



PHARMACISTS AND NATURAL HEALTH CARE PRODUCTS: ANALYSIS OF THE ROLE OF THE PHARMACISTS

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ABSTRACT

Natural Healthcare Products (NHPs) have increasingly become main stream across the world. However, regulatory structures and frameworks have continued to lag behind. This rapid growth in adoption of healthcare products has raised queries as to who is best placed to administer these products. A cross section of practitioners and academicians are of the opinion that these products are best administered by pharmacists. However, there are those who are of the opinion that such medicines should be simply administered over the counter to consumers. The present study investigates this issue in a large group of practitioners in the UAE. We have collected data from practitioners to investigate issues such as frequency of inquiries and knowledge of NHPs amongst other variables. To determine pharmacist perception of their role in the administration of NHPs and whether they believed they are the best placed to exclusively offer NHPs to patients. The findings of this study showed that although pharmacists are not very knowledgeable about NHPs, they indeed highly sought after for NHPs inquiries. The present study also recommends documentation of NHPs and mandating documentation of NHPs treatments especially for homeopathic products.

KEYWORD: National Health Products, Pharmacists.

INTRODUCTION

According to United States National Centre for Complementary and Integrative Health NIH^[1], the use of National Health Products (NHPs) have been on the rise since 2007. In a survey consisting of 34, 525 adults and 10, 218 children on more than 100 different kinds NHPs and practices, NIH established that the use of NHPs has significantly shifted between the years 2007 and 2012. Certain products registered higher level of consumption even as the popularity of others declined considerably. Dietary supplements, vitamins and minerals registered the highest growths. Fish oil in particular emerged as the most preferred natural product for both adults and children.

In Canada, surveys conducted by the Canadian Pharmacists Association (CPA)^[2] established that more than half of all Canadian adults visited a pharmacist in any given week; out of this, a total of 71% of them purchased NHPs or dietary supplements. Majority of the NHPs which have been purchased included: herbal medicines, homeopathic remedies and vitamins.^[3]

This rapid growth in adoption of NHPs has raised queries as to who is best placed to authorise and administer these products. A cross section of practitioners and academicians are of the opinion that these products are best administered by pharmacists. However, there are

those who are of the opinion that such medicines should be simply administered over the counter to consumers. The present study investigates these issues.

Several studies have shown that different factors have contributed to the growing uptake of NHPs. Factors such as frustration with pharmaceutical medicines or conventional treatments, healthcare empowerment, greater healthcare autonomy, cultural factors, and challenges associated with chronic diseases have been outlined as some of the most common factors encouraging the use of NHPs.^[4,5,6] In Canada, the standard definition of NHPs is the products that include minerals, herbal content, traditional medicines, homeopathic remedies, essential fatty acids, amino acids and probiotics that are usually sold over the counter (OTC). According to Canada's NHPs Regulations, the underlying rationale is for the definition of health products is that they should only consist of NHPs if they are to be deemed safe for consumption. This basically means that products that have not been categorised as safe for consumers to select by themselves have to be regulated and are generally considered as drugs.

The relatively ease of access of natural products compared to conventional medicines does not necessarily mean that they are always safe for consumption. This is despite the fact that they can be accessed without doctor

prescription. According to Farrell et al.,^[7] some of the products that have been categorised as natural by the regulators in Canada and USA have side effects especially for pregnant mothers, children, seniors, breastfeeding women, patients from surgery, and people with serious illnesses. Similarly, Health Canada (2007)^[8] also established that certain uses of natural health products can be unsafe for individuals. For instance, simultaneous use of both prescription and natural health products is widely considered unsafe due to high potential for adverse interactions.^[7] In a 2004 survey conducted by BeMedWise (2009),^[9] it was established that up to 32% of natural healthcare product users were mixing prescription drugs with natural healthcare products (NHPs). In 2006, Charrois et al.^[10] conducted a survey of pharmacists in Canada where they established that more than 50% of practitioners had identified a potential for drug-NHPs interactions. Interestingly less than 2% of such incidences were reported to Health Canada. Essentially, there is a high risk for unsafe use of natural health products that the regulators and concerned institutions are generally unaware of. This has led to greater calls for NHPs to be administered by qualified pharmacists.

Pharmacists are trained professional with proper understanding of drug compositions. This necessarily means that they are better placed to identify potential for adverse HHPs-drug interactions. As such, they are the most suited professionals to offer evidence-based guidance on the suitability and even safe use of NHPs.^[11,12] A number of surveys have also shown that this position is not only held by pharmacists. According to a survey conducted by the Bouldin et al. (1999)^[13], it was established that consumers are increasingly seeking for counselling and consultations from pharmacist. For instance, the survey showed in 1996 most pharmacists registered an average of two NHPs related consultations a week. However, by 1999 this had increase seven times a week on average. Essentially, consumers of NHPs trust pharmacist as a source of advice for NHPs use.

It has become a widely recognised fact that NHPs are the future of healthcare. Various regulatory authorities and advisory councils in US and Canada have also recognised this. Natural Association of Pharmacy Regulatory Authorities (NAPRA) of Canada through the national Drug Scheduling Advisory Committee released a report in 2007^[14] which essentially affirmed the growing influence of natural health products in Canada. NHPs were basically declared as the future of healthcare in the country. This means that NHPs have become fully legitimate treatment options and pharmacist are obliged to fully understand them and be knowledgeable about them.

At the moment, promotional materials advertising NHPs have flooded the air waves. Practitioners of NHPs are offering all manner of promises on what NHPs can do for their health and even lives. However, there remains a

gap on credible sources of information as concerns the truth on these natural health products.^[14] According to NAPRA (2007)^[14], NHPs enthusiasts and consumers are thirst for credible sources of information with now capable of filling the gap. Therefore, they argue that pharmacists are the best positioned professionals to offer credible advice to consumers. Several surveys have also reported that pharmacists are the number one option for consultation and information gathering as concerns NHPs.^[3] Pharmacists are ranked ahead of government's Health Canada portal and any other authoritative health publication on the subject.

Slightly contrasting results were reported by Kwan et al. (2006)^[12] whose findings show that as concerns NHPs information access, the internet remains the leading source of information for consumers. However, Kwan et al. (2006)^[12] also established that pharmacists have emerged as the go-to consultants on use of NHPs. Most consumers have turned to pharmacist for issues such as interpretation of NHPs related information from producers and also from a variety of sources. This led Kwan et al. (2006)^[12] to conclude that pharmacists have a professional obligation as concerns the administration and related consultations concerning NHPs. They argues that as the experts on drugs, pharmacist are the most ideal when it comes to advising consumers on safe use, potentially harmful compound in NHPs, and potential for contra-indications with conventional synthetic drugs. Bennett (2000)^[15] argues that anything less than full involvement of pharmacist in the administration of NHPs leaves patients at risk and has the potential to erode the trust that patients have in pharmacists.

