

Original Article

A Cross-Sectional Analysis of Knowledge, Beliefs and Practices Regarding Traditional Medicine Use among Pharmacy Students of Different Private and Government Universities of Lahore, Pakistan

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Abstract

Background: Students' understanding regarding traditional medicine is a part of pharmacy curriculum. In Pakistan, be it students or healthcare professionals, little is known about the general importance of traditional medicine. **Objectives:** The aim of this study is to assess the students, enrolled in Doctor of Pharmacy Program, regarding their beliefs, knowledge and practices for use of medicinal plants. **Methodology:** The questionnaires were distributed among the Doctor of Pharmacy (Pharm-D) students. The data was analyzed using SPSS software (IBM, version. 22) and different statistical tests were applied, including descriptive analysis, t-test and Pearson chi squared test. **Results:** Total 254 responses were obtained in the study. While the outcome indicates that the majority of the participants (n=237: 93.3%) acknowledge the usefulness of traditional medicine. 151 (59.4%) participants believed that the traditional medicine is safe but 103 (40.6%) concerned about the side effects of herbal remedies. 187 (73.6%) reported the use of some type of medicinal plants in their life. Easy availability of traditional medicine was reported by 186 (73.2%) participants and 176 (69.3%) claimed the medicinal plants as inexpensive alternatives. The physician was kept informed about the concomitant administration of herbal with allopathic medicine in only 43 (16.9%). Stomach pain (14.17%) was most common sickness for which participants utilized traditional treatment, followed by cough (12.6%) and flu (10.63%). Mint (10.24%) was found to be the most commonly used medicinal plant, followed by aloe (9.84%) and ginger (7.48%). **Conclusion:** Detailed studies are still required to evaluate not only the students but also health care professionals about their understanding, prescribing practice and dealing with patients already using medicinal plants. This will help in improved management of the disorders and may lead further advancement in the field of natural product research and cutting off ill effects of allopathic treatment.

Keywords: Medicinal plants; Traditional medicine; Knowledge; Pharmacy; Students

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Introduction

Medicinal plants are widely used around the globe for the treatment of various acute and chronic ailments¹. Modern healthcare facilities are not available everywhere in low- and middle- income countries.

More than 70% of the Asian population of developing countries are using the medicinal plants for the treatment of the various diseases^{2, 3}. According to a study, approximately 57% of the Pakistan population relies on the traditional medicine for the treatment

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of multiple disorders⁴. However, less consideration is paid on education of the traditional medicine and medicinal plants in Pakistan⁵. The main reason of major population using the medicinal plants is based on the belief and perception of treating different ailments in an economical way while avoiding side effects⁶. Many low- and middle- income countries are striving to inculcate the traditional medicine system into their national health system and programs. Asia seems to be more progressive in this venture of instilling the traditional health system to national health policy and China achieved this agenda successfully³. The assessment of the data, questions evaluation, testing of different hypothesis and various anthropological aspects regarding traditional medicine would be proved beneficial to reach a definite conclusion and foster the bond between natural, medical and social sciences¹. Around the globe, many researchers are actively doing research on medicinal plants and documented the available information regarding traditional medicine and its uses⁷. Beliefs, knowledge and training of pharmacy students about the traditional medicine and medicinal plants currently gain a substantial importance as in depth knowledge is required for safe and effective use of traditional medicine⁸. Hence, it is the need of hour to evaluate pharmacy students about familiarity, attitude and viewpoint regarding traditional health system and cure through medicinal plants^{9,10}. The aim of the current study is to assess the knowledge, beliefs and practices of pharmacy students both private and government sectors about the traditional medicine. The outcomes of this would be helpful in devising the pharmacy curriculum, national education policy, better treatment outcomes and development in drug design and discovery.

Material and methods

Study Design and Settings

For the current study, a descriptive cross-sectional research method was chosen. The data were collected from June 2019 to September 2019. Our respondents were pharmacy students from three different universities of Lahore, Pakistan. Out of three universities, two were of private sectors (Uni 1 and Uni 2) and one was from the government sector (Uni 3).

Data Collection Instrument

A simple and objective oriented data collection questionnaire was devised for the collection of data. The questionnaire was divided into the

different sections in order to collect comprehensive information regarding traditional medicine. The sample collection tool was divided into the following sections:

Section 1

This section was about the basic demographics i.e. age, gender, marital status, area of residence and name of university currently enrolled.

Section 2

This section was devised to assess the basic knowledge, perception, beliefs and practices about the traditional medicine. It also included the common medicinal plants use for the cure of disease and side effects (if any experienced).

Participants

Data were collected from the pharmacy students. The inclusion and exclusion criteria for the participants is mentioned below

Inclusion criteria

All the students who were enrolled in the Doctor of Pharmacy (Pharm-D) program of both private and government universities of Lahore region were the subjects of this study. Only those participants were considered for the current research that were willing to contribute.

