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Pharmacist's Attitudes, Practices and Knowledge towards Herbal Drugs

(Original Research Article)

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ABSTRACT:

With the increased use of herbal drugs, pressure is growing on pharmacists to have more knowledge about herbal medicine. We assessed pharmacists' dispensing practices, opinions, and knowledge regarding herbal drugs. A cross-sectional study was carried out among community pharmacists in Libya using a questionnaire. A convenience sample of 602

community pharmacists was included in the study. 65.6% of participants believed that herbal products were beneficial and 53.5% believed these had fewer side effects than conventional medicines. Most participants thought they have good knowledge of herbal preparations. However, their actual knowledge in response to the questionnaire was low. The lowest score was observed for the herbal drug interactions domain with an average score of 30.62%. Although herbal products are commonly dispensed in Libya, community pharmacists have poor knowledge about these medicines. Continuing pharmacy education in general, is needed for community pharmacists to qualify to provide better pharmaceutical care. Additionally, pharmacists need to refresh their knowledge by attending periodic educational courses and by using reliable resources for information about herbal products in order to provide effective and competent pharmaceutical care.

KEYWORDS: Pharmacists, Herbal, Drugs, Knowledge, Libya.

INTRODUCTION

Medicine is a substance that has nutritive, curative, or preventive properties, while the term “herbal” refers to a botanical or plant-based preparation. Hence, the term “herbal medicine” is used for plant-based substances that consist of nutritive, curative, or preventive properties. Herbal medicine is an interdisciplinary branch between herbal medicine and Ayurveda as it covers all fields of herbal medicine related to botany, medicinal plant research, pharmacognosy, phytochemistry, phytotherapy, botanical medicines (Sharma, A et al. 2021). There is limited scientific evidence for the safety and efficacy of plants used in 21st-century herbalism, which generally does not provide standards for purity or dosage (.Petrovska, B.B, et al, 2012), The knowledge of the development of ideas related to the usage of medicinal plants as well as the evolution of awareness has increased the ability of pharmacists and physicians to respond to the challenges that have emerged with the spreading of professional services in the facilitation of man's life (Hard to swallow. Nature, 2007). Some ancient cultures wrote about plants and their medical uses in books called herbals. In ancient Egypt, herbs are mentioned in Egyptian medical papyri, depicted in tomb illustrations, or on rare occasions found in medical jars containing trace amounts of herbs (Nunn, J.F , 2002), In ancient Egypt, the Ebers papyrus dates from about 1550 BC, and covers more than 700 compounds, mainly of plant origin (.Atanasov, A.G., et al), The earliest known Greek herbals came from Theophrastus of Eresos who, in the 4th century BC, wrote in Greek Historian Plantarum from Diocles of Carystus who wrote during the 3rd century BC, and from Krateuas who wrote in the 1st century BC. Only a few fragments of these works have survived intact, but from what remains, scholars noted overlap with the Egyptian herbals (Robson, B, et al, 2009). Seeds likely used for herbalism were found in

archaeological sites of Bronze age China dating from the Shang dynasty (c. 1600–1046 BC), De Materia Medica originally written in Greek by Pedanius Dioscorides (c. 40–90 AD) of Anazarbus, Cilicia a physician and botanist, is one example of herbal writing used over centuries until the 1600s (Grafton, A, et al, 2010), Complementary and alternative medicine (CAM) is an official method for health care in many regions of the ancient world it is expected to be widely integrated into the modern medical system and become part of it. Moreover, healthcare costs and the spread of chronic diseases continue to rise, especially among the aging population. Being relatively affordable and generally accessible, self-medication with TM products is now a very popular form of healthcare practice (Song, M., et al, 2017). The dominant source of knowledge of the use of natural products from medicinal plants is the result of human experience by trial and error for hundreds of centuries through palatability trials or sudden deaths, and the search for foods available to treat diseases(H.T.C., Libyan mother's awareness, 2022), As defined by the National Center for Complementary and Alternative Medicine (NCCAM) at the National Institutes of Health, CAM is a group of diverse medical and healthcare systems, practices, and products that are not generally considered part of conventional medicine (Pearson, N.J, et al, 2007), The conjunction of "alternative" and "complementary" is a little confusing. In the simplest explanation, Complementary medicine refers to practices, which are used alongside conventional medicine while Alternative medicine includes methods that are used to replace Conventional medicine (Organization, W.H., WHO, 2004), A combination of traditional medicine and CAM is regarded by the NCCAM as integrated medicine (Ng, J.Y., et al, 2016) , Whole CAM medical systems, Energy therapies, and Biologically based therapies (wai Fan, K, 2005), MBM focuses on the significant ways in which behavioral, social, mental, spiritual, and emotional factors affect an individual's health (Kerna, N., et al, 2021, V.R. Preedy et al, 2010), Energy therapies: NCCAM has classified energy medicine therapies into 2 basic categories: veritable or bioelectromagnetic-based therapies, and putative energy field "biofield" therapies (PaCE, 2012, Denner, S.S,2009. Carey, W.B., et al, 2009), The alternative medical systems can be classified into the following subcategories: Ayurvedic medicine, Traditional Chinese medicine, Chinese herbal medicine, T'ai Chi, Naturopathy and Homeopathy (Akter, S., et al, 2021, Swartz, M.H., 2020, Gerber, L., et al. 2014, Ashur, S.T., et al, Alrowais, N.A, et al, 2017), The World Health Organization (WHO) defines herbal medicine as a practice that includes herbs, herbal materials, herbal preparations, and finished herbal products, that contain active ingredients parts of plants, other plant materials, or combinations (Msomi, N.Z, et al, 2019, Tugume, P., et al, 2019, El-Dahiyat, F., et al, 2020), In Libya, Herbal medicine has maintained popularity as a result of historical, cultural, and psychosocial factors since medicinal plants grown in the region have been used for thousands of years and therefore, provided a rich heritage of folk herbal medicine which has survived through generations (El-Mughrabi, 1999), Common reasons for using herbal medicine include HM's availability, relatively low cost, Dissatisfaction with conventional medicines,