As call for greater involvement of pharmacists in the administration of natural health products increase, there have also been calls for greater regulation of the NHPs industry in Canada.^[7] In Canada, Pharmacy regulatory authorities across the provinces and territories have put in place practice guidelines that require pharmacists to have good knowledge of NHPs. This includes being able to offer proper advice to patients as concerns risks, benefits and where necessary the content of these products. In some jurisdictions, such efforts have even gone further to include educational programs for pharmacists geared towards enhancing their knowledge of NHPs.

The strategic role of pharmacist as counsellors in the use of NHPs is also further affirmed by the fact that more than half of dietary supplements in Canada and US are purchased from pharmacies.^[16] This serves to further show that pharmacies are strategically poised to help consumers of NHPs make better choices. According to Boon (2005)^[16], there are also other factors that make pharmacists the most ideal professional in the administration of NHPs. First, pharmacists (and pharmacies) are easy to access by patient at the time the purchase decision is being made. This means that when consumers are buying the NHPs, they are able to

immediately consult and receive appropriate counselling. Secondly, pharmacists possess evidence-based information which is essential when it comes what would be more effective for a particular illness between NHPs and conventional drugs. Thirdly, pharmacists have considerably in healthcare; this makes them more appropriate for offering advice as concerns self medication or need for further medical attention for professionals. Fourth, pharmacists have been trained in pharmacology and pathophysiology which means that they are better equipped to analyse and interpret claims by NHPs producers at both the theoretical level and also in practice. Finally, the generally high levels of trust accorded to pharmacists position them as the credible professionals to administer NHPs.

However, there remains debate as concerns a number of issues. Despite the strong argument in support of administration of NHPs by pharmacists, a number of issues have been raised. First, NHPs have always been offered by non-pharmacists across different cultures. Some of the providers of these services inherited their practice from their ancestors. Essentially, the place of herbalist in the society has always existed without any middlemen. Secondly, introducing pharmacists into the value chain is bound to increase costs for consumers. These are some of the issues that the present study seeks to resolve.

The aim of the present study is to evaluate the role that pharmacist can play in the administration of NHPs given their position as experts in drugs. This study recognises that there are cultural and even emotional aspects associated with the consumption of NHPs with many NHPs consumers having significant reservations with having NHPs being offered from mainstream healthcare system. It aims to determine how best such fundamental differences can be minimised without undermining the integrity or safety of NHPs consumption.

The main objective of this study is to determine pharmacist perception of their role in the administration of NHPs and whether they believe they are the best placed to exclusively offer NHPs to patients.

Most pharmacist would agree with the idea that they are the best placed to offer NHPs. However, most of them would agree to exclusivity or the limitation of NHPs distribution to pharmacies only. This will be largely due to a number of factors. First, the diversity of NHPs means that expertise on a significant number of them will largely remain minimal. Secondly, most pharmacists respect and appreciate the role that herbalists and other NHPs practitioners play in the administration of NHPs. Thirdly; most pharmacists would not want to be engaged in controversies surrounding certain NHPs especially homeopathic treatments.

The other objectives of this study were to determine the best source of NHPs information by consumers and to

identify the most ideal strategies for ensuring that pharmacist are well conversant with NHPs.

It is expected that most practitioners would opt for proper documentation to be provided with NHPs. This is primarily because this is the standard mode of operation for practitioners. Pharmacological and pharmacokinetics information provided in drug labels have been widely used as source of information on drugs. We, therefore hypothesise that most respondents would strongly advocate for more detailed and more transparent release of information regarding NHPs. The issue of transparency has also been highlighted further by Eysenbach and Jadad (2001).^[17]

This study contributes to both theory and practice. It builds on the previous studies by Kwan et al. (2008)^[18] and Farrell et al. (2008).^[7] NHPs have emerged as a powerful force in the healthcare industry. Significant percentages of people are using NHPs regularly as supplements and also for curative purposes. However, NHPs are still largely offered as over the counter medicines without any need for prescription. According to Farrell et al. (2008)^[7] and Kwan t al. (2008)^[18] this placed consumers consider risks in terms of contra-indications and improper use.

In practice, this study provides recommendations to both policy makers and practitioners. To policy makers, it seeks to identify strategies for bridging the technical and professional divide between pharmacists and NHPs practitioners and consumers. To pharmacists, this paper seeks to provide practical measures for better engagement with NHPs.

MATERIALS AND METHODS

The questions in the questionnaire were divided into several sections with precise instructions on how they were to be filled. Subsequently, post cards were sent to participants as reminders. The present study targeted participants from across the major towns in UAE. Most of the participants had good mastery of the English language. Stratified random sampling approach was used in the selection of participants. Stratification was conducted by city. The approximate number of registered pharmacists was used to determine sample proportionality from each city. We contacted the regulator and industry associations to access mailing address for registered pharmacists in UAE. Using the above approach, we were able to find participants from across all the major cities in UAE.

We have adopted various benchmarks for assessing statistical responses. A 5 point Likert Scale was used in the study. This generally means above average mean (of 80%) was considered to represent approval of that particular issue (variable). For instance, variables that recorded above 80% were considered as endorsement for expressed sentiment. A total of 125 pharmacists were

mailed questionnaires across all the major cities in the UAE.

This study incorporated the main themes in the questionnaire. Broadly, issues of knowledge were included in one set of question, issue of responsibility was incorporated in the other set of question, and the issue of adverse interactions was included in a separate set of questions.

Data Analysis

The analysis was conducted using both qualitative and quantitative methods. In terms of quantitative techniques, we used SPSS data analysis software from IBM, Version 17 of the software was used for data analysis. The process of transcribing data was conducted by the author to ensure consistency and minimise errors.

Quantitative analysis was conducted in several stages. The first step consisted of descriptive analyses which entailed testing for means and other measures of central tendencies. Descriptive statistics were extracted for all of the variables. The aim was to determine the level of agreement on the part of respondents to the variables that were being tested. The second step entailed correlation analysis of the variables. At this stage, relationships between varied points of views were evaluated using correlation analysis. Additionally, logistic regression was conducted to test the relationship between independent and dependent variables.

In terms of qualitative analysis, the comment section at end of each set of questions was the main source of qualitative data. Content analysis techniques were used to analyse the qualitative data. We started by analysing the broad themes emerging from the comments by

respondents. Repeated points of views were analysis and categorised to form sub themes. The emerging themes from the comments were analysed in conjunction with the quantitative findings.

Ethical Considerations

There are a number of considerations that were taken to ensure that the present study adhered to all ethical requirements. First, this was largely a low risk study that required no intrusive procedures in the process of data collection. Second, it was fully voluntary and participants could choose to opt out of the study at any time without any reason whatsoever. Third, at outset, all participants were required to sign a consent form which outlined their rights and obligations of the researcher towards the protection of those rights.