Exclusion criteria

All the students enrolled in other than Doctor of Pharmacy (Pharm-D) program and studying outside Lahore were excluded from this study. Those students who were not willing to participate were also not considered.

Data Collection

Total 500 copies were distributed and 254 responses were obtained. To have reliable results, sample size of 218 or more was required based on the desired accuracy with a confidence level of 95%. Before collection of the data, all participants were briefed about the study. Written consent was taken from the subjects for this research. Sufficient time was given to the participants for their response and they were asked to submit filled forms to the faculty office of the Pharmaceutical Chemistry Department, Superior University Lahore, Pakistan till September 30, 2019. After the due date, the collected sampling instruments were segregated into the private and government universities respondents for the purpose of comparative analysis.

Data Analysis

The data were analyzed using software SPSS (Statistical Package for the Social Sciences IBM, version. 22). Descriptive statistical analysis and t-test were used for the results calculations. The dependent variables association was measured by the Pearson Chi-square. An alpha value ≤ 0.05 was considered to be statistically significant.

Ethical Clearance

This is a cross-sectional survey study and does not need ethical approval. This research has been conducted after obtaining suitable informed consent from the volunteers. After approval from the participants, data were collected and confidentiality of the information was secured.

Results

Table 1 illustrates the basic demographic information of the respondents. 254 students participated in the study, aged between 15 to 35 years with maximum participants (52%) having ages between 21 to 25 years. Among the total 254, a vast majority of the participants (95.28%) were unmarried. 28.7% (73) of the total participants were males and the rest 70.5% (179) were female.

Table 1. Basic demographic information

Parameter	Frequency	Percentage (%)
Age		
15-20	118	46.5
21-25	132	52
26-30	2	0.8
31-35	2	0.8
Gender		
Male	73	28.7
Female	179	70.5
Marital status		
Married	12	4.724
Unmarried	242	95.28
Residence		
Urban	152	59.84
Rural	102	40.16

Homes (50%) were the major source of information regarding the use of medicinal plants, followed by relatives (26%) (Table 2).

Table 2. Major source of information regarding the use of medicinal plants

From where you heard about herbal medicine or treatment?	Frequency (%)
Home	127 (50%)
Neighbors	17 (6.7%)
Relatives	66 (26%)
Others	44 (17.3%)

Participants' responses to various questions regarding traditional medicine have shown in Table 3 and Figure 1. Most of the participants (n=237; 93.3%) admitted the worth of traditional medicine in disease treatment. 151 (59.4%) participants believed that the medicinal plants are harmless but 103 (40.6%) denied it and were concerned about the side effects linked with the use of traditional medicine. Out of 254, 187 (73.6%) reported the use of some type of medicinal plants in their life. Easy accessibility of traditional medicine was reported by 186 (73.2%) participants and 176 (69.3%) claimed the traditional medicine as low-priced alternative. More than half of the participants (66.5%) had taken traditional medicine with allopathic medicine. The physician was informed about the concomitant administration of traditional and allopathic medicine in only 43 (16.9%) cases as compared to the 211 (83.1%) uninformed cases. The use of medicinal plants gave satisfactory results according to 187 (73.6%) participants whereas 67 (26.4%) participants were not satisfied with traditional medicine. A comparative analysis among universities was performed (Figure 2) and a minor difference is noticed in responses that has taken from the participants.

Table 3. Respondents' assessment about the traditional medicine

Statement	Traditional Medicine related knowledge(n=254)		p value
	Yes	No	
Have you ever used traditional medicines (home remedies/ Tibb e Nabvi/ Hikmat)?	187 (73.6%)	67 (26.4%)	0.496
Do you think traditional medicines are useful in treating diseases?	237 (93.3%)	17 (6.7%)	0.85
Do you know traditional medicine have side effects?	103 (40.6%)	151 (59.4%)	0.506
Traditional medicines are easy to obtain or assessable?	186 (73.2%)	68 (26.8%)	0.726
Do you think traditional medicines are inexpensive?	176 (69.3%)	78 (30.75%)	0.318

Statement	Traditional Medicine related knowledge(n=254)		
Have you ever taken traditional medicine with allopathic medicine?	85 (33.5%)	169 (66.5%)	0.299
If you have taken traditional medicine with allopathic medicine then have you informed your physician?	43 (16.9%)	211 (83.1%)	0.216
Did you experience any adverse drug reaction when taken traditional medicine with allopathic medicine?	21 (8.3%)	233(91.7%)	0.109
Do you think traditional medicine treatment gives satisfactory results?	187 (73.6%)	67 (26.4%)	0.547
Do you know the brand name of any traditional medicine?	119 (46.9%)	135 (53.1%)	0.017

When the respondents were asked about the medical condition for which they used traditional medicines, varieties of diseases were reported as shown in Table 4 and data were also illustrated in Figures 3 and 4. Stomach pain (14.17%) was found to be the most common ailment for which participants seek traditional treatment, followed by cough (12.6%) and flu (10.63%). Other common diseases for which patients chose traditional treatment include sore throat, acne (5.51%), constipation (5.51%), sunburn (4.33%), diarrhea (3.94%), obesity (3.94) and tooth ache (3.15%).

