

# **ORIGINAL RESEARCH**

## **EVALUATION OF THE KNOWLEDGE, ATTITUDE AND PRACTICES (KAP) OF COMMUNITY PHARMACISTS TOWARDS HERBAL MEDICINAL PRODUCTS (HMPs) IN SOME SOUTH-SOUTH STATES OF NIGERIA**

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## **ABSTRACT**

### **Background**

The global increase in the use of herbal drugs partly stems from the misconception that natural means “safe or risk-free”. In order to provide optimal pharmaceutical care to patients taking herbal medicinal products (HMPs), pharmacists who are the link between patients and medications need to be versed in the pharmacology, safety and counselling on rational use of herbal products.

The objectives of this study were to assess the knowledge, attitude and counselling practices of community pharmacists towards HMPs.

### **Methods**

The study was carried out in Community pharmacies in the capital of 3 states in South- South zone of Nigeria.

Data was collected using self-administered questionnaires which were distributed to community pharmacists in the capital of three (3) states of the South-South zone of Nigeria Uyo, Calabar and Port Harcourt. Data analysis was done using SPSS version 17. Descriptive statistics were used to quantify the major findings of the study. Responses from the 3 states were compared using t-test, ANOVA and chi square where appropriate.

### **Results**

Most community pharmacists sold HMPs and confirmed that clients seek information on these products which pharmacists should provide. There was limited knowledge especially in the area of dosage, side effect and interactions of some selected HMPs (Gingko, Garlic and

Ginseng) but knowledge of indication was quite high. The few respondents (16%) that had some post-graduation training had better knowledge of HMPs than others. An overwhelming 88% of the respondents were interested in updating their knowledge of HMPs. There was deficiency in regulation and safety monitoring of HMPs. A significant difference in counselling patterns existed between orthodox drugs and HMPs ( $p < 0.05$ ). There was no significant difference in the knowledge and counselling patterns of pharmacists in the 3 state capitals ( $P > 0.05$ ).

### **Conclusion**

Community pharmacists have limited knowledge of HMPs but are eager to update their knowledge. Patients on orthodox drugs receive better counselling than those on HMPs. The knowledge and counselling patterns of pharmacists in the different states are similar. There is urgent need to embrace herbal pharmacovigilance.

**Keywords:** Community Pharmacists, herbal medicinal products, knowledge, South-South zone, Nigeria

## **INTRODUCTION**

There is a growing interest in herbal medicine due to its long history of application and general belief that herbs are natural and intrinsically safe <sup>1</sup>. Literature reveals that more than 80% of the population within developing countries rely on herbal and other traditional medicines for their primary health care due to their lower cost and time-tested nature <sup>2</sup>. Herbal medicinal products are any medicinal product, exclusively containing as active ingredients one or more herbal substances or one or more herbal preparations, or one or more such herbal substances in combination with one or more such herbal preparations<sup>3</sup>. The World Health Organization (WHO) also encourages, recommends and promotes the use of traditional and herbal products in the National Health Care Program due to ease of accessibility, comparative cost and safety<sup>4</sup>. In Nigeria, as part of its objectives, the National Drug Policy seeks “To promote research on herbal remedies and integrate those found to be safe and efficacious into the health care system” <sup>5</sup>.

Among consumers, there is a widespread misconception that “natural” always means “safe”, and a common belief that medicines from natural origin are harmless and carry no risk<sup>6</sup>. However, some medicinal plants are inherently toxic. More so, as with all medicines, herbal medicines are expected to have side effects, thus, “Safety is a fundamental principle in the provision of herbal medicines and herbal products for health care, and a critical component of quality control” <sup>6</sup>.

Pharmacists have been encouraged to integrate professional counseling and education services on Herbal Medicinal products (HMPs) into their daily practice, yet pharmacists’ counseling services on the appropriate use of these products are often deficient<sup>7</sup>. Some explanations proffered for the insufficient counselling on HMPs by pharmacists include; insufficient education on and knowledge of HMPs, unfavourable attitude towards these

products, a limited evidence base on herbal products in the literature, and a lack of time dedicated to patient counselling<sup>8</sup>.

In order to provide optimal pharmaceutical care for patients who use herbal medicinal products (HMPs), pharmacists need to be well informed about the use and safety of herbs. To achieve this, pharmacists must be adequately trained on safety, potential harmful effects and rational use of herbal medicines<sup>9</sup>. Pharmacists are therefore obliged to have update knowledge about HMPs in order to help patients discern the facts from the fiction, avoid harm, and gain the benefits of HMPs<sup>10</sup>. Patients will benefit as more information is known and widely disseminated, as such by actively embracing the responsibility of counseling patients on the proper use of HMPs, pharmacists will become a recognized source of expert information in this rapidly growing sector<sup>11</sup>.

