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RESEARCH ARTICLE

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Senior Pharmacy Students' Knowledge and Perception towards Herbal Medicines: A Preliminary study from Malaysia

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Abstract

Objectives: This study was to evaluate the perception of senior pharmacy students towards herbal medicines and determine their knowledge towards herbal medicines as well as to identify whether there is any association between the current year of study of the senior pharmacy students and their level of knowledge towards herbal medicines. **Methods:** Questionnaires which contain 21 items, 6 items in 5 point Likert scale for the perception part while 15 items in limited choices for the knowledge part were distributed to all 3rd year and 4th year senior pharmacy students. The data collected was analyzed by using SPSS software version 12. **Results:** Most of the respondents gave neutral responses towards the statements that seek for their perspectives in herbal medicines. By the way, the highest portion of respondents (56.4%) was categorized in the intermediate level while the amount of respondents with high knowledge in herbal medicines was ranked the second place among three with a percent of 37.2%. The amount left was in a poor level of knowledge. This study showed that the current year of study was associated with the level of herbal knowledge. **Conclusions:** Senior pharmacy student knowledge of herbal medicines varies depending on the current year of study in pharmacy program and they were not confident enough in giving perceptions towards herbal medicines. The pharmacy curriculum should be revised in order to enable senior pharmacy students accessing herbal medicines more often and broaden their view and knowledge in that particular field.

Key words: Herbal medicines, Knowledge, Malaysia, Perception, Senior pharmacy students.

INTRODUCTION

Herbal medicines are often more commonly preferred by general public considering their availability in rural areas, cost factors and a perceived sense of safety. Herbal medicines are defined as plant-derived material or preparations with therapeutic or other human health benefits, which contain either raw or processed ingredients from one or more plants.[1] Medication use is undoubtedly a crucial issue in the worldwide, including medical or non-medical use of prescription drugs, non-prescription drugs, and herbal products.

As experts on modern pharmacotherapy with in depth knowledge on medications, pharmacists have an important role in evaluating the safety and efficacy of herbal

medications and counseling the patients on their appropriate use.[2] Hence, it is of paramount importance to evaluate the pharmacist knowledge and attitudes towards herbal medications. One review article reported that that pharmacists perceived to have insufficient knowledge on herbal medications.[3] Furthermore, there was a distinct lack of conceptually validated measures to assess a pharmacist's knowledge concerning herbal medications.

As per the World Health Organization (WHO) estimates, 65%-80% of the global population use traditional medicine as their primary form of health care.[4] The use of herbal medicines had even increased a lot in developed countries in the recent years.[5] It is imperative for health professions to assess the safety and efficacy of herbal medications. The use of herbal medicines has got a history of several thousands of years in countries such as China, Korea and Japan.[6] However, one of the unique characteristics of herbal medicines is that they are extracted with boiling water during the decoction process.[6] This may be the main reason why quality control of oriental herbal drugs is more difficult than that of allopathic medications.

The use of alternative medicines is increasing globally and in Malaysia. During the period of 2000 to 2005, the annual sales of traditional medicines in Malaysia increased from US$ 385 million (RM 1 billion) to US$ 1.29 billion (RM 4.5 billion).[7] Although, the increasing use of traditional medicines in Malaysia is not well understood, it is an import matter of concern because herbal medicines are not strictly regulated in the country.[8] Even if the DCA evaluated the quality and safety of herbal medicines, it is limited to testing adulteration and contamination due to heavy metals and micro-organisms.[8] Absence of adequate information on the safety profile of herbal medicines had led to the image of herbal medicines being harmless. Understanding the predictors of herbal use could help health care providers in identifying the patients at high risk and provide them with necessary information on safe use.

Undoubtedly, pharmacists are considered as easily accessible trusted healthcare professionals and hence patients often ask them for advice on Complementary Alternative Medicine (CAM) related practices.[9,10] Hence it is expected that pharmacists must be better educated regarding CAM[9,10] including herbal medicines. Thus, determining pharmacy students' attitudes and perceptions toward the use of CAM including herbal medicines plays an important role in how curriculum change could be accomplished. The objective of the study was conducted to determine the knowledge and perception of senior pharmacy students towards herbal medicines.

METHODS

A cross-sectional study was carried out to collect data for this research. A validated questionnaire consists of both limited response and 5 point Likert scale items were used to collect the data. There were six questions regarding on the perception towards herbal medical medication using a 5 point Likert scale response format (strongly disagree, disagree, neutral, agree, and strongly agree) and 15 questions regarding the knowledge of senior pharmacy students towards the herbal medication. Each question contained 3 options ("yes", "no", and "undecided"), right answer carries a score of '1', and while for a wrong answer carries a score of '0'. A consensus arbitrary categorization was developed whereby those respondents who scored above 70% are considered good; between 50% and 70% are considered intermediate; below 50% are considered poor. For the purpose of this study only the 3rd and the 4th year pharmacy students were included as they had been more exposed to issues related to herbal medicines during their education years compared to their juniors in 1st and 2nd year.