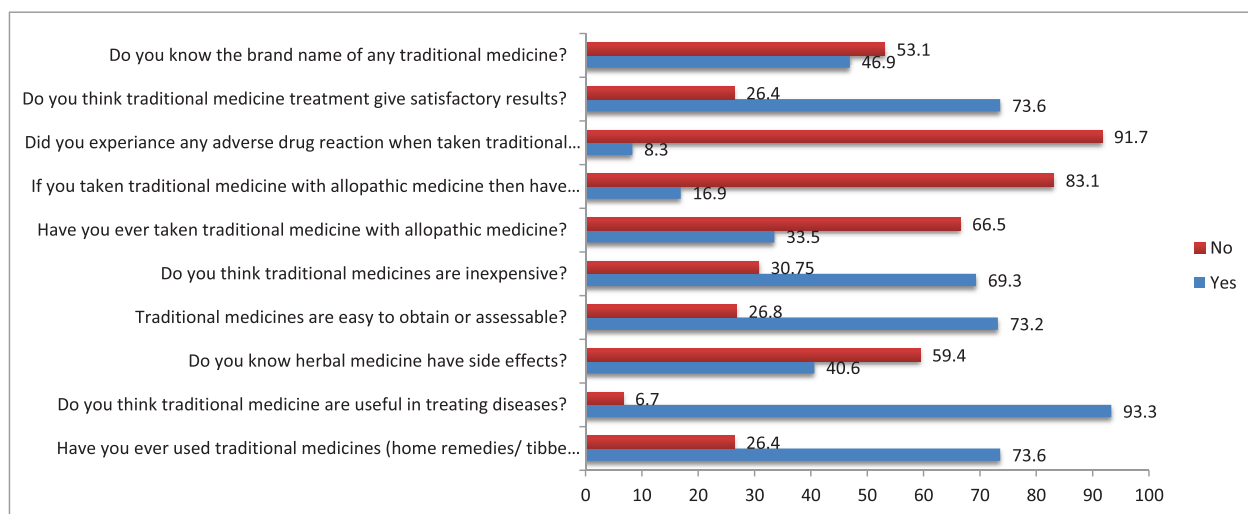


Figure 1. Respondents' assessment about the traditional medicine

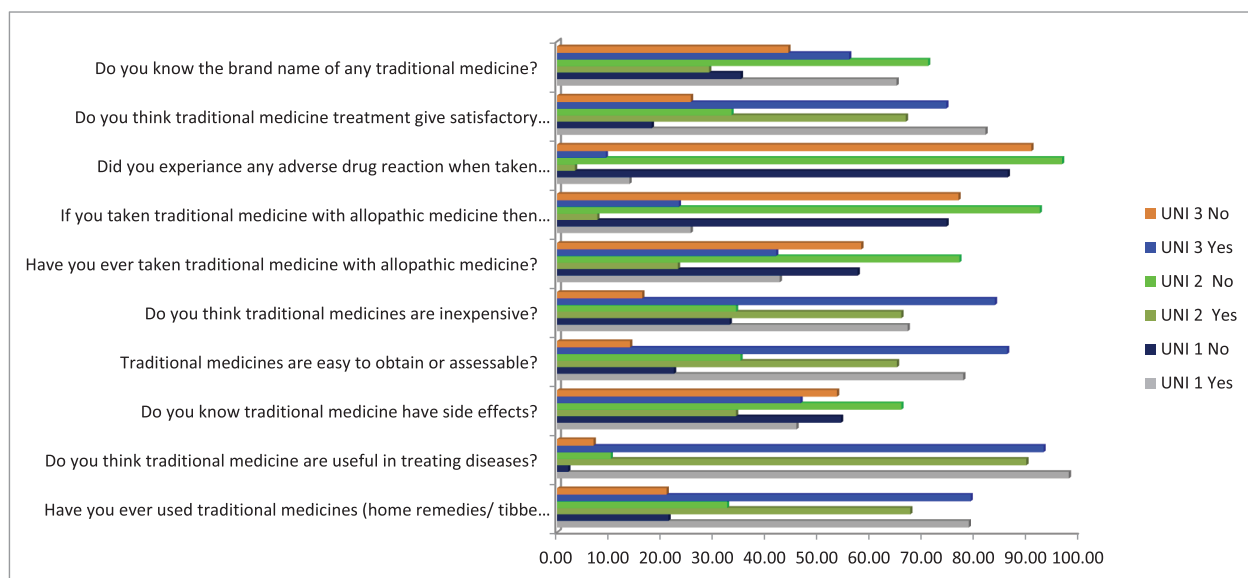


Figure 2. Responses among universities about the traditional medicine

Table 4. Respondents' assessment about the medical condition for which they used traditional medicine

