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Insite into Herbal Medicinal Practices among the Students of Sultan Moulay Slimane University, Morroco: A Retrospective Cross-Sectional Study

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Abstract

Introduction: This study sought to investigate the prevalence and determine factors for predicting the use of herbal medicine, among Sultan Moulay Slimane University students. **Methods:** This study was a retrospective cross-sectional study from March 1st, 2017 to April 13th, 2017. Four hundred seventy-six university students were interviewed using a questionnaire including a socio-demographic scale and herbal self-therapy knowledge and behaviors. The statistical analysis was performed using Microsoft Excel (*Microsoft* 2016). **Results:** The frequency of herbal self-therapy among Sultan Moulay Slimane University students has reached 65%. 26.07% of the participants reported that the first reason for using herbal self-therapy was a lack of money. Meanwhile, the most common conditions that prompted them to use these plants on their own were cough and cold (36.48%), and abdominal pain due to heartburn or peptic ulcer (24.41%). The most frequent self-administered plants were *Thymus vulgaris* (43.7%). Family, seniors, or classmates were a source of information for herbal self-therapy. **Conclusion:** The region of Beni Mellal, Morocco has important floristic biodiversity of medicinal plants that are used in traditional medicine practice. The present paper represents significant ethnobotanical information on medical plants, which provides baseline data for future pharmacological and phytochemical studies. Therefore, there is a need to establish effective herbal medicine policies and health education programs to discuss the benefits and risks of herbal medicine use with the aim of maximizing patient-desired therapeutic outcomes.

Keywords

Herbal Medicines, Sultan Moulay Slimane University, Medicinal Plants

1. Introduction

For a long time, plants have played a very important role in human life [1]. Nowadays, the use of plants as a means of treatment is still very important for human beings. In developing countries, a very important aspect of traditional medicine is the use of medicinal plants, which is attached to the culture of the people [2]. In Africa, particularly in Morocco, traditional medicinal plants play an important role. However, it's usually needed for human health, other plants, and animals [3]. Further, many plants are used for medicine, cosmetics, beverages, cleaning staff, and other purposes [4].

Medicinal plant use in Morocco is related to floral availability. Consequently, due to its geographical location at the intersection of Africa and European trade routes, geomorphic structure, and range of climate types, Morocco is one of the richest countries in terms of its phytodiversity [4]. These plants attract consumers concerning health and create considerable consumer demand.

Herbal self-therapy has benefits and risks. In the first place, self-therapy with herbal remedies can reduce the demand for traditional medical services, especially in third-world countries where medical resources and services are limited. Furthermore, herbal remedies are less expensive and more readily available than modern medications. However, herbal self-therapy might have serious health consequences due to incorrect self-diagnosis, inappropriate choice of herbal remedy, adulterated herbal products, severe adverse reactions, dangerous drug interactions, masking of severe disease, risk of addiction, and abuse [5]. In addition, the absence of clinical trials and other traditional safety mechanisms before herbal medicines are introduced to the market results in questionable safe dosage ranges that may produce adverse and unexpected outcomes [6].

Studies regarding the use of herbal remedies among university students have been carried out in many regions of the world. Most of those published studies concluded that students commonly use and have favorable attitudes toward herbal remedies [7]. Most of those published studies did not yield results regarding herbal self-therapy among university students in the north of Africa, where medicinal herbs are an integral part of culture and religion.

The purpose of this present paper is to investigate the prevalence and risk factors for herbal self-therapy among Sultan Moulay Slimane University students, Beni Mellal, Morocco (USMS).

The objectives of this study were to determine the extent of herbal self-therapy among university students, investigate the different types of herbal remedies used and investigate the correlates and reasons associated with such practice.

2. Materials and Methods

The cross-sectional study was conducted among students of the first, third, and sixth years of USMS in Beni Mellal, in the form of a survey that was carried out in the period March to 1st–April 13th 2017. All interviewees voluntarily participated in the survey after being briefed in detail about the goals and methods of the study. The survey was anonymous and all obtained data was kept confidential. The Ethical Committee of the USMS of Beni Mellal, Morocco reviewed and approved the study.

The first part of the questionnaire included basic data about respondents (sex, age, faculty, and field of study), The second part of the questionnaire included data about self-prescribed plants, reasons for herbal self-therapy, methods of supply, and duration of use of herbal remedies self-prescribed.

The sample size was determined by using the equation of one proportion: $N = Z^2 pq/d^2$, where N is the sample size, p is the prevalence of herbal self-therapy taken as 50%, q = (1 − p), Z is the standard normal deviation (usually set at 1.96, which corresponds to the 95% confidence interval), and d is the desired degree of accuracy, set at 0.05 to tolerate a 5% error. Accordingly, the calculated minimum sample size is N = 377 students. For better precision, we took an additional 99 of them. Thus, a total of 476 students studying at the institute were considered eligible to participate in the study.