the expected side effects of conventional medicines, and positive past experiences with herbal medicine (Welz, A.N, et al, 2018, Moreira, D.d.L., et al, 2014, Achour, S., et al. 2013, Kiliś-Pstrusińska, K, et al, 2021), The global increase in HM use has raised renewed concerns regarding the increased herbal drug adverse effects as well as herb-drug interactions. According to the PubMed database, the first recorded report regarding HDI was published in 1967, which assessed potential interactions between different HD and Anesthetics (Pellerano, P, 1967, Dülger, G, 2012, Manikandan, P, et al , 2018, Linde, K, 2009, Ong, C.E., 2014, Baxter, K, 2013), The changes in furosemide absorptive permeability may be caused by interference with P-glycoprotein or other transporter proteins (Wanwimolruk, et al, 2014, Agency, E.M, 2009), St John's wort, and specifically hyperforin, have shown an increase in the activity of the P-glycoprotein drug transporter, especially intestinal P-glycoprotein, which reduces the absorption of digoxin (Gurley, B.J., et al, 2008, Mamindla, S, et al, 2016, Organization, W.H, 1998). For the classification of herbal or traditional medicinal products, factors applied in regulatory systems include: description in a pharmacopoeia monograph, prescription status, claim of a therapeutic effect, scheduled or regulated ingredients or substances, or periods of use. Some countries draw a distinction between "officially approved" products and "officially recognized" products, by which the latter products can be marketed without scientific assessment by the authority (Jayasuriya, D, 2013, De Smet, et al, 1995, Saraf, S, 2012, Halila, G.C., et al, 2015), The pharmacist's obligation is to evaluate the patient's medical condition, provide proper advice and counsel the patient on the proper course of treatment to be taken (Alseid, S., 2021, Rajiah, K. et al, 2021, Asmelashe Gelayee, D., et al, 2017, Alsayari, A., et al, 2018), Therefore, community pharmacists are receiving more queries from patients about herbal products than ever before, this necessitates that pharmacists should be aware of their possible uses, dosing, adverse effects, drug interactions and contraindications (Ahmed, N.J, et al, 2019, Fahmy, S.A, et al, 2010, Tew, M.M., et al, 2021). Studies reported that 44% of pharmacists surveyed acknowledged that their knowledge of herbs and natural products is not adequate. Similarly, also surveyed various clinicians, including 46 pharmacists, about their knowledge of and attitude toward herbs and other dietary supplements. Pharmacists' knowledge level score was less than 50% of the maximal score, and their score for the level of confidence in their clinical expertise when dealing with questions about herbs and dietary supplements was 30% of the maximal score. Given these results, the author believes that pharmacists need to have resources available to them on herbal supplements to provide current, accurate, and unbiased information on these products (Al-Arifi, M.N, 2013), The pharmaceutical care initiative. Teaching students basics of nutrition and non-drug therapies is also viewed as one of the important professional competencies by the Accreditation Council for Pharmacy Education (ACPE), but pharmacy schools are arguably not providing enough training in this field (Lapidus, M, 2007, Abudalo, R., et al. 2022, Younis, N.A.K.Y, 2019, Shraim, N.Y., et al, 2017, and Chen, X., et al, 2016), The study aims to

measuring the extent of pharmacist's knowledge and awareness of herbal products among them. Comparison of pharmacist's knowledge, attitudes and practices towards herbal products in practice environments

MATERIALS AND METHODS

Study Design

This study used a prospective cross-sectional self-administered questionnaire, which was carried out in community pharmacies across the Libya area. Along with extensive literature reviews of the existing clinical data of potential drug-herb interactions on a sample 602 of Libyan pharmacy practitioners that were randomly selected.

Study Population

A total of 64 community pharmacies in Al-Khoms city were randomly selected for visits based on their geographical distribution (i.e., north, south, east, and west). The target sample size was set to 602 pharmacists (40.1 % of Al-khoms and 59.9 % of other cites).

Sample Size and Sampling Procedure

Using the number of community pharmacies in the Al-Khoms city, the sample size was estimated, Raosoft sample size calculator: (http://www.raosoft.com/samplesize.html), was used with a pre-determined margin of error of 5%, and a confidence level of 95%. In order to minimize erroneous results and to increase the reliability of this study. The target sample size was set to 602 pharmacists (40.1 % of Al-khoms and 59.9 % of other cites). A convenience sampling technique was used in this study. Eligible participants had to meet a set of inclusion criteria. These criteria are Libyan nationality only; licensed pharmacist in Libyan Ministry of Health; had Bachelor's degree certification at least or higher degree; willing to participate and who had provided verbal consent to participate in the study; and completely filled out the questionnaire form and answered all questions.

Study Questionnaire

The questionnaire consisted of six sections. The first section consisted of five questions that documented the demographic data of the respondents such as gender, age, residency, qualification, and the number of years practicing as a pharmacist (years of experience).The second section consisted of seven questions in which respondents recorded their opinions about herbal medicine: Efficacy, ADRs, HDI, herbal medicines regulations, and Continuing education. Four choices of Answers were provided to answer each single-answer question ("Strongly Agree," "Agree," "Disagree," and "I don't know"). The third section consisted of seven questions and was designed to assess respondents' dispensing practices of herbal medicine products commonly available in community pharmacies, their associated adverse reactions, precautions as well as patient counseling. Five choices of Answers were provided to answer each single-answer question ("No," "Rarely," "Sometimes," "Often," and "Always").The fourth section was divided into two parts, first part consisted of four questions in which respondents were asked to assess their knowledge about herbal medicine, herbal

medicine ADRs, herb-drug interactions, and usage precautions. Four choices of Answers were provided to answer each single-answer question ("Very good," "Good," "Acceptable," and "Weak"). In the second part, participants were asked to list the resources that they use to support their herbal medicine knowledge, this part was designed to allow participants to choose multiple answers some of which were provided while keeping open space for participants to add other answers.

In the fifth section, participants were asked to list names of herbal medicines that they commonly dispensed in their pharmacies. Some names were prelisted for the participants to choose of, while leaving some space for them to add more. The last section was prepared based on a past literature review of publications related to herbal medicine, it was designed to include nine questions related to pharmacists' practice of herbal drugs: (uses, herbal drug ADRs and herb-drug interactions), three questions for each. Three choices of answers were provided to answer each single-answer question ("correct," "incorrect," and "I don't know"). This section was conducted to help the presenters to assess and predict the participant's actual knowledge of herbal medicine.

Data Collection

One of the authors was the investigator who personally visited the pharmacies. The licensed pharmacist in charge of the provision of pharmaceutical care at each community pharmacy studied was targeted as the survey respondent who was identified by inquiry or badge observation. Before the formal survey started, verbal informed consent was obtained from the respondents. A standardized working process was then carried out by the investigator: (Sharma, A., P, 2021), self-introduction; (Petrovska, B.B, 2012), systemic explanation of research background and objectives as indicated on the cover page of the questionnaire; (Hard to swallow. Nature, 2007), declaration of the academic and anonymous nature of this survey; and (Nunn, J.F, 2002), reconfirmation of respondents' participation. Whenever respondents made queries about the study, the investigator would provide more specific information. The questionnaires were completed by respondents without any intervention. All of the questionnaires were distributed directly to the respondents and collected on-site during the same visit (Chen, X., et al, 2016).

Data Management and Statistical Analysis

The collected data were sorted, coded then entered and analyzed using the SPSS, version 25.0 statistical software. Parametric data were expressed as means, standard deviations, while non- parametric data were expressed as numbers and percentages. We would compare pharmacist's knowledge toward herbal products among demographic groups using an independent t-test and a one-way analysis of variance test. A p value of less than 0.05 was considered statistically significant.

Ethical approval: It was obtained from Department of Pharmacognosy, Faculty of Pharmacy, University of Elmergib, Al-Khoms, Libya, and was validated by a group of experts constituting four members of faculty of pharmacy then a pilot study conducted on 30 of pharmacists to check for clarity, simplicity and relevancy. The average time of administration of the interviews was 8-10 minutes. The

questionnaire was written in Arabic, to be applicable to all pharmacy practitioner (including pharmacy assistant) and then translated into English (Younis, N.A.K.Y, 2019, Shraim, N.Y., et al, 2017)

RESULTS AND DISCUSSION

Pharmacy practitioners' characteristics: A total of 602 pharmacy practitioners from various regions (involving 31cities) in Libya responded to the study. Details regarding the community pharmacist's-socio-demographic characteristics are provided in Table (1).