Disease	Total	Percentage (%)
Acne	14	5.51
Arthritis	3	1.18
Asthma	2	0.79
Bronchitis	4	1.57
Constipation	14	5.51
Cough	32	12.60
Dandruff	3	1.18
Diabetes	4	1.57
Diarrhea	10	3.94
Face wrinkles	1	0.39
Fever	4	1.57
Flu	27	10.63
Gum Swelling	1	0.39
Hair fall	5	1.97
Hypertension	6	2.36
Itching	3	1.18
Jaundice	5	1.97
Kidney pain	1	0.39
Liver infection	2	0.79
Motion sickness	2	0.79
Mouth ulcers	2	0.79
Muscle pain	3	1.18
Nervous disorder	4	1.57
Obesity	10	3.94
Pollen allergy	2	0.79
Sore throat	16	6.30
Stomach pain	36	14.17
Sunburn	11	4.33
Toothache	8	3.15
Typhoid	1	0.39
Weakness	1	0.39

Table 5. Respondents' assessment about medicinal plants used for the treatment of diseases

Medicinal plants	Response n=254	Percentage (%)
Ajwain	13.00	5.12
Aloe	25.00	9.84
Black seed oil	3.00	1.18
Cardamum	4.00	1.57
Cascara	3.00	1.18
Cinnamon	7.00	2.76
Clove	12.00	4.72
Coconut oil	1.00	0.39
Euclyptus	8.00	3.15
Fennel	15.00	5.91
Garlic	13.00	5.12
Ginger	19.00	7.48
Glycerrhiza	11.00	4.33
Gram flour	1.00	0.39
Green chilli	2.00	0.79
Green tea	9.00	3.54
Honey	7.00	2.76
Ipecac	3.00	1.18
Isapaghol	10.00	3.94
Joshanda	17.00	6.69
Lemon grass	10.00	3.94
Mint	26.00	10.24
Neem	4.00	1.57
Nux vomica	2.00	0.79
Olive oil	10.00	3.94
Safron	1.00	0.39
Sandal	6.00	2.36
Senna leaves	1.00	0.39
Sahtoot	13.00	5.12
Sohanjana	2.00	0.79
Turmeric	6.00	2.36
Valarian roots	4.00	1.57

