5 shows that 79% and 81% of community pharmacists dispense prescription only drugs (POM) (Hyosine and Profen respectively) without prescription. At the same time, 85% dispense Amyilin DM without prescription, although it is a category P OTC drug. A relative study from Pakistan also highlights a similar practice of selling POM without prescription (Rabbani *et al.*, 2001).

An assessment of phamacists' knowledge was carried out by rating answers to questions about dispensing OTC and making the following classifications:

- 3-4 has acceptable knowledge;

- 1-2 has less acceptable knowledge;

- less than 1 has poor knowledge respectively.

As can be seen from Table 6, the classification of pharmacists according to their knowledge in dispensing OTC, as Poor/less acceptable/ acceptable are 11.3%/23.8%/ 65.0%) respectively for the overall range showing an acceptable percentage.

CONCLUSIONS

- There is a high deficiency in basic knowledge regarding the OTC list, and incorrect selling of POM, e.g. Profen and Hyosine. However, P category OTC drugs, e.g. Amyilin DM, was not dispensed on refill requests;

- Community pharmacists have good knowledge regarding drug interaction and adverse drug reaction;

- There is problem in the proper dispensing of drugs and a lack of knowledge about OTC drugs, which is a serious problem.

RECOMMENDATIONS

1- Community pharmacists must improve their clinical knowledge and skills to perform basic assessments regarding patients' health status and needs. This should be done through continuous medical education and a supportive supervision programme.

2- The OTC list must be provided by the Directorate of Pharmacy and implementation of policy followed.

3- To develop community pharmacy services, there must be collaboration between professional associations, universities, conductive education centres and practicing pharmacists.

4- Dispensing regulations need to be enforced and community pharmacists must practice ethically.

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BIOGRAPHICAL NOTES

Dr Abu-Bakr Yagoub Ibrahim Mohammed is an Associate Professor of Community Medicine, and Head of the Community Medicine Department and senior lecturer at the College of Medicine, Elrazi University. He is registered as a Community Medicine Consultant at Sudan Medical Council. He has a Certificate in Medical Informatics from e HCF school of Medical Informatics. He is an External examiner for the MSc degree in Public and Environmental Health and Health Education in the College – Medical & Health Studies Board – University of Khartoum (Sudan). He is an author of the book, *A summary guide to practice Primary Health Care Essential Activities*; the same version has been translated into Arabic. His new book, *Lecture Notes in Community Medicine*, is under publication.