A study in the South-Western region of Nigeria revealed that most pharmacists (78%) opined that pharmacists were the most qualified professionals to engage in the sale and supply of HMPs though they have inadequate knowledge of these products, despite their undergraduate training<sup>12</sup>.

This study assessed community pharmacists' perceptions, attitudes and opinions on HMPs, the influence of pharmacists' demographics on their knowledge of HMPs and compares pharmacists' patient counseling practices on HMPs with orthodox drugs. The study is meant to serve as the basis for future intervention to improve community pharmacists' patient counseling on HMPs in order to enhance pharmaceutical care and pharmacovigilance of these products.

## **METHODS**

### **Study Elements**

The study was conducted in three (3) state capitals; Uyo, Calabar and Port Harcourt (of Akwa Ibom, Cross River and Rivers states respectively) in the South-South geopolitical zone of Nigeria. Majority of the community pharmacies in these three (3) states are located in the state capital. The study was cross-sectional and descriptive, conducted using the total population sampling (purposive sampling) with due consideration of the exclusion and inclusion criteria. Included in the study were registered pharmacists working in licensed pharmacies. Excluded were interns, unregistered pharmacies, pharmacies located outside the capital cities and those without registered pharmacists on duty.

### **Study protocol**

A list of registered pharmacies in the three (3) states as at 31<sup>st</sup> of May, 2012 was obtained from the Pharmacists Council of Nigeria (PCN) South-South zonal office in Uyo. From the list a total of 119 pharmacies were available in the three states. One hundred and two (102) pharmacies that met the inclusion criteria were selected. Informed consent of the pharmacists was obtained before the commencement of the study.

### **Survey Instrument**

A forty-item, structured, self-administered questionnaire was the survey instrument. The questionnaires were validated for readability, question design, length and pretested on five (5) community pharmacists not included in the study.

The survey instrument was made up of two (2) parts: Part One had two sections and a total of twenty-eight (28) items. The first section was to obtain the pharmacist's demographic data like age, gender, years of community pharmacy experience and herbal training. Section two had questions evaluating pharmacists' attitudes, perceptions and professional practices towards HMPs (finished and labelled; imported or locally manufactured) including patient counselling, willingness to stock, safety and regulatory concerns. Part Two comprised of

twelve (12) questions designed to assess respondents' pharmacologic knowledge of three (3) popular and commonly sold HMPs (Garlic, Ginkgo and Ginseng).

### **Data Collection**

The pretested questionnaires were distributed to the respondents in their premises using one pharmacist per premises after obtaining their consent.

### **Data analysis**

The questionnaires were analyzed using Statistical Package for the Social Sciences (SPSS) version 17. Descriptive statistics and frequencies were used to quantify the responses of the pharmacists. The knowledge test answers were graded as follows; "correct (1)", "incorrect (0)" and "not sure (0)". Counselling patterns were graded as follows: (0, 1, 2, 3; for none, sometimes, most times and all times respectively) with statistical significance set at  $p \leq 0.05$ . Responses from the three states were compared using t-test (to test the difference between mean scores of counselling for orthodox and herbal medicines), ANOVA (to test for difference in mean scores of knowledge, orthodox and herbal medicines counselling between the states) and chi square (to test for difference in knowledge of indication, dose, side effect and interaction for the selected HMPs) as appropriate.

### **Protocol for calculating counselling scores**

Grading: (None=0, Sometimes=1, Most times=2, All times=3)

Frequency: (Number of respondents)

Score: (Frequency \* score)

Total score:  $\sum$  (Frequency \* score)

### **Comparison of counselling scores of orthodox and hmps**

**Null Hypothesis (H<sub>0</sub>):** There is no statistically significant difference in the counselling score of orthodox drugs and HMPs.

**Alternative Hypothesis (H<sub>A</sub>):** There is a statistically significant difference in the counselling score of orthodox drugs and HMPs.