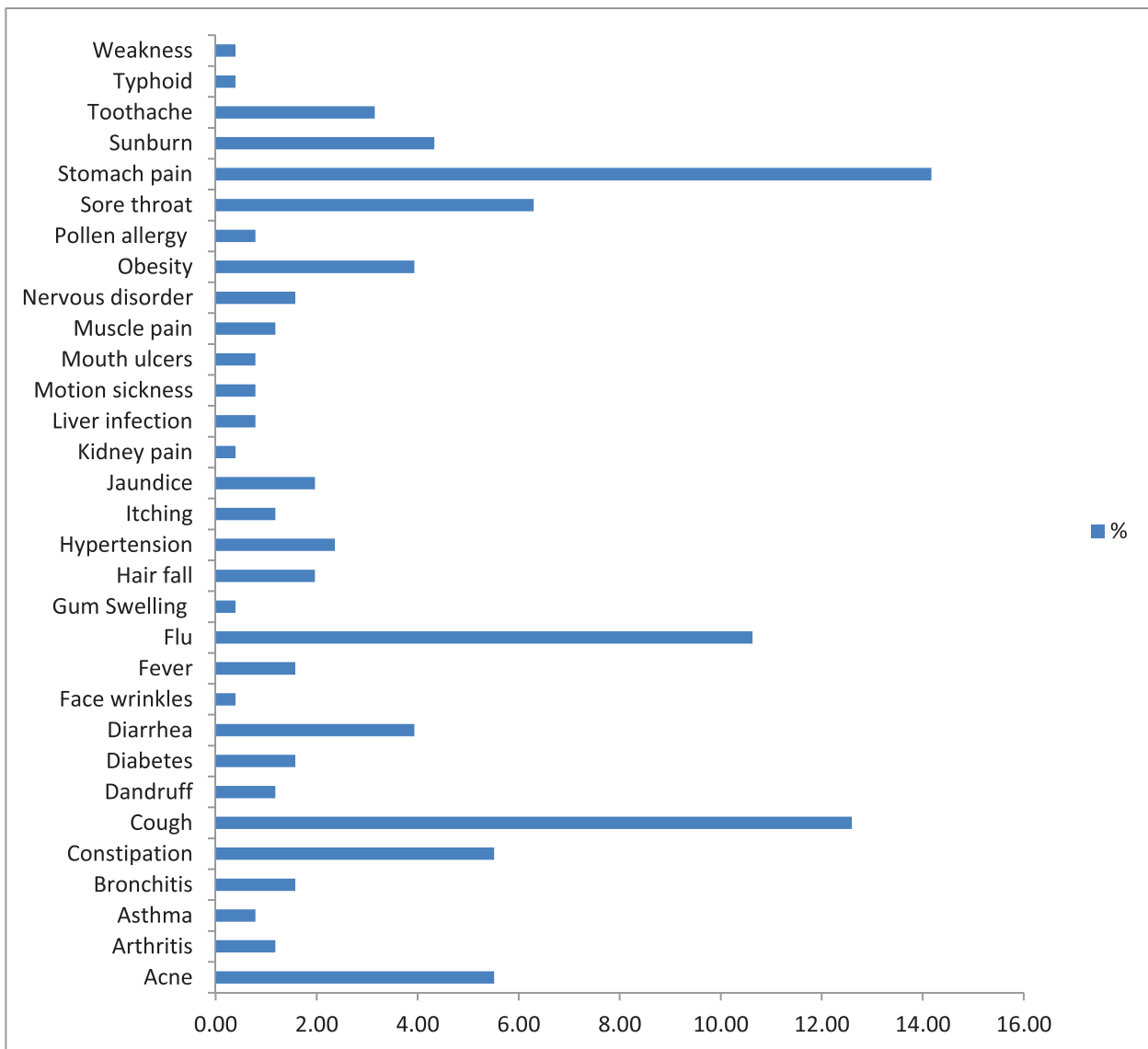


Figure 3. Respondents' assessment about the medical condition for which they used traditional medicine

Approximately half (46.9%) of the participants had the knowledge about different medicinal plants and were able to quote some names (Table 5, Figures 5 and 6). Mint (10.24%) was found to be the most commonly used herb, followed by aloe (9.84%) and ginger (7.48%). Other commonly used medicinal plants quoted by the participants include joshanda (6.69%), fennel (5.91%), ajwain (5.12%), garlic (5.12%) and shahtoot (5.12%).

Discussion

In the recent past, traditional medicine has taken a boom which is comparable to its practice in the ancient centuries. A great proportion i.e. 80% of population has shown inclination to use medicinal plants, specifically as a home remedy to treat various disorders^{3, 8}. However, the use finds its roots in

culture and societal grounds as seen with Asian, in particular Pakistan^{5, 9}. The data from the present study demonstrates that pharmacy students have a sound knowledge of traditional medicine, reflecting an understanding of benefits and/or side effects, consumption of medicinal plants in various diseased conditions and their names along with affordability and accessibility¹⁰⁻¹³.

Results revealed that most of the well informed students took home and relatives as a primary source of information. Impact and influence of the family remain vital amongst the Asian population for use of traditional medicine and has been quoted in the past^{14, 15}. On the contrary, many other sources have been playing a part in informing students and some of them are cited in the literature included social media, online websites and television advertisements^{16, 17}. Amongst