The majority of them were located in Al-Khoms (40.1%). Based on gender; females responded to the survey more than males (55.1% versus 44.9 %). Participants aged between 20 and 29 years old accounted for the highest percentage (44.7%). Participants had varying degrees of education, with the majority having a bachelor's degree (92%). As well as, they have varying years of experience in practice; the majority of respondents (37.7%) have 1 to 5 years of experience.

Table: (1) Participant's Demographic Data

Variable	Categorization	Frequency	Percent%	Mean	S.D
Gender	Male	270	44.9%	44.27	20.118
	Female	332	55.1%	45.04	20.629
Age	From 20-29 years	269	44.7%	42.21	19.894
	From 30-39 years	251	41.7%	47.76	19.758
	From 40-49 years	54	9%	42.55	20.870
	More than 50 years	28	4.7%	45.21	26.214
Education level	Bachelor of Pharmacy	554	92.0%	44.86	20.191
	Masters&PhD degree	48	8.0%	42.82	22.688
Years of experience	Less than 1 year	74	12.3%	35.73	20.169
	From 1-5 years	227	37.7%	44.43	19.749
	From 6-10 years	156	25.9%	48.86	19.293
	From 11-20 years	109	18.1%	45.37	20.945
	More than 20 years	36	6 %	45.34	22.737

Pharmacist's Attitudes about Herbal Medicine Use

Pharmacists had varying opinions regarding herbal medicine. But the majority of pharmacists "agreed" that herbal medications are efficacious (65.6%). More than half (53.5%) respondents "agreed' that herbal drugs have less adverse effects than conventional medicine, the majority (67.9%) of respondents "disagreed" that herbal medicine have placebo effect, more than half of respondents (53%) "Disagreed" that herbal medicine have been sufficiently studied, while nearly half (49.3%) of the pharmacists

"Agreed" that herbal medicines have significant interactions with conventional medicine, (43.4%) of the community pharmacists "agreed" that herbal medicines should only be sold in a pharmacy. (47.8%)

"Agreed" that continuing education on herbal medications should be mandatory. All frequencies and percentages of pharmacists' herbal medicine Attitudes are shown in Table (2).

Table: (2) Frequencies and percentages of pharmacists' herbal medicine Attitudes

Do you agree that?	Answer alternatives							
	Strongly agree		Agree		Disagree		I Don't know	
	Freq	%	Freq	%	Freq	%	Freq	%
Herbal medicines have Beneficial effect?	167	27.7	395	65.6	30	5	10	1.7
Herbal medicines have less side effect than conventional medicines?	90	15	322	53.5	164	27.2	26	4.3
Herbal medicines have placebo effect?	20	3.3	98	16.3	409	67.9	75	12.5
Herbal medicines have sufficiently studied?	31	5.1	163	27.1	319	53	89	14.8
Herbal medicines have significant interaction with drugs?	79	13.1	297	49.3	124	20.6	102	16.9
Should herbal medicine dispensing be limited inside the pharmacy?	159	26.4	261	43.4	161	26.7	21	3.5
Should continuing education about herbal medicines be mandatory?	245	40.7	288	47.8	54	9	15	2.5

This finding is comparable to other study conducted in Palestine in 2013[64] among pharmacists. They recorded that the majority of pharmacists (91%) believed that herbal drugs are beneficial, (61%) agreed that herbal drugs have less side effects than conventional medicine. Also, a majority (70%) agreed that herbal drugs have significant interactions with conventional drugs, (43%) disagree that herbal drugs have a placebo effect while more than half disagreed (56%) that they had sufficient knowledge and needed to acquire more knowledge about herbal medicines. This could be achieved by providing pharmacist with courses on herbal product use, their side effects and drug interactions. Therefore, educational courses on herbal medicines are mandatory. Pharmacist's practices towards herbal medicines use in community pharmacies: Herbal products were reported to be "sometimes" dispensed inside pharmacy by (43.4%) of pharmacists. The nearly half of respondents (47%) "Sometimes" use herbal drugs for self-treatment, almost half (48.2%) reported that they "sometimes" get inquiries related to herbal drugs.

A total of (37.5%) pharmacists "sometimes" counsel clients about herbal drug use. About (45%) pharmacist receive "no" complaints related to herbal drugs side effects. Respondents "sometimes" (29.7%) check for possible herbal drugs interactions, while (27.1%) of respondents "sometimes" warn their patients about herbal drugs side effects. Common practices of dispensing herbal products in Libyan pharmacies are illustrated in Fiqure1, and Figure 2.

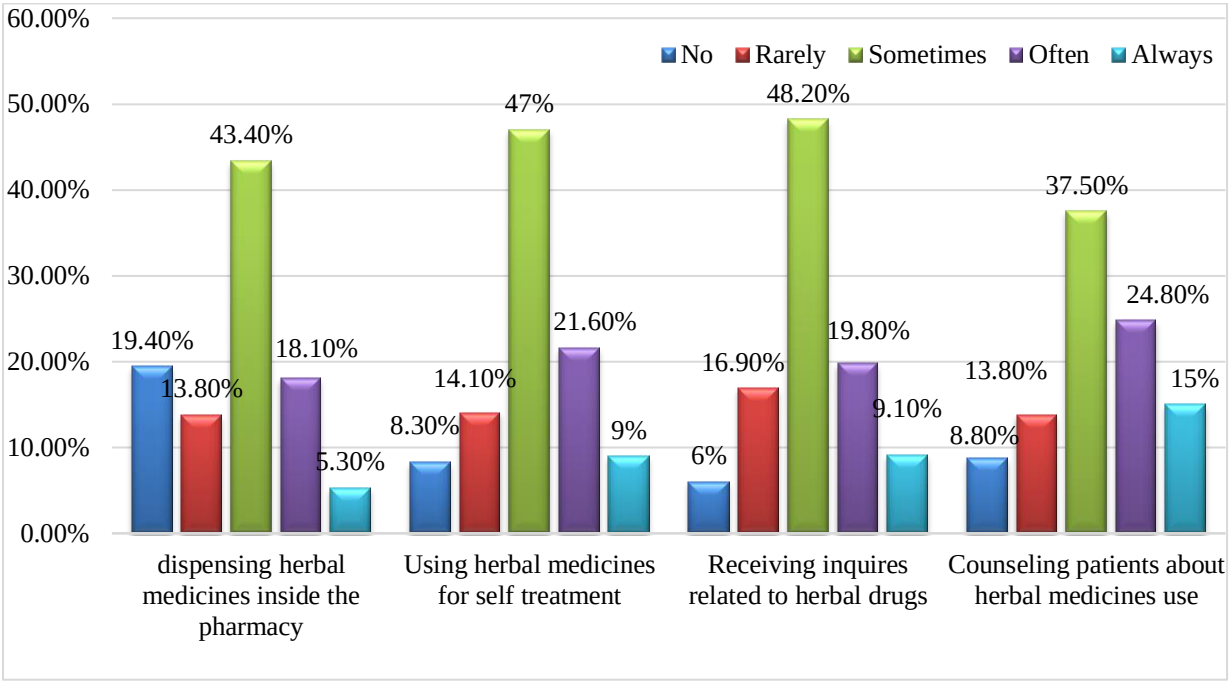

Figure: (1) Common practices of dispensing herbal products in Libyan pharmacies.