**Decision Test:** Two-tailed paired samples t -test.

**Decision rule:** Accept Null Hypothesis if  $p \geq 0.05$ , Reject Null hypothesis if  $p < 0.05$

## **RESULTS**

A total of 73 out of the 102 self-administered questionnaires distributed were filled, retrieved and subsequently analyzed, with a response rate of 71.6%. Results of the assessment of respondents' knowledge of common HMPs based on demographics are shown in Table 1. Knowledge of indication for selected HMPs (Gingko, Garlic and Ginseng) was high but limited in the area of dosage, side effect and interactions (Figure 1) while patient counselling patterns on orthodox and HMPs are shown in Tables 2 and 3 respectively. .

Majority of the respondents (83.4%) had only undergraduate training as their highest level of herbal training.

Majority of the respondents 64 (88%) maintained that the National Drug Policy (NDP) partly seeks to promote research on herbal remedies and integrate the useful ones into the health system. Also, 62 (85%) opined that pharmacists were the most qualified to handle the sales and supplies of HMPs while 45 (61.7%) affirmed that the commonest mode of sales is on patient requests.

About 13 (18%) do not stock HMPs, while 9 (12.3%) respondents were either unaware or disagreed that there exist a global increase in the demand and use of HMPs. Majority 34



(46.6%) believe the high demand for HMPs is basically because they are natural. Those in doubt of the efficacy and safety of HMPs were 5 (6.8%) and 11 (15.3%) respectively.

Over 80% of respondents affirmed that patients often seek information on HMPs daily from them, while 70 (96%) opined that pharmacists were duty bound to provide such information, and 32 (43.8%) admitted their dependence on product leaflets as regular source of information on HMPs. Majority 44 (60.2%) of respondents were either unsure or doubtful of the relevance of their undergraduate pharmacognosy training to the effective dissemination of HMPs information. Only 1 (1.4%) respondent disagreed that pharmacists should update their knowledge while 64 (88%) were interested in updating their knowledge of HMPs.

Thirty three (45.2%) pharmacists adduced that the most frequently asked question on HMPs bothered on efficacy while possible interactions were often overlooked. Also, most respondents 54 (74%) believed health and vitality products were the most purchased HMPs.

Fifty seven (78.1%) of the respondents believed NAFDAC is the most appropriate regulator of these products, although 25 (34.3%) felt the regulator is grossly deficient. Interestingly, 49 (67.1%) of respondents have never observed ADR resulting from HMPs while 65 (89%) have never seen herb-drug interactions.

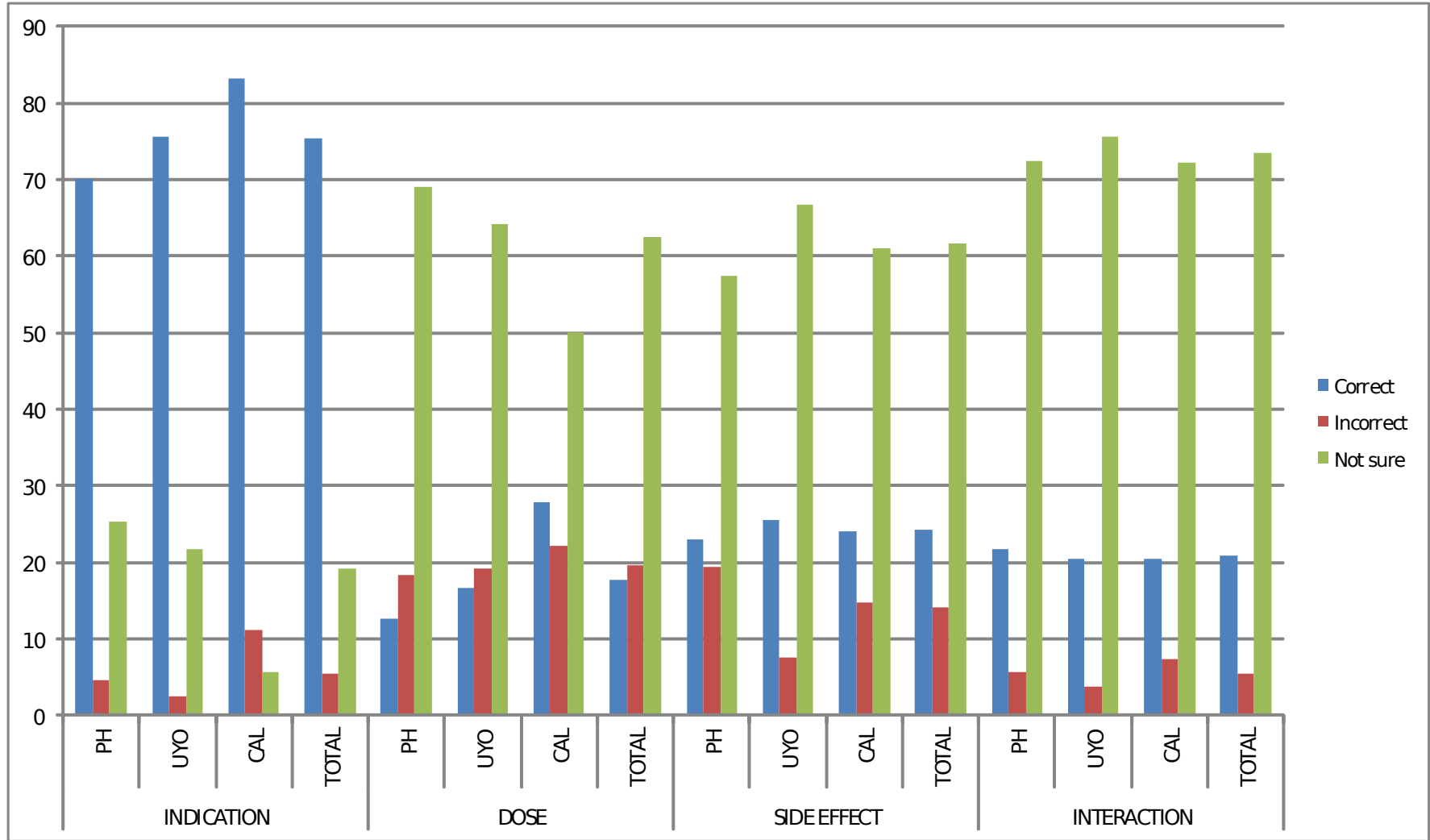
Paired t-test was carried out to compare orthodox counselling score with herbak counselling score. The result showed that there was statistically significant difference between the two scores (Table 4)