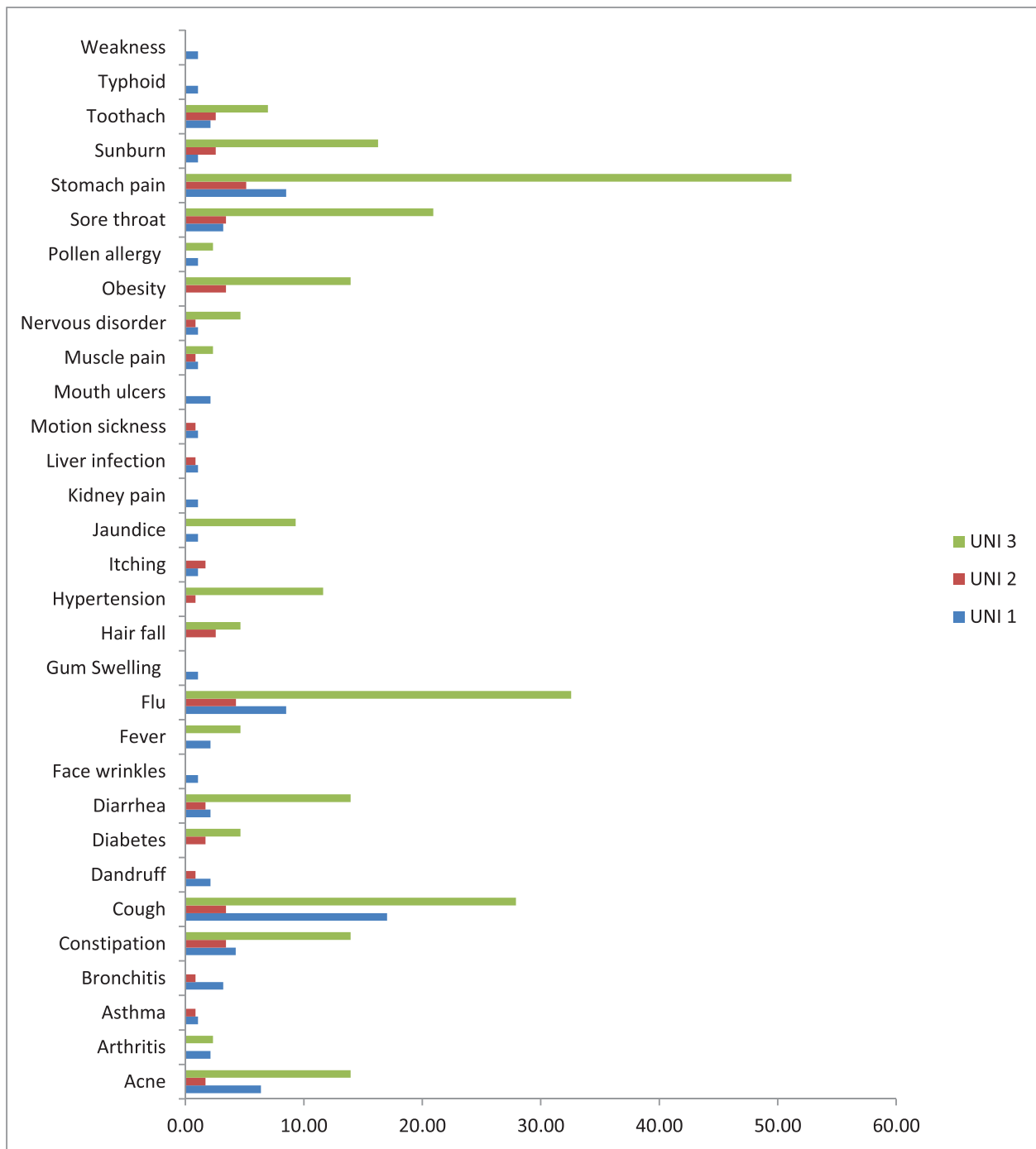


Figure 4. Responses among different universities about the medical condition for which respondents used traditional medicine

the students accustomed to the use of traditional medicine, a great deal agreed with its usefulness in the treatment and cure of diseases. A total of 93.3% (n=237) approved its benefits that subsequently attained in a diseased condition and the literature supports this through traditional medicine excessive use over various regions all around the globe¹⁸⁻²⁰. Pupils were questioned for their perceptions about the safety and any concerns pertaining to side effects

of the traditional medicine. The result was interesting as slightly more than half of the total count i.e., 151 (59.4%) participants considered traditional medicine as a safe mode of treatment. On the other hand, 103 (40.3%) respondents refuted on traditional medicine safety point and showing concern for associated side effects. The cost effectiveness and appreciable therapeutic effects are nothing new for traditional medicine and extensively discussed in previous