The returned questionnaires were checked for completeness of data. The data obtained from the completed questionnaires were analyzed by using the statistical software Excel, *Microsoft* 2016. Categorical variables were expressed as percentages or frequency, and continuous variables were expressed as means ± SD or median.

3. Results

3.1. Socio-Demographic Characteristics of Study Participants

A total of 476 students participated in the study and successfully completed the questionnaire, of whom 252 (52.94%) were female and 224 (47.06%) were male. Among these 476 students, 141 (29.62%), 219 (46.01%) and 110 (23.11%) were studying in their first year, the second year and final year, respectively.

Also, 264 (55.46%) were biology students, and 212 (44.54%) were no biology students. The participants' mean age was 22.78 ± 2.8 years, while the age group of 17 to 22 years dominated, accounting for 86.76% of the study population. The basic respondents' demographic characteristics are presented in Table 1.

3.2. Prevalence of Herbal Self-Therapy and Illness/Symptoms Associated with Herbal Self-Therapy

A total of 308 (65%) students reported having practiced herbal self-therapy during the study period, with 129 males (43%) and 164 females (57%), the majority of them were between 17 and 22 years old, with 87.07%.

Table 1. Socio-demographic characteristics of the study population.

Socio-demographic factors		Number of students (%)
Gender	Male	224 (47.06%)
	Female	252 (52.94%)
Age group (years)	17 - 22	413 (86.76%)
	23 - 27	57 (11.97%)
	≥ 28	06 (1.26%)
Formation	Biology	264 (55.46%)
	Other than biology	212 (44.54%)
Year of study	First year	141 (29.62%)
	Second year	219 (46.01%)
	Third year	110 (23.11%)
	More than third year	06 (1.26%)

The present study reveals that 61.13% of university students started their herbal self-therapy during the length of childhood. Also, it was found that the prevalence of herbal self-therapy varied significantly among different years of students, as evidenced by the fact that 44.7% of second-year students practiced herbal self-therapy compared to 31.3% of first-year students and 24.1% of final-year students.

3.3. The Reason and Information for Using Herbal Self-Therapy, the Type of Plant Requested, and the Treatment's Outcome

Among the total 294 respondents that used herbal self-therapy, 26.07% of them reported that they used herbal self-therapy due to a lack of money, 26.07% of them reported that they used because the disease was not serious, and 29.14% of them used it for an emergency.

The most common morbidities for which students used herbal self-therapy were cough and common cold (36.48%), abdominal pain due to heartburn or peptic ulcer (24.41%), period pain (9.81%), fever (10.19%), and headache (6.67%). Other causes of morbidity prompting the students to practice herbal self-therapy include diarrhea, fever, and tonsillitis.

University students reported a total of 48 taxa used for herbal self-therapy in the study area. Plants commonly used for herbal self-therapy included Thymus vulgaris (43.7%), followed by *Dysphania ambrosioides* (11.3%), *Eucalyptus* (16.63%), *Cuminum cyminum* (4.6%), *Zingiber officinale*, *Citrus limon*, *Trigonella foenum graccum*, *Lavandula angustifolia* and *Aloysia citriodora*.

The most common sources of information for herbal self-therapy, which were denoted in multiple-choice questions, were family, seniors, or classmates (37.13%), means of communication, the Internet, and TV infomercials.

The majority of university students who reported having practiced herbal

self-therapy (72.48%) were not satisfied after taking plants for herbal self-therapy. Also, more than half of them decided to stop taking plants without medical advice in case of no results after taking these plants. 82.66% of students claim to have been forced to consult a doctor following the failure of herbal self-therapy.

4. Discussion

The aim of this study was to assess the prevalence and associated factors of herbal self-therapy among students at USMS, Beni Mellal, Morocco.

The prevalence of herbal self-therapy in the world varies depending on location, and the prevalence has increased recently. The current study revealed that the prevalence of herbal self-therapy practice among the participants was found to be 65%. This finding is almost similar to the studies conducted at Kin Saud University, Riyadh, Saudi Arabia [8].

On the other hand, the finding of this study was lower than those studies carried out at the University of North Carolina at Charlotte (79%) [9], while, in Jordan, a higher proportion of the population used herbal medicines (80.2%) [10]. Our study findings were higher than those of studies conducted at the University of Malaya, Kuala Lumpur, Malaysia (33.9%) [11], the University of Kansas, The United States of America [12], An-Najah National University, Nablus, Palestine (33.9%) [13] and in Egypt, 37% of the population reported using herbal medicines [12].

This difference might be due to the respondents' cultural differences, healthcare systems, infrastructures, and socio-demographic characteristics. For example, the well-established healthcare systems and infrastructures in developed countries might create suitable conditions for clients to consult their healthcare professionals and use drugs ordered by these professionals. As a result, their herbal self-therapy practice would be lower than the result of our study. Additionally, respondents from the United States of America and Malaysian countries could get strong health education about the risk factors of herbal self-therapy and its negative effects on health and life, which led them to lower herbal self-therapy practices [12].