As part of the ethical consideration, we took all the necessary measures to ensure the protection of participants' confidentiality. Use of names was only limited to the mailing. All of the completed questionnaires received were anonymized using random serial numbers. After transcription, the data was stored in a secured computer.

RESULTS

We studied 240 pharmacists, 40% females and 80% males, from different parts of the UAE. The figure shows years in practice. Majority of participants had an experience more than 10 years (45%). This was followed by participants with more than 10 years experience .Only 8.3% of participants had less than 1 year of experience. This basically means that the sample of participants was fairly representative of the practitioner experience in the industry.

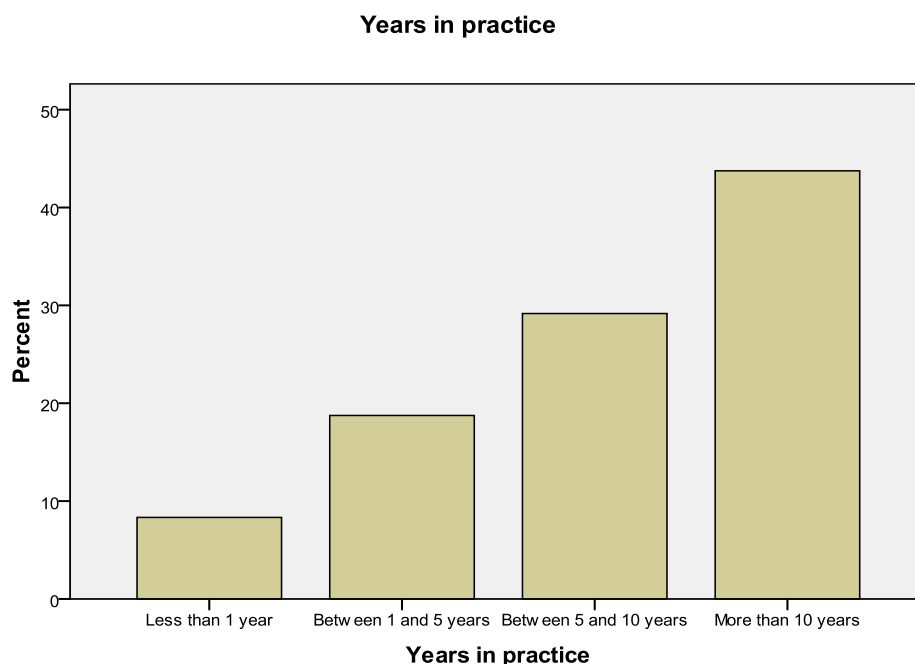


Table 1: Estimated Size of Population Being Served.

Estimated size of population served

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 1,000	160	66.7	66.7	66.7
	1,000 - 5,000	25	10.4	10.4	77.1
	5,000 - 10,000	25	10.4	10.4	87.5
	Above 10,000	30	12.5	12.5	100.0
	Total	240	100.0	100.0	

Table 1 shows that majority of participants work for pharmacies serving small populations of below 1000 people (representing 66.7% of all participants). Only twenty five participants served population between 1000 and 5000 people (representing 10.4%). Similarly, only 10.4% of participants served areas with populations between 5000 and 10000 people. Thirty participants

worked in pharmacies that served more than 10000 people (representing 12.5% of all participants). In sum, small, mid-sized and large pharmacies were all represented in this study. This is important for purposes of determining whether there are relationships between pharmacy sizes and administration of NHPs.

Table 2: Work Environment Pharmacy Location.

Which of the following best describes the location of your pharmacy?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chain pharmacy	15	6.3	6.3	6.3
	Supermarket pharmacy	30	12.5	12.5	18.8
	Hospital pharmacy	130	54.2	54.2	72.9
	Family practice	65	27.1	27.1	100.0
	Total	240	100.0	100.0	

Table 2 shows the location and distribution of pharmacies where the participants worked. Majority of participants worked in hospital pharmacies or pharmacies attached to a clinic or some kind of health care facility. This represents 54.2% of all participants. A total of 65 participants were from family practice

representing 27.1% of all respondents. Supermarket pharmacies contributed 12.5% of all participants with chain pharmacies contributing 6.3% of all participants. The above largely reflects the distribution of pharmacies in UAE.

Table 3: Region of Operation.

Which region do you operate from?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dubai	10	4.2	4.2	4.2
	Abu Dhabi	55	22.9	22.9	27.1
	Sharjah	95	39.6	39.6	66.7
	Al Ain	80	33.3	33.3	100.0
	Total	240	100.0	100.0	

Table 3 shows the regions from which participants in the survey operate from. Majority of participants come from Sharjah and Al Ain representing 39.6% and 33.3% of all

participants respectively. Abu Dhabi contributed 22.9% of all participants with Dubai contributing just 4.2% of all participants.

Table 4: Kinds of NHPs being Sold.

What kind of NHPs do you sell? (tick as appropriate)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Vitamins and minerals	20	8.3	8.3	8.3
	Herbal medicines	30	12.5	12.5	20.8
	Homeopathic medicines	130	54.2	54.2	75.0
	Glucosamine and/or Chondroitin	60	25.0	25.0	100.0
	Total	240	100.0	100.0	

Table 4 shows the most common types of NHPs being sold in the UAE pharmacies according to the respondents. Homeopathic medicines are the most sold kinds of medicine representing 54.2 per cent.

Glucosamine and Chondroitin came in second at 25% of market share. Herbal medicines contribute 12.5% and Vitamins and minerals contribute 8.3%.

Table 5: Position at the Pharmacy: Which of the following best describe your position?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Staff Pharmacist	40	16.7	16.7	16.7
	Manager/Owner	85	35.4	35.4	52.1
	Other (Please specify)	115	47.9	47.9	100.0
	Total	240	100.0	100.0	

Table 5 shows that majority of participants were neither managers/owners nor staff pharmacists (representing 47.9%). Managers/owners represented 35.4% of all

participants with staff pharmacist contributing 16.7% of all participants.

Table 6: Patient Interaction: Do you directly interact with your patients?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	115	47.9	47.9	47.9
	No	125	52.1	52.1	100.0
	Total	240	100.0	100.0	

Table 6 shows pharmacists direct interaction with patients. The response was mixed with 52% of respondent indicating that they did not interact with

patients directly. In contrast, 47.9% of participants indicated that they interacted with their patients directly.

Tables 7: NHPs Inquiry. How often do you receive inquiries about NHPs?