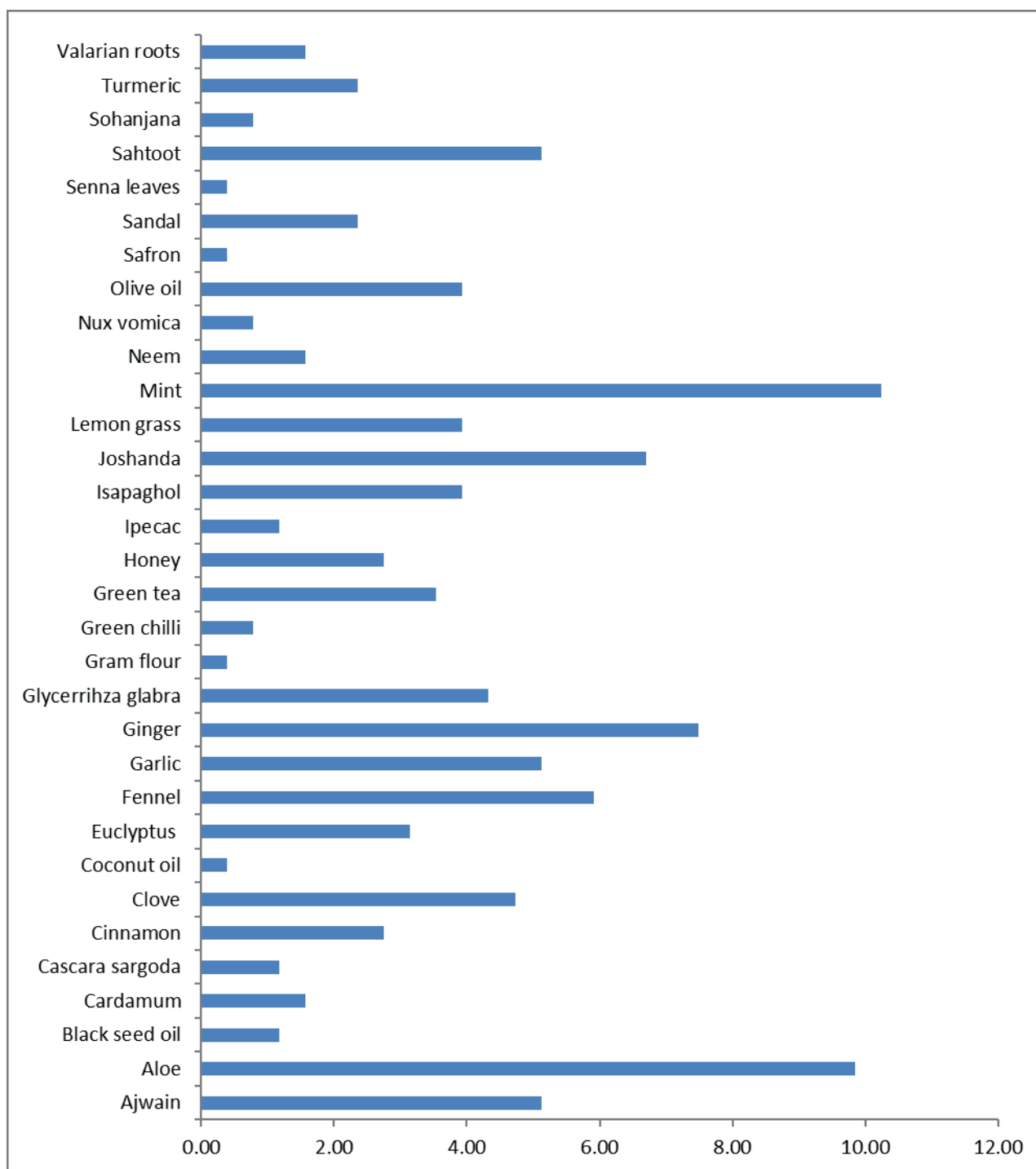


Figure 5. Respondents' assessment about medicinal plants used for the treatment of diseases

studies. Further, an insignificant difference among responses of all universities was observed through comparative analysis that demonstrates a uniform curriculum has followed to teach pharmacy students in all institutions^{21, 22}.

When participants were inquired about their knowledge of medicinal plants, almost half of the subjects were well familiar with the names of

medicinal plants and their applications in treating various disorders. A total of 187 that constitutes the 73.65% of sample size reported in affirmation, later quoting names of some common medicinal plants. Many of the medicinal plants originated from household use such as mint found as highly used herbs, followed by aloe²³ and ginger. Other commonly used medicinal plants quoted by the participants included fennel, garlic, shahtoot and ajwain²⁴⁻²⁶.