Knowledge and counselling patterns were compared among the three state capitals and there was no significant difference among their mean scores (Table 5).

**Table 1: MEAN SCORE OF KNOWLEDGE ON HERBAL PRODUCTS BASED ON RESPONDENTS' DEMOGRAPHICS (P≤ 0.05)**

<b>Classification</b>	<b>Group of Respondents</b>	<b>Frequency (%)</b>	<b>Mean ± SD</b>	<b>Median</b>
Training	Without Post-graduation training	61 (84%)	3.98+/- 2.19	4.0
	With post-graduation Training	12 (16%)	5.08+/-3.12	5.0
Post-graduation experience	<5 years	35 (48%)	3.63+/- 2.28	3.0
	5-10 years	21 (29%)	5.00+/-2.24	4.0
	>10 years	17 (23%)	4.24+/- 2.56	5.0

Years as community Pharmacist	<5 years	49 (67%)	3.93+/- 2.56	3.0
	5-10 years	14 (19%)	4.71+/- 2.56	5.0
	>10 years	10 (14%)	4.50+/- 2.56	5.0
Location	Port Harcourt	29 (40%)	3.83+/-2.41	3.0
	Uyo	26 (35%)	4.20+/- 2.6	4.0
	Calabar	18 (25%)	4.67+/- 1.94	4.0



**Fig. 1: Pharmacists Knowledge of Indication, Dose, Side Effect and Interaction of herbal products**

**Table 2: RESPONDENTS' SCORES ON COUNSELLING PRACTICES FOR**

<b>ITEM</b>	<b>INDICATIONS</b>	<b>DOSAGES</b>	<b>SIDE EFFECTS</b>	<b>INTERACTIONS</b>
<b>None (0)</b>	<b>1*0 (0)</b>	<b>1*0 (0)</b>	<b>3*0 (0)</b>	<b>3*0 (0)</b>
<b>Some times (1)</b>	<b>4*1 (4)</b>	<b>3*1 (3)</b>	<b>10*1 (10)</b>	<b>15*1 (15)</b>
<b>Most times (2)</b>	<b>10*2 (20)</b>	<b>9*2 (18)</b>	<b>21*2 (42)</b>	<b>17*2 (34)</b>
<b>All times (3)</b>	<b>58*3 (174)</b>	<b>60*3 (180)</b>	<b>39*3 (117)</b>	<b>38*3 (114)</b>
<b>TOTAL SCORE</b>	<b>198</b>	<b>201</b>	<b>169</b>	<b>163</b>