NHPs	NHPs Inquiry	Frequency	Percentage
Herbal	Once a month	40	16.7
	Several times /month	90	37.5
	Several times /week	85	35.4
	At least once a day	25	10.4
Vitamins	Once a month	45	18.8
	Several time / month	55	22.9
	Several times / week	120	50
	At least once a day	20	8.3
Homeopathic products	Once a month	40	16.7
	Several times /month	50	20.8
	Several times /week	120	50
	At least once a day	25	10.4

Tables 7 shows that majority of participants receive the various NHPs several times a month. This is evidenced by the average mean of 3 and 4. In terms of how often they receive inquiries about NHPs (Herbal), the mean was 3.3, for vitamins, the mean was 3.4 and for homeopathic products, the mean was 3.5. This essentially means that homeopathic products were the most consumed NHPs product in the UAE.

(with participants reporting inquiries several time a week at 50%).

Table 7 shows how often patient inquired about herbal products. Majority of respondents indicated that they receive inquiries several times a month (37.5%) and several times a week (35.4). This reflects the generally high levels of interest in NHPs. A similar trend is seen when it comes to homeopathic products and vitamins

Table 8: Correlation: (Correlation is significant at the 0.01 level.*. Correlation is significant at the 0.05 level). Correlations**

		Location of your pharmacy?	city	What kind of NHPs do you sell?	Your position?	interaction with patients directly	receiving inquiries about NHPs (Herbal)	receiving inquiries about NHPs (Vitamins)	receiving inquiries about NHPs (Homeopathic products)
Location of your pharmacy?	r value	1	.121	.495**	-.151	.077	.282	.161	.284
	p value		.413	.000	.305	.604	.052	.274	.050
	N	240	240	240	240	240	240	240	240
City	r value	.121	1	.001	.253	.023	-.121	-.068	-.242
	p value	.413		.993	.082	.875	.411	.646	.097
	N	240	240	240	240	240	240	240	240
Kind of NHPs do you sell?	r value	.495**	.001	1	-.180	.052	.275	.389**	.337*
	p value	.000	.993		.221	.727	.059	.006	.019
	N	240	240	240	240	240	240	240	240
Your position?	r value	-.151	.253	-.180	1	.011	-.189	-.101	-.132
	p value	.305	.082	.221		.943	.198	.495	.370
	N	240	240	240	240	240	240	240	240
Interaction with patients directly	r value	.077	.023	.052	.011	1	-.089	.0240	-.065
	p value	.604	.875	.727	.943		.545	.747	.659
	N	240	240	240	240	240	240	240	240
Receiving inquiries about NHPs (Herbal)	r value	.282	-.121	.275	-.189	-.089	1	.501**	.456**
	p value	.052	.411	.059	.198	.545		.000	.001
	N	240	240	240	240	240	240	240	240
Receiving inquiries about NHPs (Vitamins)	r value	.161	-.068	.389**	-.101	.0240	.501**	1	.526**
	p value	.274	.646	.006	.495	.747	.000		.000
	N	240	240	240	240	240	240	240	240
Receiving inquiries about NHPs (Homeopathic products)	r value	.284	-.242	.337*	-.132	-.065	.456**	.526**	1
	p value	.050	.097	.019	.370	.659	.001	.000	
	N	240	240	240	240	240	240	240	240

The correlation analysis presented in table 8 provides several insights into location, pharmacy ownership, and pharmacy location influence patient inquiries. There was a significant positive correlation between the kind of NHPs sold and the type of inquiries being received at

0.501 and 0.456 for vitamins and homeopathic products respectively. Essentially, pharmacist selling vitamins and homeopathic products in supermarket pharmacies are more likely to receive inquiries about them

Table 9: Knowledge about NHPs: How Knowledgeable Are you on NHPs Products?

NHPs	Knowledge	Frequency	Percentage
Herbal	Not at all	5	2.1
	Somehow	10	4.2
	Neutral	50	20.8
	Knowledgeable	95	39.6
	Very knowledgeable	80	33.3
Vitamins & Minerals	Not at all	15	6.3
	Somehow	110	45.8
	Neutral	60	25
	Knowledgeable	50	20.8
	Very knowledgeable	5	2.1
Homeopathic Products	Not at all	25	10.4
	Somehow	100	41.7
	Neutral	70	29.2
	knowledgeable	20	8.3
	Very knowledgeable	25	10.4

In terms of knowledge about NHPs, most pharmacists were knowledgeable about herbal products. As concerns Vitamins and Minerals and homeopathic products, most participants were neutral. Essentially, for majority of NHPs products UAE pharmacist have very little

knowledge about them. On herbal products, pharmacists are largely knowledgeable (knowledgeable, 39.6%; Very Knowledgeable, 33.3%. On vitamins and minerals and homeopathic products, practitioners are considerably less knowledgeable (table 9).

Table 10: Correlation between NHPs and Knowledge (. Correlation is significant at the 0.01 level.*. Correlation is significant at 0.05). Correlations**

		Location of pharmacy?	City	Kind of NHPs you sell?	Your position?	Interaction with your patients directly	Knowledge on NHPs products (Herbal)	Knowledge on NHPs products (Vitamins and Minerals)	Knowledgeable on NHPs products (Homeopathic products)
Location of Pharmacy	r value	1	.121	.495**	-.151	.077	.466**	-.018	.195
	p value		.413	.000	.305	.604	.001	.902	.183
	N	240	240	240	240	240	240	240	240
City	r value	.121	1	.001	.253	.023	.439**	-.224	-.081
	p value	.413		.993	.082	.875	.002	.125	.584
	N	240	240	240	240	240	240	240	240
Kind of NHPs you sell?	r value	.495**	.001	1	-.180	.052	.261	-.018	.007
	p value	.000	.993		.221	.727	.073	.906	.960
	N	240	240	240	240	240	240	240	240
Your position?	r value	-.151	.253	-.180	1	.011	.158	-.060	-.153
	p value	.305	.082	.221		.943	.284	.687	.300
	N	240	240	240	240	240	240	240	240
Interact with your patients directly	r value	.077	.023	.052	.011	1	.067	.192	.201
	p value	.604	.875	.727	.943		.651	.192	.170
	N	240	240	240	240	240	240	240	240
Knowledge on NHPs products (Herbal)	r value	.466**	.439**	.261	.158	.067	1	.086	.013
	p value	.001	.002	.073	.284	.651		.563	.929
	N	240	240	240	240	240	240	240	240
Knowledge on NHPs products (Vitamins and Minerals)	r value	-.018	-.224	-.018	-.060	.192	.086	1	.193
	p value	.902	.125	.906	.687	.192	.563		.188
	N	240	240	240	240	240	240	240	240
Knowledge on NHPs products (Homeopathic products)	r value	.195	-.081	.007	-.153	.201	.013	.193	1
	p value	.183	.584	.960	.300	.170	.929	.188	
	N	240	240	240	240	240	240	240	240

The correlation analysis shown by table 10 indicates that there was a significant correlation between location and knowledge about NHPs and location of pharmacy (at 0.466) and also by city (at 0.439). Pharmacies owned by academic, government, and pharmaceutical industry

associations were more likely to have more pharmacists who are knowledgeable about NHPs. Interestingly, pharmacist in Dubai and Al Ain were more likely to be more knowledgeable about NHPs compared to other cities.