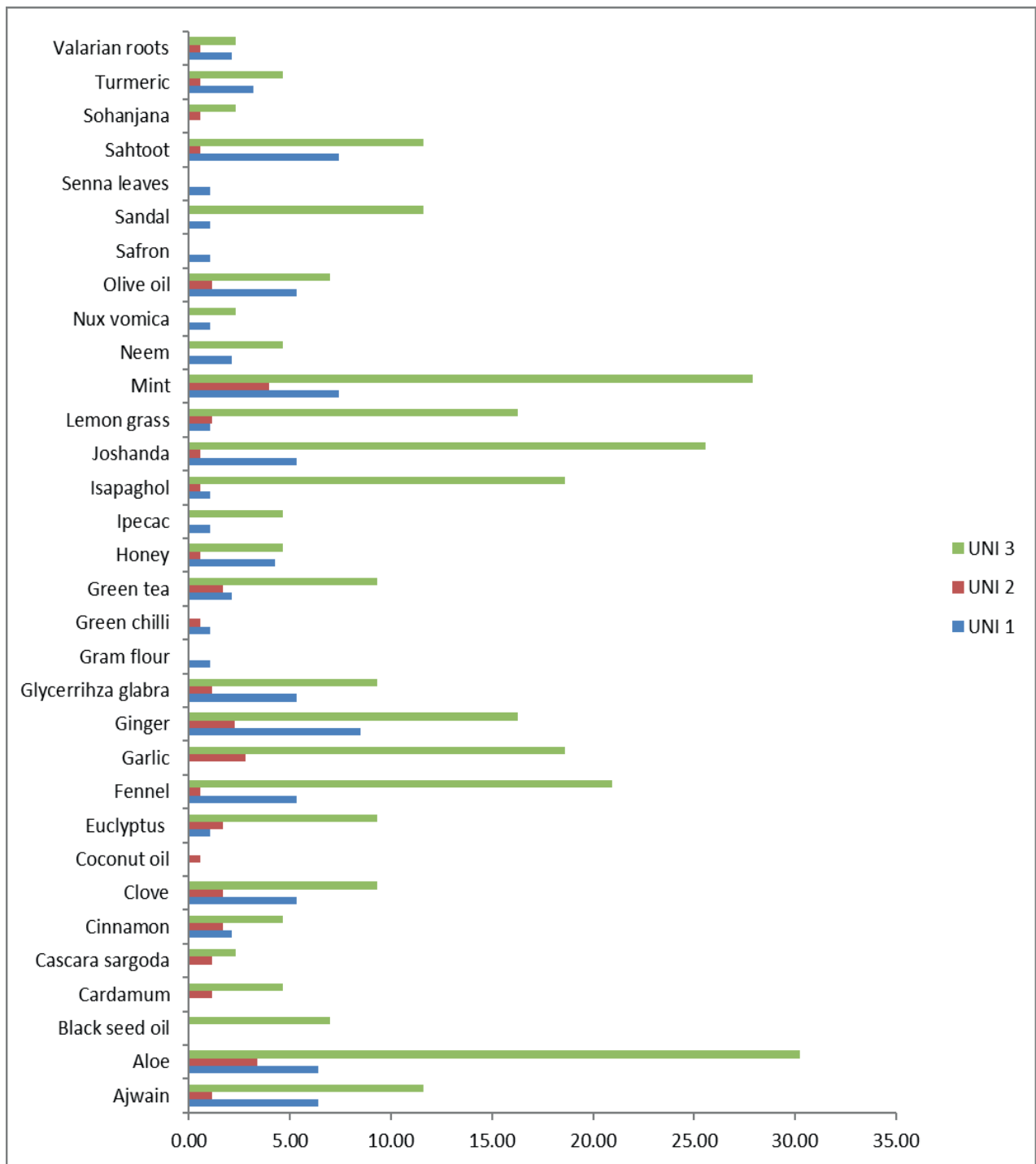


Figure 6. Responses among universities about commonly use medicinal plants

While analyzing the use and knowledge of medicinal plants, an interesting parameter of availability and accessibility was also evaluated. Though the costs of traditional therapies are not explored in this study, there is converging evidence that they are highly cost-effective^{14, 16, 27}.

Traditional medicine usage with allopathic has always been a point of debate and always causes confusion

in the combined output of either mode of treatments. That combination of therapies could synergize the effect, potentiate or nullify, altogether. Keeping this in mind, pupils were evaluated for combined therapies and whether it was done with due consent and acknowledgment of the physician or kept hidden. The results revealed that a percentage greater than half of the total population had been taking allopathy and traditional medicine treatment in concoction. As

far as permission of the physician is concerned, it was done rarely and not practiced for most of the time^{28, 29}. Previous data give an insight of the fact that well aware students with medical background, appreciate the advice of their physician for commonly applied traditional therapies and notifying interactions, if any³⁰. A count of 187 (73.6%) participants reported their satisfaction with the results of traditional medicine. Traditional medicine has been excessively used with almost no threats to health as this stands consistent with various studies^{31, 32}. In a previous study, people have reported a positive response to traditional medicine use, however, few people also showing reservations regarding its use. This hesitation could be attributed to the lack of scientific and phenotypic testing of the natural products^{33, 34}. Altogether, researches previously carried, revealed a range in response varying from the positive reaction to skepticism with the use of traditional medicine^{35, 36}. Candidates of the study were also assessed regarding medicinal plants utilization against day to day issues and diseases. The outcome of the current survey showed that majority of the participants were using medicinal plants to treat many ailments and previous studies also supported this investigation as medicinal plants are enriched source of phytochemicals that have potential therapeutic activities to cure diseases^{37, 38}. However, many of the effects of medicinal plants are not completely understood, yet found effective as therapeutic agents and still there is a need to conduct more research in this area of study^{39, 40}.

Limitations

This study has a few limitations as mentioned below:

1. It is confined within the geographical region of Lahore.
2. Only includes pharmacy students, excluding all

others.

3. Survey questions are limited to medicinal plants of daily use or commonly advertised.

Conclusion

Medicinal plants are widely used to treat various disorders around the world. Current study outcomes have demonstrated that the students have great interest in the field of traditional medicine. This research may turn to be useful regarding future recommendations in Pharmacy curriculum. Introduction of Clinical Pharmacognosy in Pharmacy curriculum could probably enhance the safe usage of natural products alongside allopathic medicine together with more phenotype based testing.

Conflict of interest

There is no conflict of interest among the authors.

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None

Authors' contribution

Data gathering and idea owner of this study:

Kanwal Ashiq

Study design: Kanwal Ashiq, Sana Ashiq

Data gathering and Statistical Analysis: Kanwal Ashiq, Mayyda Asif Bajwa, Rabia Khokhar, Farah Abid, Samreen Tanveer, Mehwish Qayyum, Sana Jameel

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