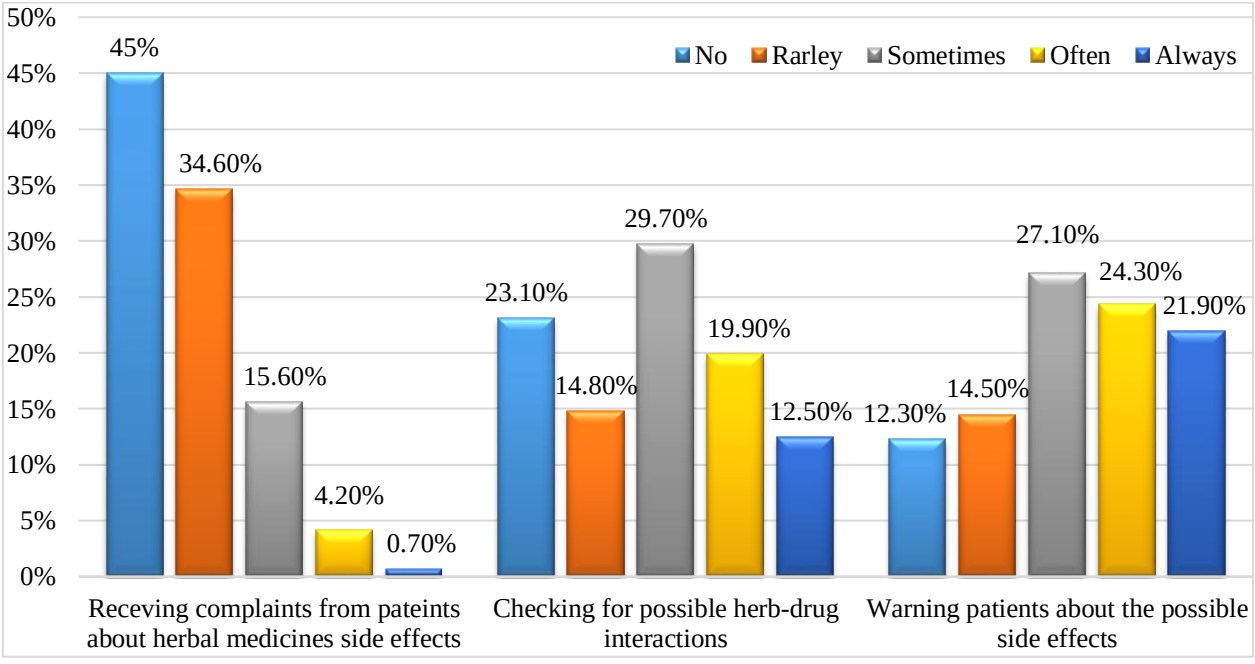

Figure: (2) Common practices of dispensing herbal products in Libyan pharmacies.

The current study showed that herbal medicines are commonly used for self-treatment by munity pharmacists in Libya, which is similar to other studies (H.T.C., Abdulaziz *et a*l., 2023

Libyan mother's awareness of natural products among infants. 2022). This shows the growing acceptance of herbal medicines among healthcare professionals. However, respondents to this study were less involved in dispensing of these preparations. That is the pharmacist's responds toward their practices of the use of herbal dugs is neutral. Several factors can be calculated for this purpose, most respondents felt that pharmacists are not currently authorized to dispense with these treatments, have not received any additional training related to these preparations, and have limited access to information related to herbal medicines. Also, the practice of advising respondents on herbal medicines is minimal and most have never received/rarely received inquiries regarding herbal medicines. In short, having good knowledge of pharmacists is mandatory for good practices. It is essential for pharmacists to expand their knowledge regarding the harmful effects of herbal products and drug interactions to provide the required pharmaceutical care to patients, which can be achieved by identifying reliable information and resources about herbal products, attending mandatory courses on herbal products, and counselling patients when they are looking for herbal products, and counselling patients when they are looking for herbal products. All of these recommendations will equip them for good practices, thereby implementing pharmaceutical care services to ensure rational and appropriate use of medicines.

Pharmacist Self-Assessment and Knowledge of Herbal Drugs

Respondents were asked about their knowledge pertaining to herbal products Fiqure 3. The majority (50.2%) reported that they had "good" knowledge about herbal products in their pharmacies, while only (19.1%) reported that they had "very good" knowledge. Close percentages were reported for "good" and "acceptable" knowledge of the pharmacist for side effects of herbal drugs by (39.2%) and (38.5%), respectively. For knowledge of herb–drug interactions, they have "good" knowledge by (37.7%) and "acceptable" knowledge by (35.2%), while knowledge about precautions of using herbal drugs said they have ‘good’ knowledge by (43.7%) and "acceptable" knowledge by (32.9%).

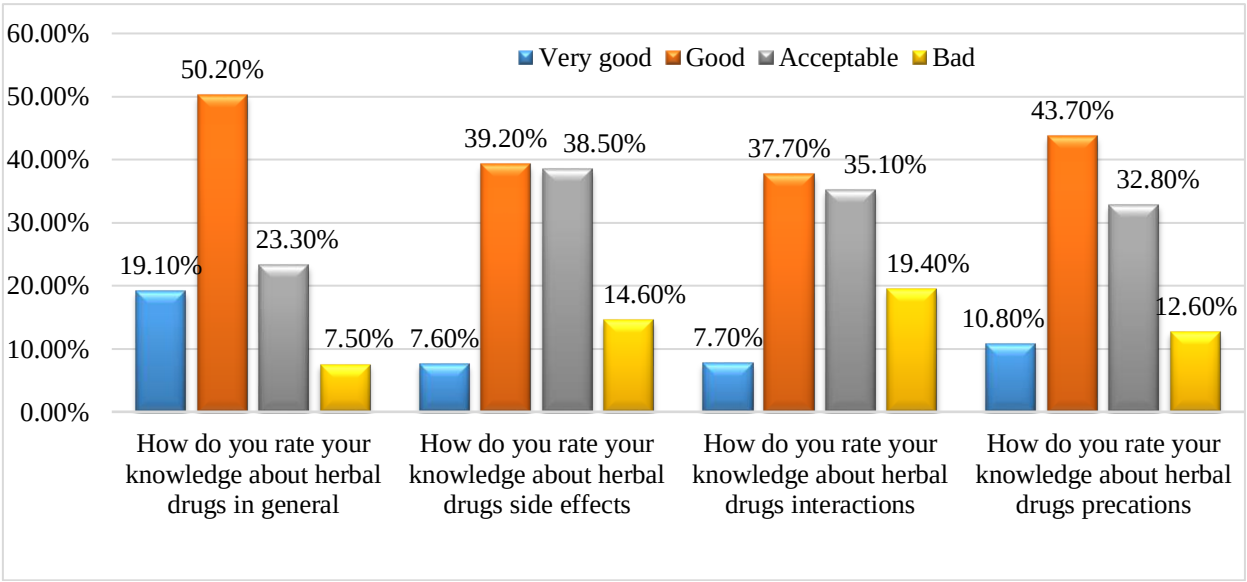

Figure :(3) the Percent of Pharmacist Self-Assessment and Knowledge of Herbal Drugs

Pharmacist's Self-Assessment

Regarding the medical and pharmaceutical information, they readily had about herbal products, large percentage of respondents (79.6%) relied on internet websites, and only (29.7%) relied on colleagues (pharmacists and physicians) to reach the required information about herbal products. While some mentioned that they obtain their knowledge from books (24.6%). As in fiqure 4.