Table 11: Pharmacist Responsibility in helping patients assess NHPs.

NHPs	Responsibility	Frequency	Percentage
Herbal Medicine	Not important	5	2.1
	Somehow important	25	10.4
	Neutral	65	27.1
	Important	95	39.6
Vitamins & Minerals	Very important	50	20.8
	Not important	0	0
	Somehow important	45	18.8
	Neutral	90	37.5
Homeopathic Products	Important	90	37.5
	Very important	15	6.3
	Not important	5	2.1

	Somehow important	30	12.5
	Neutral	55	22.9
	Important	90	37.5
	Very important	60	25

In terms of pharmacist responsibility, most pharmacists consider it important to have a responsibility in helping patients assess NHPs products. This is particularly so for homeopathic products, followed by herbal medicines. On herbal medicines, most participants (39.6%) consider important that pharmacists have a responsibility in helping patients assess NHPs.

Similarly, on homeopathic products most participants (important, 37.5% and Very Important, 25%) are of the opinion that practitioners have responsibility in helping patients assess NHPs.

Table 12: Correlation between locations and responsibility to help patients (. Correlation is significant at the 0.01 level.*. Correlation is significant at the 0.05 level) Correlations**

		Location of your pharmacy?	City	Kind of NHPs you sell? (tick as appropriate)	Your position?	Interaction with your patients directly	Responsibility in helping patient assess NHPs (Herbal)	Responsibility in helping patient assess NHPs (Vitamins and Minerals)	Responsibility in helping patient assess NHPs (Homeopathic products)
Location of your pharmacy?	r value	1	.121	.495**	-.151	.077	.351*	.389**	.331*
	p value		.413	.000	.305	.604	.015	.006	.021
	N	240	240	240	240	240	240	240	240
City do you operate from?	r value	.121	1	.001	.253	.023	.083	.193	.030
	p value	.413		.993	.082	.875	.577	.189	.838
	N	240	240	240	240	240	240	240	240
Kind of NHPs do you sell?	r value	.495**	.001	1	-.180	.052	.235	.077	.367*
	p value	.000	.993		.221	.727	.108	.603	.010
	N	240	240	240	240	240	240	240	240
Position?	r value	-.151	.253	-.180	1	.011	-.114	.010	-.125
	p value	.305	.082	.221		.943	.440	.944	.397
	N	240	240	240	240	240	240	240	240
Interaction with your patients directly	r value	.077	.023	.052	.011	1	-.155	.207	.172
	p value	.604	.875	.727	.943		.293	.159	.242
	N	240	240	240	240	240	240	240	240
Responsibility in helping patient assess NHPs (Herbal)	r value	.351*	.083	.235	-.114	-.155	1	.150	.068
	p value	.015	.577	.108	.440	.293		.309	.647
	N	240	240	240	240	240	240	240	240
Responsibility in helping patient assess NHPs (Vitamins and Minerals)	r value	.389**	.193	.077	.010	.207	.150	1	.364*
	p value	.006	.189	.603	.944	.159	.309		.011
	N	240	240	240	240	240	240	240	240
Responsibility in helping patient assess NHPs (Homeopathic products)	r value	.331*	.030	.367*	-.125	.172	.068	.364*	1
	p value	.021	.838	.010	.397	.242	.647	.011	
	N	240	240	240	240	240	240	240	240

In terms of correlation analysis, table 12 shows that there was a significant correlation between location and whether pharmacist consider their responsibility to help patients with at 0.389. In essence, for pharmacies owned

by academic institutions regulatory bodies and industry associations are more likely to have pharmacists who consider that it is their responsibility to help patients with NHPs patients.

Table 13: Pharmacist's advice on NHPs.

NHPs	Advice	Frequency	Percentage
Herbal Medicine	Not important	5	2.1
	Somehow important	10	4.2
	Neutral	30	12.5
	Agree	135	56.3
	Very important	60	25
Vitamins & Minerals	Not important	5	2.1
	Somehow important	35	14.6
	Neutral	75	31.3
	Agree	85	35.4
	Very important	40	16.7
Homeopathic Products	Not important	25	10.4
	Somehow important	75	31.3
	Neutral	70	29.2
	Agree	50	20.8
	Very important	20	8.3

As concerns giving advice on adverse effects of NHPs, table 13 showed that most pharmacists agree that they should offer advice. For herbal NHPs, the mean is highest at 3.9, vitamins and minerals at 3.5, and homeopathic medicines at 2.9. Majority of participants

(56%) agree that when it comes to herbal products, pharmacists should offer advice on adverse effects. On the others, participants are largely neutral or consider it less important.

Table 14: Correlation between the type of NHPs and the pharmacists advice: (. Correlation is significant at the 0.01 level. *. Correlation is significant at the 0.05).****Correlations**

		Location of your pharmacy?	City	What kind of NHPs do you sell?	Your position?	Interaction with your patients directly	Pharmacist should offer advice on adverse effects of NHPs (Herbal)	Pharmacist should offer advice on adverse effects of NHPs (Vitamins and Minerals)	Pharmacist should offer advice on adverse effects of NHPs (Homeopathic products)
Which of the following best describes the location of your pharmacy?	Pearson Correlation	1	.121	.495**	-.151	.077	.426**	.194	.282
	Sig. (2-tailed)		.413	.000	.305	.604	.003	.185	.052
	N	240	240	240	240	240	240	240	240
Which city do you operate from?	Pearson Correlation	.121	1	.001	.253	.023	.458**	-.134	.091
	Sig. (2-tailed)	.413		.993	.082	.875	.001	.363	.541
	N	240	240	240	240	240	240	240	240
What kind of NHPs do you sell? (tick as appropriate)	Pearson Correlation	.495**	.001	1	-.180	.052	.173	.297*	.193
	Sig. (2-tailed)	.000	.993		.221	.727	.240	.040	.189
	N	240	240	240	240	240	240	240	240
Which of the following best describe your position?	Pearson Correlation	-.151	.253	-.180	1	.011	.142	-.239	-.171
	Sig. (2-tailed)	.305	.082	.221		.943	.335	.102	.244
	N	240	240	240	240	240	240	240	240
Do you interact with your patients directly	Pearson Correlation	.077	.023	.052	.011	1	.172	-.063	.323*
	Sig. (2-tailed)	.604	.875	.727	.943		.242	.673	.025
	N	240	240	240	240	240	240	240	240
Pharmacist should offer advice on adverse effects of NHPs (Herbal)	Pearson Correlation	.426**	.458**	.173	.142	.172	1	.159	.040
	Sig. (2-tailed)	.003	.001	.240	.335	.242		.282	.785
	N	240	240	240	240	240	240	240	240
Pharmacist should offer advice on	Pearson Correlation	.194	-.134	.297*	-.239	-.063	.159	1	-.177

adverse effects of NHPs (Vitamins and Minerals)	Sig. (2-tailed)	.185	.363	.040	.102	.673	.282		.229
	N	240	240	240	240	240	240	240	240
Pharmacist should offer advice on adverse effects of NHPs (Homeopathic products)	Pearson Correlation	.282	.091	.193	-.171	.323*	.040	-.177	1
	Sig. (2-tailed)	.052	.541	.189	.244	.025	.785	.229	
	N	240	240	240	240	240	240	240	240