**ORTHODOX DRUGS**

**Table 3: RESPONDENTS' SCORES ON COUNSELLING PRACTICES For HERBAL**

**MEDICINAL PRODUCTS**

<b>ITEM</b>	<b>INDICATIONS</b>	<b>DOSAGES</b>	<b>SIDE EFFECTS</b>	<b>INTERACTIONS</b>
<b>None (0)</b>	<b>10*0 (0)</b>	<b>10*0 (0)</b>	<b>17*0 (0)</b>	<b>18*0 (0)</b>
<b>Some times (1)</b>	<b>27*1 (27)</b>	<b>27*1 (27)</b>	<b>34*1 (34)</b>	<b>32*1 (32)</b>
<b>Most times (2)</b>	<b>13*2 (26)</b>	<b>13*2 (26)</b>	<b>20*2 (40)</b>	<b>18*2 (36)</b>
<b>All times (3)</b>	<b>23*3 (69)</b>	<b>23*3 (69)</b>	<b>2*3 (6)</b>	<b>5*3 (15)</b>
<b>TOTAL SCORE</b>	<b>122</b>	<b>122</b>	<b>80</b>	<b>83</b>

**Table 4: Showing paired t-test results of counselling patterns of respondents**

		Paired Differences					
		Mean	SD	S.E.M	t	df	Sig. (2-tailed)
Pair	Orthodox drugs Counselling Score- HMPs Counselling Score	4.48	3.72	0.44	10.279	72	9.12* 10 <sup>-10</sup>

**Table 5: Mean scores of knowledge, Orthodox counselling and herbal counselling for each state capital and overall**

	Calabar n = 18	Port Harcourt n = 29	Uyo n = 26	Total n = 73	p
<b>Knowledge score</b>	4.67 ± 1.94	3.83 ± 2.41	4.19 ± 2.6	4.16 ±	0.505
<b>Orthodox counseling score</b>	9.22 ± 3.3	10.52 ± 2.11	10.00 ± 2.32	10.01 ± 2.54	0.237
<b>Herbal counseling</b>	4.78 ± 2.6	5.52 ± 2.85	6.08 ± 2.94	5.53 ± 2.83	0.330

score					
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## DISCUSSION

Majority of respondents (>80%) cited their basic undergraduate pharmacognosy courses as their only form of training on herbal medicines and attested to the inadequacy of their training to their daily practice. This is similar to the results obtained in a study by Adisa and Fakeye<sup>12</sup> which showed that 72% of respondents were without any form of post graduate training, workshops or seminars on HMPs. This could also be responsible for the overwhelming advocacy by respondents for practicing pharmacists to embrace herbal training in order to counsel patients effectively, since respondents affirmed that patients often seek information on HMPs daily from them.

About 13% of respondents were either not aware or not sure of the National Drug Policy<sup>5</sup> and its objectives which partly seek to promote research on herbal remedies with the aim of integrating those found to be efficacious into the healthcare system. Consequently, pharmacists should be encouraged to be more acquainted with policies guiding their professional practice since this may likely influence their attitude and perceptions.

Two-thirds of the respondents had personally used HMPs, as also seen in a study by Abahussain *et al.*,<sup>13</sup> where a good number of pharmacists agreed to having used HMPs for their own ailments. However, more than 20% of them doubted the efficacy and safety of these products. Furthermore, most of the respondents in this study opined that the global increase in the demand and usage of HMPs stemmed from the perception by patients of these products being natural and therefore a “risk –free” alternative to orthodox drugs. This raises

the safety concern expressed in most literature basically because being natural is not often equivalent to being “risk-free” and thus creates a gap in patients’ knowledge which requires education and sensitization<sup>6</sup>.

Majority of the respondents agreed to stocking HMPs in their pharmacies and strongly believed that pharmacists should be solely in charge of the sales and supplies of HMPs, as equally seen in previous studies<sup>12,14</sup>. However, when viewed against the backdrop of apparent deficits in knowledge this tends to question the justification for pharmacists to stock products that they are ill-equipped to handle, thereby raising the seeming conflict between profit motive and practice ethics<sup>14</sup>. Consequently, this buttresses the urgent need for training on HMPs to promote and enhance effective practice.

Also, observed was the fact that pharmacists that had between 5-10 years experience performed better than others probably due to an increased awareness of their roles and additional relevant trainings on the subject. Generally, it was also seen that pharmacists did well in questions bordering on the indications for herbal products as was also observed in previous studies<sup>9, 13, 15, 16</sup> but were below average on other aspects like dose, side effect and interaction, which calls for improvement.