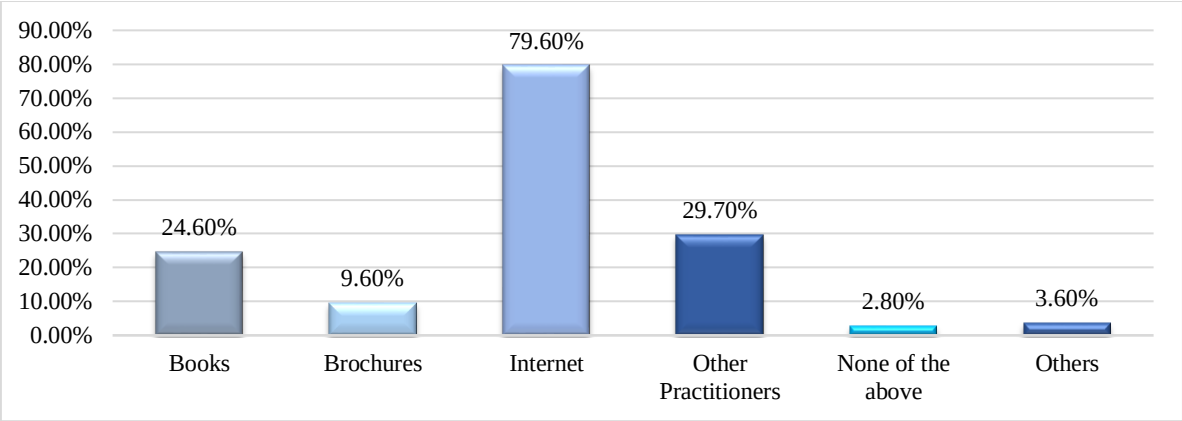

Figure: (4) Information Resources.

Pharmacist were also asked whether they dispense any of the herbal drugs shown in figure (5) Senna had the highest percentage (85.5%) followed by chamomile (79.2%), Ginkgo and garlic were also dispensed at a rate of (68.8%) and (62.8%), respectively.

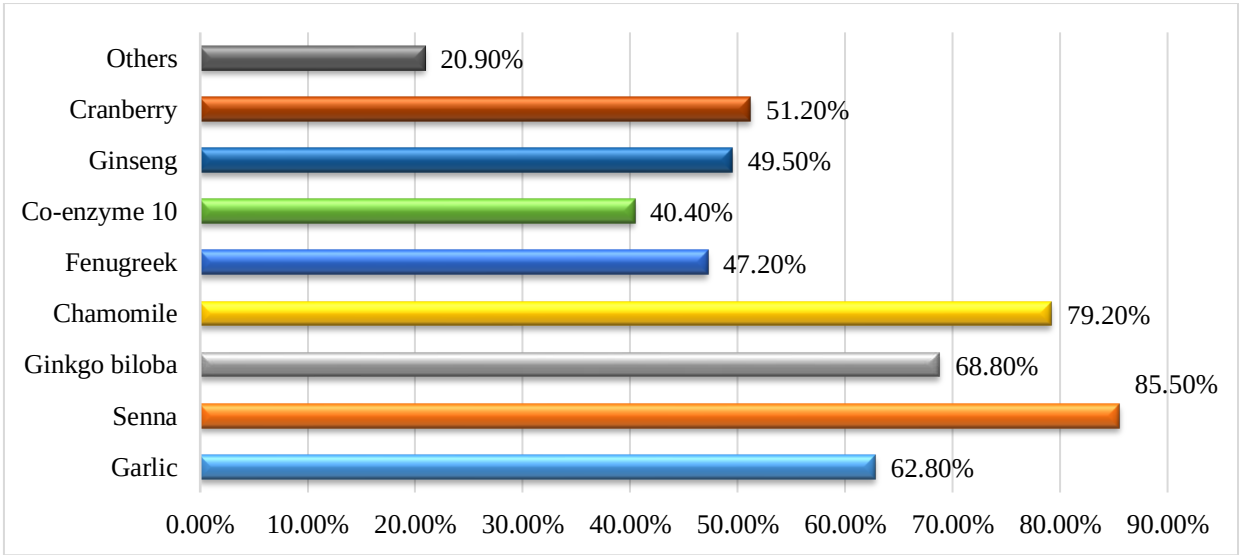

Figure: (5) Commonly Dispensed Herbal Drugs

Pharmacist's Knowledge of Herbal Drugs Commonly Dispensed in Libyan Community Pharmacies

The resulted data shows pharmacist's knowledge of herbal products uses as in figure 6. The pharmacists' mean adverse effect knowledge as in figure 7. And the pharmacists' herbal-drug interaction knowledge as in figure 8.