The correlation analysis shows that there is a significant correlation between what kinds of NHPs being sold and

whether the pharmacist thought that advice should be given at 0.297 for herbal medicines.

Table 15: Pharmacists and NHPs Counseling.

NHPs Products	Counseling	Frequencies	Percentage
Herbal Medicine	Not important	0	0
	Somewhat important	55	22.9
	Neutral	90	37.5
	Important	90	37.5
	Very important	5	2.1
Vitamins & Minerals	Not important	5	2.1
	Somewhat important	45	18.8
	Neutral	105	43.8
	Important	75	31.3
	Very important	10	4.2
Homeopathic Products	Not important	0	0
	Disagree	15	6.3
	Neutral	45	18.8
	Important	12.5	52.1
	Very important	55	22.9

In terms of counselling, table 15, showed that majority of pharmacists agree that they should be able to effectively offer counselling to patients at a mean of 3.2 for herbal medicines, Vitamins at 3.1 and 3.9. Essentially for

homeopathic medicines, most pharmacists in UAE were of the opinion that counselling should be for homeopathic medicines. The same result is seen expressed in the frequency tables.

Table 16: Correlation between the type of NHPs and counselling offered by pharmacists (. Correlation is significant at the 0.01 level.*. Correlation is significant at the 0.05 level). Correlations**

		Which of the following best describes the location of your pharmacy?	Which city do you operate from?	What kind of NHPs do you sell? (tick as appropriate)	Which of the following best describe your position?	Do you interact with your patients directly	Pharmacist should be able to effectively counsel patients on adverse interactions (Herbal)	Pharmacist should be able to effectively counsel patients on adverse interactions (Vitamins and Minerals)	Pharmacist should be able to effectively counsel patients on adverse interactions (Homeopathics)
Which of the following best describes the location of your pharmacy?	Pearson Correlation	1	.121	.495**	-.151	.077	.251	.117	.354*
	Sig. (2-tailed)		.413	.000	.305	.604	.085	.428	.014
	N	240	240	240	240	240	240	240	240
Which city do you operate from?	Pearson Correlation	.121	1	.001	.253	.023	.055	-.034	.033
	Sig. (2-tailed)	.413		.993	.082	.875	.712	.821	.826
	N	240	240	240	240	240	240	240	240
What kind of NHPs do you sell? (tick as appropriate)	Pearson Correlation	.495**	.001	1	-.180	.052	.257	.214	.2403**
	Sig. (2-tailed)	.000	.993		.221	.727	.078	.144	.001
	N	240	240	240	240	240	240	240	240

Which of the following best describe your position?	Pearson Correlation	-.151	.253	-.180	1	.011	-.168	-.083	-.026
	Sig. (2-tailed)	.305	.082	.221		.943	.255	.576	.861
	N	240	240	240	240	240	240	240	240
Do you interact with your patients directly	Pearson Correlation	.077	.023	.052	.011	1	.378**	.188	.158
	Sig. (2-tailed)	.604	.875	.727	.943		.008	.200	.283
	N	240	240	240	240	240	240	240	240
Pharmacist should be able to effectively counsel patients on adverse interactions (Herbal)	Pearson Correlation	.251	.055	.257	-.168	.378**	1	.379**	.278
	Sig. (2-tailed)	.085	.712	.078	.255	.008		.008	.056
	N	240	240	240	240	240	240	240	240
Pharmacist should be able to effectively counsel patients on adverse interactions (Vitamins and Mnral)	Pearson Correlation	.117	-.034	.214	-.083	.188	.379**	1	.231
	Sig. (2-tailed)	.428	.821	.144	.576	.200	.008		.114
	N	240	240	240	240	240	240	240	240
Pharmacist should be able to effectively counsel patients on adverse interactions (Homeopathics)	Pearson Correlation	.354*	.033	.2403**	-.026	.158	.278	.231	1
	Sig. (2-tailed)	.014	.826	.001	.861	.283	.056	.114	
	N	240	240	240	240	240	240	240	240

In terms of correlation, there is a significant relationship between what kinds of NHPs is being sold and need for offering counseling on potential adverse reactions. This is particular so for herbal medicines at 0.378. Essentially,

most pharmacists were of the opinion that patients receiving herbal medicines should be particularly given adequate counseling on potential for adverse impacts.

Table 17: Documentations of NHPs Use: Use of NHPs should be documented.

NHPs	Documentations	Frequency	Percentage
Herbal Medicines	Not important	15	6.3
	Somewhat important	90	37.5
	Neutral	75	31.3
	Important	40	16.7
	Very important	20	8.3
Vitamines & Minerals	Not important	45	18.8
	Somewhat important	125	52.1
	Neutral	40	16.7
	Important	25	10.4
	Very Important	5	2.1
Homeopathic products	Not important	0	0
	Somewhat important	25	10.4
	Neutral	65	27.1
	Important	100	41.7
	Very important	50	20.8

In terms of documentation of NHPs, there was a mixed reaction amongst UAE pharmacists. Most of them were of the opinion that for homeopathic products, use of NHPs should be documented. However as concerns herbal, the responses were largely neutral (2.8) while for

Vitamins and Mineral, the general consensus was that it was not important (Table 17). Similarly, the majority of participants considered documentation of NHPs use as not important with the exception of homeopathic products.