The questionnaires were distributed to the students following a lecture and collected immediately after they had finish answering it. During the study period there were a total of 261 students enrolled in 3rd and 4th year pharmacy degree programme at USM respectively. The survey forms were distributed to all of them after their standard lecture time. At the end of the study only 165 students (63.2%) of them responded to the survey. The questionnaires were distributed to the students following a lecture and collected immediately after they had finish answering it and then marks were given to each respondent. Eventually, the data collected was analyzed by using the SPSS software version 12.0.1. Descriptive statistics and a non-parametric test (Mann-Whitney U test) were used in data analysis.

A total of 261 questionnaires were distributed among 3rd year and 4th year pharmacy and 165 of the respondents were responded (response rate = 63.2%). There were 114 (69.1%) females and 51 (30.9%) males. The demographic details of the respondents are described in Table 1.

Senior pharmacy student perceptions towards herbal medicines: The perception of the students towards herbal medicine sis listed below in Table 2.

Senior pharmacy student knowledge towards herbal medicines: The knowledge of the students towards herbal medicines is listed in Table 3.

DISCUSSION

Table 1: Demographic distribution of the respondents

Parameters	Intervals	[n (%)]	
		3rd year (n=63)	4th year (n=102)
	Male	21 (12.7)	30 (18.2)
	Female	42 (25.5)	72 (43.6)
Age distribution	20	8 (4.8)	0 (0)
	21	52 (31.5)	6 (3.6)
	22	3 (1.8)	81 (49.2)
	23	0 (0)	19 (9.1)
Mode on entry to pharmacy program	Matriculation	61 (37.0)	2 (1.2)
	STPM	91 (55.1)	11 (6.7)

Table 2: Senior pharmacy student perceptions towards herbal medicines

Responses	Responses					Mann-Whitney U *p-values		
	SDA n (%)	DA n (%)	N (%)	A n (%)	SA n (%)	Year of Stud	Gender	Mod of Ent
1. In my opinion, herbal medicine product is more effective than allopathic medicines	3 (1.8)	38 (38.0)	102 (61.8)	21 (12.7)	1 (0.6)	0.196	0.081	0.753
2. The side effects of the herbal medicines are less compared to the allopathic medicines.	3 (1.8)	50 (30.3)	52 (31.5)	54	6 (3.6)	0.174	0.118	0.563
3. I will prefer herbal medicines as a treatment compare to allopathic medicines when I am sick.	8 (4.8)	59 (35.8)	67 (40.6)	30 (18.2)	1 (0.6)	0.507	0.334	0.762
4. Pharmacy student should know well about the uses and side effects of herbal medicines.	3 (1.8)	3 (1.8)	17 (10.3)	87 (52.7)	55 (33.3)	0.453	0.752	0.266
5. Herbal medicines are more reliable than allopathic medicines since they have undergone a long history.	7 (4.2)	43 (26.1)	85 (51.5)	24 (14.5)	6 (3.6)	0.672	0.425	0.149
6. The usage of herbal medicines is not evidence based.	4 (2.4)	57 (34.5)	58 (35.2)	40 (24.2)	6 (3.6)	0.360	0.649	0.314

Note- *p<0.05

This study is undertaken in order to evaluate the perceptions and knowledge of senior pharmacy students towards herbal medicines. The results showed that the senior pharmacy students in Universiti Sains Malaysia (USM), a public university in Malaysia do not have adequate and wider view towards herbal medicines and seemed to have less access to the information related to that particular field. Though there were also respondents who gave positive perceptions toward this subject, they were only a small population.

From the results shown, it is obvious that only approximately 34% of the respondents achieved the level that was considered having high knowledge towards herbal medicines while the number of respondents who were categorised in the level of "poor knowledge" was at 10%. A majority of them were categorised in the intermediate level. These results might be caused by insufficient accessibility of information about herbal medicines for the senior pharmacy students.

Actually, low scoring in the test does not totally represent the sufficiency of content in herbal medicine courses offered in pharmacy curriculum in USM because the test did not count towards academic standing, and respondents may not have strived for the best in the test. The absenteeism which occurred while the study was conducted is also considered as a factor for the low percentage of respondents responding well.