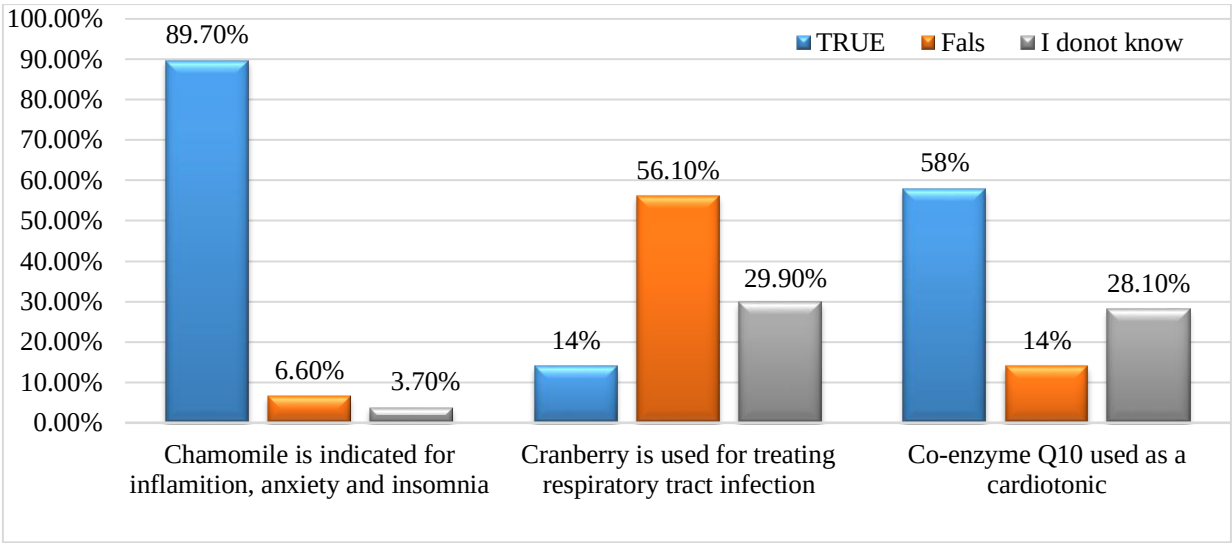

Figure: (6) Pharmacist's Actual Herbal Drug Knowledge

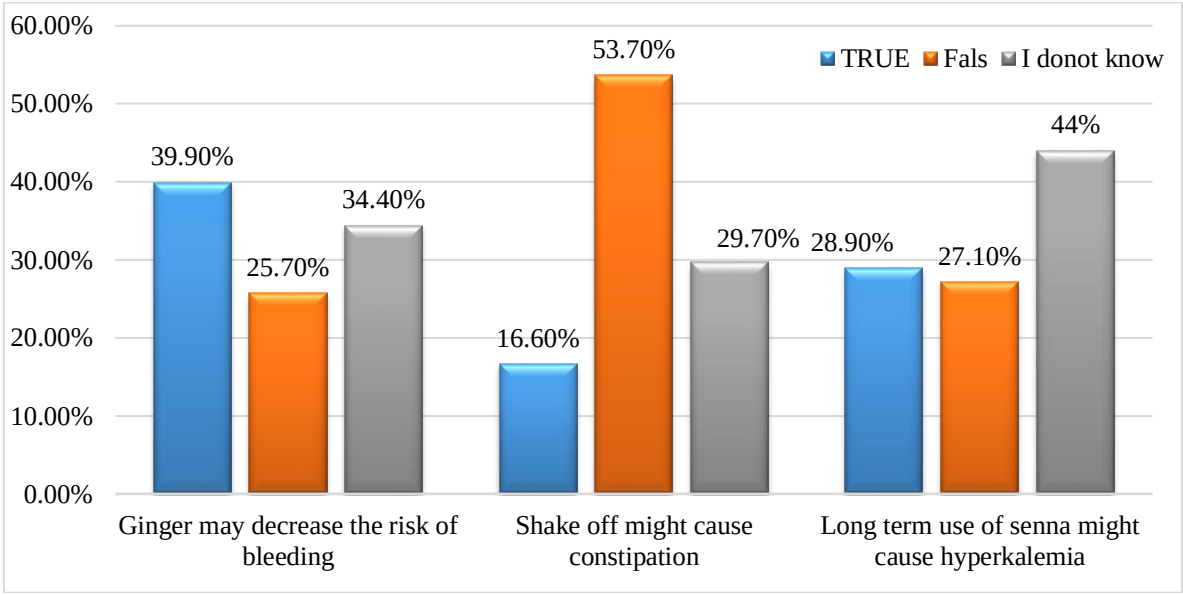

Figure: (7) Pharmacist's Knowledge Regarding Herbal Drugs Side Effects

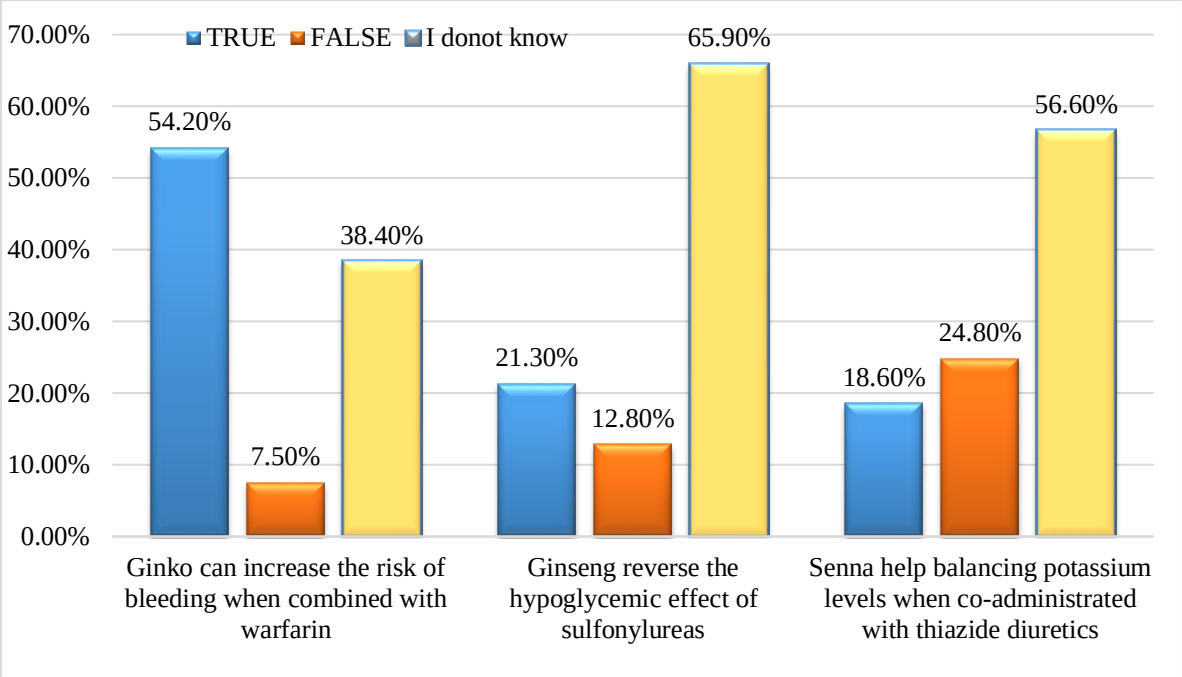

Figure: (8) Pharmacist's Actual Knowledge Regarding Herbal Drug Interactions.

Factors Affecting Degrees of Knowledge of Herbal Products

The results, as shown in Table (3), indicate that the overall mean knowledge score was a highly significant difference between age groups (p = 0.002). In comparing age groups, there was a

Significant difference found for the overall knowledge score. Participants who were aged 30 to 39 years old had the highest score, followed by those older than 50 years old (p = 0.002).

Moreover, when compared by years of experience, the results showed a significant difference in overall knowledge scores (p = 0.001).

The pharmacists who did have 6 to 10 years had the highest scores for overall knowledge of herbal products than those without.

On the contrary, there was no significant difference in the level of knowledge of herbal products regarding, gender and graduation level.

Table: (3) Factors Affecting Pharmacists' Knowledge Regarding Herbal Drugs

Knowledge scores percentage towards Herbal Products		
Variable	**Mean± S.D**	**p- value**
Gender		
Male	44.27±20.118	0.647[1]
Female	45.04±20.629	
Age		
20 -29 year	42.21±19.894	
30 -39 year	47.76 ±19.758	0.002[2]
40 -49 year	42.55±20.870	
Older than 50 years	45.21±26.214	
Graduation level		
University	44.86±20.191	0.543[1]
Master or above	42.82±22.688	
Years of experience		
1 - 5 years	44.34±19.74	
6 -10 year	48.86±19.293	0.001[2]
11-20 years	45.37±20.945	
More than 20 Years	45.34±22.737	

Pharmacists usually inform patients about herbal medicine indications, side effects and interactions, and conditions that make herbal products unsafe, this suggests that they should be aware about their role in guiding the safe and effective use of herbal products by better communication with patients. Additionally, other barriers that could impede pharmacy practitioners and have a considerable influence from discussing herbal remedies are a lack of knowledge or lack of authoritative resources about herbal products. To facilitate patients' Acquisition of adequate herbal product counselling, pharmacy practitioners' education programs and training should be implemented to ascertain the awareness of herbal product counselling and consolidate the provided professional pharmaceutical care services. Because the prevalence of chronic diseases has increased dramatically in Libya, this may expand the number of patients' taking conventional medications in addition to herbal remedies. Some herbal products may have adverse effects (e.g. Shake-off Phyto-fibers might cause diarrhea, Long term use of Senna might cause hyperkalemia (Agency, E.M., HMPC, 2006), Ginger may decrease the risk of bleeding, whilst others may interact with conventional medications (e.g. Ginkgo can increase the risk of bleeding when co-administrated with warfarin , Ginseng potentiate the hypoglycemic effect of sulfonylureas (Baxter, K., S , et al, 2014), Senna disturb potassium levels when co-administrated with thiazide diuretics(Agency, E.M., HMPC, 2006). In the last section of the questionnaire, with respect to the quiz assessing the pharmacist's knowledge of herbal

medicines (uses, side effects and herb-drug interactions) to help us predicting their actual knowledge of herbal drugs dispensing practices.