The main element affecting the culture of our community is a religious belief. Many herbal treatments are mentioned in the holy book (*Quran*). For example, ginger, known in Arabic as *Zingiber officinale* (Zanjibil), is commonly used to cure/control anorexia, intestinal pain, headache, diarrhea, constipation, intestinal swelling, and stomach disorders [14]. *Allium sativum*, or *Garlic* (*Thūm*) is also mentioned in the holy book (Quran) and is known for its numerous benefits as a digestive stimulant, diuretic, antiallergic, and antispasmodic [15]. Other plants mentioned in the holy book (*Quran*) include onions, camphor, olives, figs, squash, sweet basil, grapes, pomegranates, and many others.

People who use herbal self-therapy appear to share similar characteristics. Factors found to influence the use of herbal self-therapy to include gender, age, and perceived health status. Various studies have consistently shown that wom-

en are more likely to be users of herbal self-therapy than men, and our results are consistent with these [16].

The reasons for not using herbal medicines are different as reported by non-users. However, the highest percentage of them reported that they did not believe in the efficacy of herbal medicines. Other important reasons were that the individuals felt healthy and had no need for their use and there was unavailability of adequate information about the herbal medicines. These findings might prompt manufacturers of these herbal products to disseminate more information and perform more outreach and education regarding their products [10].

The possible reasons might be that female students faced recurrent disease conditions more than their male counterparts due to their relatively low immunity and continuous menstrual cycle due to hormonal effects. Moreover, herbal medicines for women's menstrual issues are used globally [17], This monthly menstrual cycle is strongly associated with an anti-pain plant-like Thymus vulgaris, which may result in plants gradually adapting to their environment and making them hesitant to visit healthcare organizations, finally leading them to a high magnitude of herbal self-therapy [18].

The low cost and acceptability of traditional herbal medicines in various cultures encouraged users to use these products for both therapeutic and preventive purposes. Moreover, the use of herbal medicines has a historical context and is well-accepted in Islamic culture, further strengthening users' acceptance of these products [10].

In our scientific research, those respondents who had a higher income per month were less likely to use herbal self-therapy than those who had a lower income. While, the possible justification might be that students who have lower incomes might not be able to afford to visit healthcare institutions and consult licensed health professionals. So, they might be urged to buy plants at a lower cost from over-the-counter centers, which in turn, leads to high herbal self-therapy practice. However, this finding is in contrast with studies conducted in Jordan [10] and Arabic Saudi [8]. These studies revealed that income and herbal self-therapy practices have a direct relationship and justify why students who have a lower income might visit the school health clinic that delivers free service, or they might ignore minor disease conditions like the common cold.

In the present research study, the most commonly used plants were Thymus vulgaris. It is considered a famous species of the genus "*Thymus*" (Lamiaceae family), which represents one of the distinguishable plants in many parts of the world, especially throughout the Mediterranean area, North Africa, Asia, and Europe [19] [20]. The Thymus family is well known for its biological and natural activities like food additives and its usage in traditional medicine and pharmaceutical preparations [21].

Thymus vulgaris is an important medicinal and aromatic plant that has been used for centuries in phytopharmaceutical preparations, food preservatives, and as an aromatic ingredient. Its essential oil contains bioactive monoterpenes such

as thymol, carvacrol, and linalool, which have antioxidative, anti-inflammatory, antibacterial, and antifungal effects. Thyme essential oil has antibacterial and antifungal properties [19] [20].

Regarding the source of information for herbal self-therapy, family, seniors, or classmates were the most common sources of information. This finding is comparable with findings from Jordan [10] and Pakistan [8].

Globally, the practice of herbal self-therapy exposes the individual, especially the elderly, to the risk of adverse events, iatrogenesis, and the masking and aggravation of diseases, subjecting them to functional impairments that may compromise their autonomy and capacity for participation.

5. Conclusion

We found the use of herbal self-therapy is common among Sultan Moulay Slimane University students. However, assessing students' herbal self-therapy practices and associated factors is very important to different stakeholders to intervene in plant misuse and overcome its impacts. The current study revealed that the prevalence of herbal self-therapy practice among university students was high. The most common disease conditions were coughs and common colds, and the primary requested plants were *Thymus vulgaris*. Family, seniors, or classmates were the most common sources of plants for herbal self-therapy. Gender and high school students' monthly income were the factors that affected herbal self-therapy practices. Therefore, by taking into account the high magnitude, its impact, and the associated factors, it requires great attention, especially when students stay longer at university to attend education. Despite everything, other studies are necessary.

Author Contributions

All authors were involved with each of the below activities. Aniba Rafik and Barguigua Abouddihaj shared in the conception and design of the study. Aniba Rafik and Dihmane Asmaa shared in the generation, collection, assembly, analysis, and interpretation of data. Nayme Kaotar and Mohammed Timinouni were involved in the drafting and revision of the manuscript. All authors shared approval of the final version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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