A study from Kuwait suggested that knowledge on herbal medicine should be incorporated in pharmacy curriculum as a compulsory part and not just an elective course. For the practicing pharmacists, steps should be taken to provide regular updates. This study had shown that pharmacists

Table 3: Senior pharmacy students' knowledge towards herbal medicines

Responses	Yes, n (%)	No, n (%)	Undecided n (%)	Year of study	Gender	Mode of entry
1. Eurycoma Longifolia is also known as 'Tongkat Ali' in Malay.	134 (81.2)	8 (4.8)	23 (13.9)	<0.001*	0.607	0.245
2. Beta-carboline alkaloids isolated from 'Tongkat Ali' have demonstrated significant cytotoxicity against human lung cancer and human breast cancer cell lines.	20 (12.1)	27 (16.4)	118 (71.5)	0.001*	0.102	0.331
3. 'Tongkat Ali' works very well as an aphrodisiac.	63 (38.2)	22 (13.3)	80 (48.5)	0.234	0.130	0.175
4. 'Tongkat Ali' can be taken on everyday basis since there is no side effect.	11 (6.7)	128 (77.6)	26 (15.8)	0.006*	0.215	0.417
5. Garlic can be prepared as wine which is a good stimulant lotion for baldness of the head.	26 (15.8)	40 (24.2)	99 (60.0)	0.212	0.426	0.297
6. Garlic has been used with the intention of lowering blood pressure and cholesterol.	132 (80.0)	6 (3.6)	27 (16.4)	0.005*	0.738	0.705
7. Milk thistle is recommended for the prevention and treatment of various liver disorders including viral hepatitis.	88 (53.3)	15 (9.1)	62 (37.6)	<0.001*	0.100	0.007*
8. The safety of milk thistle in pregnant or nursing women is unknown.	53 (32.1)	35 (21.2)	77 (46.7)	<0.001*	0.113	0.530
9. St. John's Wort is effective in the treatments of depression.	112 (67.9)	9 (5.5)	44 (26.7)	<0.001*	0.486	0.011*
10. St. John's Wort is contraindicated in pregnancy.	112 (67.9)	8 (4.8)	45 (27.3)	0.003*	0.252	0.368
11. Orthosiphon Stamineus is the scientific name of 'Misai Kucing'.	135 (81.8)	12 (7.3)	18 (10.9)	0.708	0.592	0.079
12. Labisia Pumila is also known as 'Kacip Fatimah' in Malay.	67 (40.6)	16 (9.7)	82 (49.7)	0.764	0.933	0.559
13. Saw Palmetto is commonly used to treat enlarge prostate or benign prostatic hyperplasia (BPH).	116 (70.3)	3 (1.8)	46 (27.9)	<0.001*	0.675	0.074
14. Ginseng can be taken in addition to prescribed drugs without risk of incompatibility.	15 (9.1)	114 (69.1)	36 (21.8)	0.001*	0.611	0.647
15. A massive ginseng overdose will cause "Ginseng Abuse Syndrome"	96 (58.2)	11 (6.7)	58 (35.2)	<0.001*	0.278	0.765

with previous continuing herbal education are more knowledgeable than the ones without it.[11] The finding of this study support our results and once again confirms the need for introducing herbal medicines into pharmacy program curriculum.

Another Korean study involving 608 female nursing students evaluate the perceptions, knowledge and misuse of one herbal drug (Uwhangchungsimwon) and found a higher proportion using it.[12] Authors reported that 83% considered Uwhangchungsimwon to be effective in minimizing examination tension or anxiety and 58% use it for psychological relaxation. Despite a thorough understanding and scientific studies on its effects, students were known to be misinformed regarding the safe use of Uwhangchungsimwon, especially its effects relieving anxiety and depression. These misconceptions might have made the students to misuse Uwhangchungsimwon to alleviate examination tension and anxiety.[12]

As future pharmacy practitioners, pharmacy students must be able to provide useful, professional advice and guidance in differentiating and choosing good quality herbal remedies and help patients make more informed decisions about herbal therapy options as well as to prevent any deception of counterfeit herbal medicines. Inadequate knowledge towards herbal medicines indicates that our pharmacy students are not qualified yet to undertake this responsibility. Thus, a comprehensive development of the current pharmacy curriculum is needed.

Limitations and Recommendations:

The main obstacle to this study is the uncooperativity of our respondents. Part of them did not return back or lost the questionnaires that were distributed to them. The lack of free time due to the packed lecture schedule contributes to this limitation as well. Besides, another limitation experienced in this study was the general inaccessibility of

the senior pharmacy students. Last but not the least, the outcome of the study may not be representative due to the smaller sample size increasing the chances of sampling errors. To minimize those limitations, the same research should be conducted at other universities and institutions with larger student sample size which would make the study more accurately representative of the perception and knowledge of senior pharmacy students towards herbal medicines. Furthermore, the introduction of additional courses and contents into the ordinary pharmacy curriculum is recommended.

CONCLUSION

Overall, this study showed that most of the senior pharmacy students gave neutral perceptions towards herbal medicines. In addition, there were only 6.1% of the respondents being graded as good in herbal knowledge. These indirectly reflected that the study in herbal medicines is still insufficient in our pharmacy curriculum. Therefore, the introduction of a comprehensive herbal medicine study is needed in the current pharmacy curriculum.

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