CONCLUSION

The study showed that many pharmacists in Libya believed that herbal drugs are effective and a high proportion of pharmacists thought that they're safe when compared with conventional drugs, the study detects that pharmacy practitioners were capable to give the right information about the usage of selected herbal products more than drug-herb interactions. The same results were found in other studies.

REFERENCES

Al-Arifi, M.N., Availability and needs of herbal medicinal information resources at community pharmacy, Riyadh region, Saudi Arabia. Saudi Pharmaceutical Journal, 2013. 21(4): p. 351-360.

Al-Jabi, S. W., Khader, M., Hamarsha, I., Atallh, D., Bani-Odeh, S., Daraghmeh, A., ... & Zyoud, S. E. H. (2021). Complementary and alternative medicine use among pediatrics in Palestine: a cross-sectional study. BMC pediatrics, 21, 1-9.

Abudalo, R., Alqudah, A., Abuqamar, A., Abdelaziz, A., Alshawabkeh, M., & Taha, L. (2022). Pharmacy practitioners' practice, awareness and knowledge about herbal products and their potential interactions with cardiovascular drugs. F1000research, 11, 912-912.

Achour, S., Rhalem, N., Elfakir, S., Khattabi, A., Nejjari, C., Mokhtari, A., ... & Soulaymani, R. (2013). Prognostic factors of Atractylis gummifera L. poisoning, Morocco. Eastern Mediterranean health journal, 19(11).

Agency, E.M., HMPC community herbal monograph on senna leaf (sennae folium). . 2006.

Ahmed, N.J. and M.F. Khan, Community Pharmacists' Knowledge, Attitudes and Practices towards the Use of Herbal Remedies. Journal of Pharmaceutical Research International, 2019. 31(6): p. 1-8.

Alrowais, N.A. and N.A. Alyousefi, The prevalence extent of Complementary and Alternative Medicine (CAM) use among Saudis. Saudi Pharmaceutical Journal, 2017. 25(3): p. 306-318.

Alseid, S., E. Elmahjoubi, and N. Rghebi, Evaluation of over-the-counter counselling practices by Libyan community pharmacists. AlQalam Journal of Medical and Applied Sciences, 2021. 4(2): p. 126-136.

Akter, S., Hasan, M. N., Rokeya, B., Akhter, H., Gazi, M. S., Sabrin, F., & Kim, S. S. (2021). Alternative Medicine: A Recent Overview. Alternative Medicine-Update.

Alsayari, A., Almghaslah, D., Khaled, A., Annadurai, S., Alkhairy, M. A., Alqahtani, H. A., ... & Assiri, A. M. (2018). Community pharmacists' knowledge, attitudes, and practice of herbal medicines in Asir region, Kingdom of Saudi Arabia. Evidence-Based Complementary and Alternative Medicine, 2018.

Ashur, S. T., Shah, S. A., Bosseri, S., & Shamsuddin, K. (2017). Use of traditional medicine among type 2 diabetic Libyans. Eastern Mediterranean Health Journal, 23(5), 375.

Asmelashe Gelayee, D., Binega Mekonnen, G., Asrade Atnafe, S., Birarra, M. K., & Asrie, A. B. (2017). Herbal medicines: personal use, knowledge, attitude, dispensing practice, and the barriers among community pharmacists in Gondar, Northwest Ethiopia. Evidence-Based Complementary and Alternative Medicine, 2017.

A. Rabee AA, E. Mansour YS, Mariz HA, Eljamay SM. Effect of renin-angiotensin-aldosterone system blockade on intestinal injury induced by indomethacin in rats. Libyan J Med Sci 2021;5:6-10.

Atanasov, A. G., Waltenberger, B., Pferschy-Wenzig, E. M., Linder, T., Wawrosch, C., Uhrin, P., ... & Stuppner, H. (2015). Discovery and resupply of pharmacologically active plant-derived natural products: A review. Biotechnology advances, 33(8), 1582-1614.

Baxter, K., S. Driver, and E. Williamson, Stockley's herbal medicines interactions. 2013: Pharmaceutical Press London, UK.

A. Rabee AA, E. Mansour YS, Mariz HA, Eljamay SM. Effect of renin-angiotensin-aldosterone system blockade on intestinal injury induced by indomethacin in rats. Libyan J Med Sci 2021;5:6-10

Carey, W. B., Crocker, A. C., Elias, E. R., Feldman, H. M., & Coleman, W. L. (2009). Developmental-Behavioral Pediatrics E-Book. Elsevier Health Sciences.

Chen, X., Ung, C. O. L., Hu, H., Liu, X., Zhao, J., Hu, Y., ... & Yang, Q. (2016). Community pharmacists' perceptions about pharmaceutical care of traditional medicine products: a questionnaire-based cross-sectional study in Guangzhou, China. Evidence-Based Complementary and Alternative Medicine, 2016.

Denner, S.S., The science of energy therapies and contemplative practice: A conceptual review and the application of zero balancing. Holistic nursing practice, 2009. 23(6): p. 315-334.

De Smet, P.A., Should herbal medicine-like products be licensed as medicines. 1995, British Medical Journal Publishing Group. p. 1023-1024.

Dülger, G., Herbal drugs and drug interactions. Marmara Pharmaceutical Journal, 2012. 16(1): p. 9-22.

El-Dahiyat, F., Rashrash, M., Abuhamdah, S., Abu Farha, R., & Babar, Z. U. D. (2020). Herbal medicines: a cross-sectional study to evaluate the prevalence and predictors of use among Jordanian adults. Journal of pharmaceutical policy and practice, 13, 1-9.

Eljamay, S. M., Boras, E., Almzaini, M. S., & Jebreil, M. M. (2023). Practices and Behaviors Regarding the Use of Analgesics. Indonesian Journal of Innovation and Applied Sciences (IJIAS), 3(1), 67-73.

El-Mughrabi, E.-G., Usages of some plants in Libyan folk medicine. 1999: Dar Al-Hekma. Tripoli.

Fahmy, S.A., S. Abdu, and M. Abuelkhair, Pharmacists' attitude, perceptions and knowledge towards the use of herbal products in Abu Dhabi, United Arab Emirates. Pharmacy practice, 2010. 8(2): p. 109.

Gerber, L. M., Mamtani, R., Chiu, Y. L., Bener, A., Murphy, M., Cheema, S., & Verjee, M. (2014). Use of complementary and alternative medicine among midlife Arab women living in Qatar. EMHJ-Eastern Mediterranean Health Journal, 20(9), 554-560.

Grafton, A., G.W. Most, and S. Settis, The classical tradition. 2010: Harvard University Press.

Gurley, B. J., Swain, A., Williams, D. K., Barone, G., & Battu, S. K. (2008). Gauging the clinical significance of P‐glycoprotein‐mediated herb‐drug interactions: comparative effects of St. John's wort, Echinacea, clarithromycin, and rifampin on digoxin pharmacokinetics. Molecular nutrition & food research, 52(7), 772-779.

Halila, G. C., Junior, E. H., Otuki, M. F., & Correr, C. J. (2015). The practice of OTC counseling by community pharmacists in Parana, Brazil. Pharmacy practice, 13(4).