NAFDAC was perceived by most respondents to be the most suitable body to regulate HMPs in the country. Most pharmacists in the study conceded to not having observed any herbal drug- related ADR in practice and apparently overall poor patients counselling on side effects and interactions as also shown by a study Alkharfy<sup>17</sup>. This observation calls for more emphasis and strengthening of the regulatory body’s function of creating awareness of health care providers and indeed the entire public on pharmacovigilance “drug safety monitoring” which is often challenged and incapacitated by under reporting and under detection. Also, the World Health Organization welcomes the active participation of drug regulatory authorities



and National pharmacovigilance centres in the development of guidelines to monitor safety of herbal medicines. The regulatory bodies are also encouraged to strengthen national regulation, registration and quality assurance and control of HMPs, because currently, the majority of adverse events related to herbal medicines reported globally are attributable to either poor product quality or improper use<sup>18, 19</sup>. Pharmacists who are unarguably the most easily accessible health providers should be encouraged to brace up for the challenge of drug safety monitoring with concerted efforts geared towards tackling of under detection and under reporting of ADEs and ADRs in order to allow for an improvement in the quality of patients' care. Similarly, a study by Olatunde *et al.*, explored perceptions of pharmacists' professional roles and responsibilities with regards to natural products, showed that all respondents believed the key responsibility for the pharmacists was in safety monitoring, although lack of knowledge in this regards was identified as a key challenge<sup>20</sup>.

The increased level of self-medication with HMPs by patients was further buttressed by more than 60% of the respondents who agreed that the commonest mode of sales of these products was on patient's request, as such, this places enormous burden on the pharmacists being the link between the patients and medication usage as described by Lin *et al.*<sup>8</sup>. Furthermore, majority of respondents confirmed that patients seek information on HMPs on a daily basis in their practice settings and they overwhelmingly opined that pharmacists were duty bound to furnish patients with these information. However, due to the seeming inadequacies of their undergraduate herbal training there is over dependence of respondents on drug leaflets for information on these products, as was also shown in a study by Duraz and Khan<sup>9</sup>. Consequently, this possibly justifies the strong assertion by respondents that pharmacists' need to update their knowledge in this regard and the unanimous willingness of participants in the study to enrol in any form of continuing education. Thus, suggesting an urgent need for

practice regulators to institute effective training programmes geared towards capacity building for practitioners to promote effective discharge of ethical obligations.

Patient counselling is central to pharmaceutical care which is concerned with the “responsible provision of drug therapy for the purpose of achieving definite outcomes that improve the patient’s quality of life”<sup>21</sup>. Globally, pharmacists are encouraged to embrace this concept to improve patient care and it involves identifying, preventing and resolving drug-related problems possibly stemming from indications, dosages, side effects and/or interactions. The respondents strongly believed that pharmacists’ should be responsible in this regard, however, a comparison between pharmacists’ patient counselling pattern on orthodox drugs with HMPs showed a significant difference ( $P < 0.05$ ) which is possibly due to the afore mentioned inadequacies in their knowledge of the herbal products.

Furthermore, quite striking was the fact that most respondents admitted that patients were more bothered about the efficacy of these HMPs and very few were interested in the herb-drug interaction potential, which obviously is an important oversight that pharmacists ought to address, since the possibility of interactions occurring between HMPs and orthodox drugs used concurrently cannot be ruled out as affirmed in literature<sup>22, 23</sup>. This further adds credence to the urgent need for community pharmacists to brace up for this challenge by updating their knowledge in order to educate and enlighten patients thereby promoting rational use of these products.

The need for continuing education (workshops, seminars, newsletters etc) on HMPs was further underscored by the analysis of the knowledge base test of indication, dosage, side effects and interactions of commonly available and well researched HMPs (Gingko, Garlic and Ginseng). The few pharmacists (16%) who possessed some form of post graduate herbal

training had a higher mean score when compared with the majority (84%) that had no form of post graduation training, workshops, seminars etc.

## **CONCLUSION**

Community pharmacists have limited knowledge of HMPs but are willing to update their knowledge. Patients on orthodox drugs were more likely to receive better counselling than those on HMPs. The knowledge and counselling patterns of pharmacists in the different states are similar. There is need for community pharmacists to embrace herbal pharmacovigilance and drug safety monitoring in order to prevent ADRs, interactions, and promote patient safety.

## **Competing Interests**

The authors declare that there is no competing interest whether financial or non-financial.

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