Table 18: Correlation between location of pharmacy and the opinion of Homeopathic medicines (. Correlation is significant at the 0.01 level, *significant at 0.05).****Correlations**

		Which of the following best describes the location of your pharmacy?	Which city do you operate from?	What kind of NHPs do you sell? (tick as appropriate)	Which of the following best describe your position?	Do you interact with your patients directly	Use of NHPs should be documented (herbal)	Use of NHPs should be documented (Vitamins and Minerals)	Use of NHPs should be documented (homeopathic products)
Which of the following best describes the location of your pharmacy?	Pearson Correlation	1	.121	.495**	-.151	.077	.054	-.007	.522**
	Sig. (2-tailed)		.413	.000	.305	.604	.717	.963	.000
	N	240	240	240	240	240	240	240	240
Which city do you operate from?	Pearson Correlation	.121	1	.001	.253	.023	.190	.122	.061
	Sig. (2-tailed)	.413		.993	.082	.875	.195	.407	.680
	N	240	240	240	240	240	240	240	240
What kind of NHPs do you sell? (tick as appropriate)	Pearson Correlation	.495**	.001	1	-.180	.052	.252	.039	.477**
	Sig. (2-tailed)	.000	.993		.221	.727	.084	.791	.001
	N	240	240	240	240	240	240	240	240
Which of the following best describe your position?	Pearson Correlation	-.151	.253	-.180	1	.011	.121	.097	-.029
	Sig. (2-tailed)	.305	.082	.221		.943	.413	.514	.844
	N	240	240	240	240	240	240	240	240
Do you interact with your patients directly	Pearson Correlation	.077	.023	.052	.011	1	-.073	.033	.035
	Sig. (2-tailed)	.604	.875	.727	.943		.622	.824	.811
	N	240	240	240	240	240	240	240	240
Use of NHPs should be documented (herbal)	Pearson Correlation	.054	.190	.252	.121	-.073	1	.189	.369**
	Sig. (2-tailed)	.717	.195	.084	.413	.622		.198	.010
	N	240	240	240	240	240	240	240	240
Use of NHPs should be documented (Vitamins and Minerals)	Pearson Correlation	-.007	.122	.039	.097	.033	.189	1	.152
	Sig. (2-tailed)	.963	.407	.791	.514	.824	.198		.303
	N	240	240	240	240	240	240	240	240
Use of NHPs should be documented (homeopathic products)	Pearson Correlation	.522**	.061	.477**	-.029	.035	.369**	.152	1
	Sig. (2-tailed)	.000	.680	.001	.844	.811	.010	.303	
	N	240	240	240	240	240	240	240	240

The correlation analysis above shows that there is a significant correlation between location of pharmacy and the opinion as to whether consumption of homeopathic medicines use should be documented at significance level of 0.533. Essentially, for pharmacists working in government or academic institutions, they insist on the

documentation of herbal medicine use. Similarly, there was a significant correlation between type of NHPs being sold and the opinion as to whether its use should be documented at 0.477. Basically, fatty acids and fungal products use should be documented.

Table 19: Reporting Incidences of Adverse Reaction.

NHPs	Reporting Adverse Reaction	Frequency	Percentage
Herbal Medicines	Not important	0	0
	Somewhat important	10	4.2
	Neutral	35	14.6
	Important	155	64.6
	Very important	40	16.7
Vitamins & Minerals	Not important	5	2.1
	Somewhat important	45	18.8
	Neutral	105	43.8

	Important	75	31.3
	Very important	10	4.2
Homeopathic	Not important	0	0
	Somewhat important	25	10.4
	Neutral	65	27.1
	Important	100	41.7
	Very important	50	20.8

In terms of reporting of adverse incidences, the table above shows that majority of participants agree that incidences should be reported with a mean of 3.9 for herbal medicines, 3.1 for vitamins and 3.7 for homeopathic products (table 19). It shows participants opinion as concerns reporting of adverse reactions. When it comes to herbal, a significant majority of respondents

consider it important to report adverse reactions immediately (64.7%). A similar result is reported for homeopathic medicines with 41.7% considering it as important and 20.8 per cent considering it very important. However, when it comes to vitamins most participants were neutral (43.8%) with 18.8 per cent considering it somewhat important.

20. Correlations between type of pharmacy and the opinion to report adverse action (**. Correlation is significant at the 0.01 level).

Correlations

		Which of the following best describes the location of your pharmacy?	Which city do you operate from?	What kind of NHPs do you sell? (tick as appropriate)	Which of the following best describe your position?	Do you interact with your patients directly	Incidences of adverse reactions should be reported immediately (Herbal)	Incidences of adverse reactions should be reported immediately (Herbal)	Incidences of adverse reactions should be reported immediately (Herbal)
Which of the following best describes the location of your pharmacy?	Pearson Correlation	1	.121	.495**	-.151	.077	.529**	.117	.522**
	Sig. (2-tailed)		.413	.000	.305	.604	.000	.428	.000
	N	240	240	240	240	240	240	240	240
Which city do you operate from?	Pearson Correlation	.121	1	.001	.253	.023	.073	-.034	.061
	Sig. (2-tailed)	.413		.993	.082	.875	.622	.821	.680
	N	240	240	240	240	240	240	240	240
What kind of NHPs do you sell? (tick as appropriate)	Pearson Correlation	.495**	.001	1	-.180	.052	.427**	.214	.477**
	Sig. (2-tailed)	.000	.993		.221	.727	.002	.144	.001
	N	240	240	240	240	240	240	240	240
Which of the following best describe your position?	Pearson Correlation	-.151	.253	-.180	1	.011	-.125	-.083	-.029
	Sig. (2-tailed)	.305	.082	.221		.943	.397	.576	.844
	N	240	240	240	240	240	240	240	240
Do you interact with your patients directly	Pearson Correlation	.077	.023	.052	.011	1	.155	.188	.035
	Sig. (2-tailed)	.604	.875	.727	.943		.293	.200	.811
	N	240	240	240	240	240	240	240	240
Incidences of adverse reactions should be reported immediately (Herbal)	Pearson Correlation	.529**	.073	.427**	-.125	.155	1	.196	.506**
	Sig. (2-tailed)	.000	.622	.002	.397	.293		.183	.000
	N	240	240	240	240	240	240	240	240
Incidences of adverse reactions should be reported immediately (Herbal)	Pearson Correlation	.117	-.034	.214	-.083	.188	.196	1	.140
	Sig. (2-tailed)	.428	.821	.144	.576	.200	.183		.344
	N	240	240	240	240	240	240	240	240

Incidences of adverse reactions should be reported immediately (Herbal)	Pearson Correlation	.522**	.061	.477**	-.029	.035	.506**	.140	1
	Sig. (2-tailed)	.000	.680	.001	.844	.811	.000	.344	
	N	240	240	240	240	240	240	240	240

In terms of correlation analysis, there is a significant correlation between type of pharmacy and the opinion as to whether adverse reactions should be reported. For herbal and homeopathic products, the correlation is at 0.52 and for homeopathic products the correlation is at 0.533. Similarly, there is a strong correlation between type of type of NHPs being sold and whether adverse reactions should be reported at 0.427 for herbal medicines and 0.477 for homeopathic medicines. Essentially, most pharmacists are of the opinion that adverse effects of herbal medicines and homeopathic medicines should be reported as soon as possible.