H. Khalifa, N. M. Al-Awkally, S. M. Eljamay, "Oral Delivery of Biologics: Recent Advances, Challenges, and Future Perspectives," African Journal of Advanced Pure and Applied Sciences (AJAPAS), Vol. 1, Issue 2, pp. 1-6, 2022.

Hard to swallow. Nature, 2007. 448(7150): p. 106-106.

Jayasuriya, D., The regulation of medicinal plants-a preliminary review of selected aspects of national legislation. Unpublished Report, 2013.

Johnson, T., et al., Canadian pharmacy students' knowledge of herbal medicine. American Journal of Pharmaceutical Education, 2008. 72(4).

Nicholas A Kerna1, Hilary M Holets, Abdullah Hafid, Kevin D Pruitt, ND Victor Carsrud, Silile Ndhlovu, Fernand Jean-Baptiste, Sahalia Rashid and Uzoamaka Nwokorie, A Practical Review of Mind-Body Medicine (MBM): Descriptions of Prevalent MBM Therapies, Indications, Contraindications, and Efficacy. EC Psychology and Psychiatry, 2021. 10: p. 86-98.

Kiliś-Pstrusińska, K. and A. Wiela-Hojeńska, Nephrotoxicity of Herbal Products in Europe—A Review of an Underestimated Problem. International Journal of Molecular Sciences, 2021. 22(8): p. 4132.

Lapidus, M., Educating student pharmacists about herbal medicines: faculty–librarian collaboration. Health Information & Libraries Journal, 2007. 24(4): p. 267-273.

Linde, K., St. John's wort - an overview. Forsch Komplementmed, 2009. 16(3): p. 146-55.

Mamindla, S., K. Prasad, and B. Koganti, Herb-drug interactions: an overview of mechanisms and clinical aspects. International Journal of Pharmaceutical Sciences and Research, 2016. 7(9): p. 3576.

Manipulative and Body-Based Methods, in Handbook of Disease Burdens and Quality of Life Measures, V.R. Preedy and R.R. Watson, Editors. 2010, Springer New York: New York, NY. p. 4253-4253.

Manikandan, P. and S. Nagini, Cytochrome P450 structure, function and clinical significance: a review. Current drug targets, 2018. 19(1): p. 38-54.

Davyson de L. Moreira, Sabrina Schaaf Teixeira, Maria Helena D. Monteiro, Ana Cecilia A.X. De-Oliveira, Francisco J.R. Paumgartten, Traditional use and safety of herbal medicines. Revista Brasileira de Farmacognosia, 2014. 24: p. 248-257.

Msomi, N.Z. and M.B. Simelane, Herbal medicine. InTech: Rijeka, Croatia, 2019: p. 215-227.

Ng, J. Y., Boon, H. S., Thompson, A. K., & Whitehead, C. R. (2016). Making sense of "alternative","complementary","unconventional" and "integrative" medicine: exploring the terms and meanings through a textual analysis. BMC complementary and alternative medicine, 16(1), 1-18.

Nunn, J.F., Ancient egyptian medicine. 2002: University of Oklahoma Press.

Ong, C.E. and Y. Pan, Drug-herb interactions: Mechanisms involved and clinical implications of five commonly and traditionally used herbs. CELLMED, 2014. 4(3): p. 17.1-17.8.

Organization, W.H., WHO guidelines on developing consumer information on proper use of traditional, complementary and alternative medicine. 2004: World Health Organization.

Organization, W.H., Regulatory situation of herbal medicines: a worldwide review. 1998

Organization, W.H., Guidelines for the assessment of herbal medicines. 1991, World Health Organization.

PaCE, O., Complementary and alternative medicine: facts and figures: part 2. 2012.

Pellerano, P., [Pharmacologic interactions of anesthesiologic importance. I. Interference between preoperative pharmacotherapy and anesthetic drugs]. Acta Anaesthesiol, 1967. 18(6): p. 905-11.

Petrovska, B.B., Historical review of medicinal plants' usage. Pharmacogn Rev, 2012. 6(11): p. 1-5.

Pearson, N.J. and M.A. Chesney, The National Center for Complementary and Alternative Medicine. Academic Medicine, 2007. 82(10): p. 967.

Robson, B. and O. Baek, The engines of Hippocrates: From the dawn of medicine to medical and pharmaceutical informatics. 2009: John Wiley & Sons.

Rajiah, K., S. Sivarasa, and M.K. Maharajan, Impact of pharmacists' interventions and patients' decision on health outcomes in terms of medication adherence and quality use of medicines among patients attending community pharmacies: a systematic review. International journal of environmental research and public health, 2021. 18(9): p. 4392.

Sharma, A., P. Sabharwal, and R. Dada, Herbal medicine: An introduction to its history, in Herbal Medicine in Andrology. 2021, Elsevier. p. 1-8.

Shraim, N. Y., Shawahna, R., Sorady, M. A., Aiesh, B. M., Alashqar, G. S., Jitan, R. I., ... & Zyoud, S. E. H. (2017). Community pharmacists' knowledge, practices and beliefs about complementary and alternative medicine in Palestine: a cross-sectional study. BMC complementary and Alternative Medicine, 17, 1-12.

Song, M., Ung, C. O. L., Lee, V. W. Y., Hu, Y., Zhao, J., Li, P., & Hu, H. (2017). Community pharmacists' perceptions about pharmaceutical service of over-the-counter traditional Chinese medicine: a survey study in Harbin of China. BMC complementary and alternative medicine, 17, 1-10.

Swartz, M.H., Understanding Complementary and Alternative Medicine. Textbook of

wai Fan, K., National center for complementary and alternative medicine website. Journal of the Medical Library Association, 2005. 93(3): p. 410.

Wanwimolruk, S. and V. Prachayasittikul, Cytochrome P450 enzyme mediated herbal drug interactions (Part 1). EXCLI journal, 2014. 13: p. 347.

Welz, A.N., A. Emberger-Klein, and K. Menrad, Why people use herbal medicine: physical diagnosis E-book: history and examination 2020: Elsevier Health Sciences.

Saraf, S., Legal regulations of complementary and alternative medicines in different countries. Pharmacognosy reviews, 2012. 6(12): p. 154.

Tew, M. M., Hatah, E., Arif, F., Abdul Wahid, M. A., Makmor-Bakry, M., & Abdul Maulad, K. N. (2021). Geospatial analysis of distribution of community pharmacies and other health care facilities providing minor ailments services in Malaysia. Journal of pharmaceutical policy and practice, 14, 1-11.

THIS, H.T.C., Libyan mother's awareness of natural products among infants. 2022.

Tugume, P. and C. Nyakoojo, Ethno-pharmacological survey of herbal remedies used in the treatment of paediatric diseases in Buhunga parish, Rukungiri District, Uganda. BMC Complementary and Alternative Medicine, 2019. 19(1): p. 1-10.

insights from a focus-group study in Germany. BMC complementary and alternative medicine, 2018. 18(1): p. 1-9.

Xiaorui, Z., Regulatory situation of herbal medicines: A worldwide review. Tradit Med Program, 1998: p. 1-45.

Younis, N.A.K.Y., The Prevalence, Attitude and Awareness of Herbal Medicine Products Use Among Pharmacy Practitioner in Jordan. Pharmacognosy Journal, 2019. 11(5).