DISCUSSION

The main aim and objective of this study was to evaluate role of pharmacists in the administration of NHPs. In this regard, this study sought to determine the level of patient inquiries, pharmacist knowledge about NHPs, and pharmacist's responsibility towards the administration of NHPs.

As concerns inquiry of NHPs, the findings of this study showed that pharmacist are widely consulted when it comes to the use of NHPs. Majority of the participants survey reported receipt of inquiries about NHPs frequently in their workplaces. Inquiries about NHPs were particularly more frequent in the case of herbal medicines. These findings echo previous findings by Butris (2001)^[19] and Olatunde et al. (2010).^[21] All of the above findings concluded that pharmacist were the leading sources of information about NHPs in Canada. The present study has established a similar trend in the UAE.

Pharmacists' knowledge about NHPs: the present study reported mixed findings. It is only when it comes to herbal medicines that most pharmacists reported being knowledgeable. On Minerals and Vitamins and homeopathic treatments, the findings of the present study showed that most pharmacists are neutral on the issue. These findings echo previous findings by Kwan et al. (2006)^[12] whose study concluded that most pharmacies are not very knowledgeable about NHPs.

Pharmacists' responsibility towards helping patients assess NHPs: the findings of this study were generally conclusive. An overwhelming majority of them agreed that pharmacist have a role in assisting patients assess and identify the right NHPs. These are similar to the views expressed by Kwan et al. (2006)^[12] and Bennett (2000)^[15] that pharmacists have a professional obligation in the administration of NHPs. Similarly, Bennett (2000)^[15] argues that pharmacist must be fully involved

in the administration of NHPs in order to minimise risk exposure to pharmacists.

In terms of advice about potential for adverse effects, the findings of this study were mixed. Most of the participants agree that for herbal medicines, pharmacist should offer advice on potential adverse effects. A similar opinion is also expressed when it comes to Vitamins and Minerals. However, when it comes to homeopathic medicines, participants were mostly neutral. This is probably linked to the fact that homeopathic medicines are largely subject to controversy and most pharmacists would not want to be involved.^[17]

As concerns the role of pharmacists in offering counselling about NHPs, the findings of this study were fairly conclusive. It showed that pharmacists were in agreement that they should be able to effectively offer counselling to patients about NHPs. This was particularly so when it comes to homeopathic medicines where an overwhelming majority of pharmacists agreed that pharmacists should be able to offer effective counselling. A previous study by Farrell et al. (2008)^[7] also concluded that greater levels of risk associated with NHPs call for increased levels of patient counselling about NHPs. This is more for homeopathic medicines which continue to attract controversy.

In terms of documentation of use, the findings of this study showed mixed results. On herbal medicines and herbal treatments, most pharmacists were neutral as to whether there should be documentation. However, on homeopathic medicines, pharmacists overwhelmingly agreed to documentation. This aspect also serves to emphasise on the controversial nature of homeopathic treatments and general apprehension about them amongst professionals. This finding echo previous finding by Wingfield et al. (2004)^[21] whose study concluded that pharmacist were subject to ethical doubts when it comes to selling medicines they are not fully confident about. This is what informs the idea that homeopathic medicines should be documented.

On adverse reactions, the findings of this study show a unanimous conclusion that adverse reactions should be immediately reported. The issue of adverse reactions touches on drug safety which is a major concern for regulators (Health Canada, 2005).^[22] In this regard, this study concludes that reporting of adverse reactions was an aspect that needed to be mandated in the regulations.

CONCLUSIONS

The present study has shown that NHPs are best administered by pharmacists. It echoes similar studies by Boon (2005)^[17] that there are also other factors that make pharmacists the most ideal professional in the administration of NHPs. First, pharmacists (and pharmacies) are easy to access by patient at the time the purchase decision is being made. This means that when consumers are buying the NHPs, they are able to immediately consult and receive appropriate counselling. Secondly, pharmacists possess evidence-based information which is essential when it comes what would be more effective for a particular illness between NHPs and conventional drugs. Thirdly, pharmacists have considerable knowledge in healthcare; this makes them more appropriate for offering advice as concerns self medication or need for further medical attention for professionals. The present study also concludes that:

1. For most people in the UAE, pharmacist present the most reliable source of information.
2. There is a lack of adequate knowledge about NHPs amongst UAE pharmacists.
3. Most pharmacists for varied reasons are still largely timid about advising patients about potential for adverse effects.
4. Patient counselling should be made increasingly more important at the policy level by the government.

The study has established that support for NHPs administration by pharmacists is widely supported by practitioners. The present study also established that most practitioners and scholars emphasise on the role of pharmacists in counselling of NHPs consumers. However, the study also established that when it comes to competence, pharmacists are generally not well equipped to effectively administer NHPs. This study established that knowledge and controversial significantly affects practitioners' attitudes and approach towards practice. The study also established that variables such as experience, academic training, and ownership of the pharmacy significantly impacted practitioners' attitude towards dietary supplements.

RECOMMENDATIONS

The above conclusions have highlighted the insights from the study. These insights have informed a number of recommendations for practitioners and policy makers. Therefore, this study offers the following recommendations:

1. Policymakers should put in place measures to ensure that adverse incidences with NHPs are immediately reported. This should be mandated in professional ethics and code of conduct and also by government regulations.
2. Documentation of use has also emerged as an important element in the use of NHPs especially for controversial homeopathic medicines. In this regard, this study recommends entrenching documentation into the administration of NHPs to patients. This

should serve as the basis for tracking usage and identification adverse effects.

3. The issue of knowledge has also emerged in the study. In order to mitigate the general lack of knowledge amongst pharmacists in the UAE, NHPs should be documented like any other drug. At the same time, efforts should be made towards formally educating practitioner on NHPs
4. The issues of advice and counselling have also emerged in this study. In this regard, the government should develop strategies for mandating professional advice and counselling before the use of homeopathic medicines.

Limitations and Suggestions for Future Research

This study had several limitations emerging from study design and number of participants. This study primarily adopted a quantitative research approach which limited the researchers' ability to collect diverse participants' views on the role of pharmacists' on NHPs. In essence, the researcher is not able to collect individualised perspectives and knowledge gathered from their years of experience practicing in the UAE. This would have enriched the study. However, due to budgetary and time constraints the author did not conduct participant interviews. This research did not engage with producers and consumers of NHPs.

For future studies, this study recommends adoption of qualitative approaches. This should focus on elements such as practitioner attitudes on NHPs and whether they were confident about it. This study also recommends a consumer focussed study that seeks to understand consumer preferred choices of information about NHPs. At the same time, this study also recommends a study targeting producers and manufacturers of herbal medicines.

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