

Supply and Consumption Methods of Medicinal Plants in Mazar-e-Sharif City, Afghanistan

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ABSTRACT

Background: Balkh province is located in the northern part of Afghanistan, which is rich in medicine plant diversity. The large number of medicinal plant shops (Attari) in the center of Mazar-e-Sharif city indicates that the citizens of Balkh province are familiar with medicinal plants and their uses. In this study, an attempt has been made to investigate the socioeconomic characteristics, medicinal plant distribution patterns, consumption methods, and types of medicinal plants in the Mazar-e-Sharif city Attaris.

Materials and Methods: The study focused on 102 Attaris in the research area, research factors such as the age of medicinal plant sellers, monthly income, education level, marital status, number of people working in Attaris, and work experience of Attaris were studied.

Findings: The results revealed that the average age of people in Attaris is 49 years with a work experience of about 15 years, and only 3% have an education related to medicinal plants. About 20 % of medicinal plant sellers had a university education but not related to medicinal plants science, about 17 % had a diploma, 30 % had a high school education and the remaining 12 % had primary education. Unbelievably, about 50 % of consumers were rich people and the remaining 50 % of the clients were low-income. People visited Attari's to heal their digestive system disorders are the most common health issues, followed by issues with the kidneys, bladder, and urinary system, respiratory conditions, skin and wound issues, hypertension and cardiovascular conditions, liver issues, diabetes, typhoid, pain, helminthiasis, anorexia, gynecological complaints, sexual dysfunction, weakness, fever, and obesity. Lemon balm, Common jujube, Starflower, Black pepper, Cumin, and Turmeric were the high-selling medicinal plants offered in Mazar-e-Sharif Attaris'.

Conclusion: A large number of medicinal plant shops (Attaris) in the center of Mazar-e-Sharif city indicates that the citizens of Balkh province are familiar with medicinal plants and their uses. However, unfavorable economic situation of some people who referred Attaris showed that the existence of traditional medicine systems (Attaris) is considered to be one of the urgent needs of the Mazar-e-Sharif.

Keywords: Medicinal plant, Mazar-e-Sharif, Poverty; Traditional medicine; Side effects, Attari.

INTRODUCTION

The use of medicinal plants is as old as human life and like diseases, they have been born with the emergence of mankind amazingly the available several thousand-year-old documents of medicine and pharmacy contain valuable medicinal plant experiences and information. These easily accessible, culturally significant traditional medicines serve as the cornerstone of an affordable, accessible healthcare system and provide a crucial source of income for rural and indigenous populations. With the rapid progress of science on the one hand and economic issues on the other, consumption of medicinal plants has been reduced compared to the past. In recent years, there has been an increase in scientific and economic interest in the medicinal species that inhabit natural environments. Up to 80,000 blooming plants are utilized medicinally worldwide (Marinelli, 2005).

The use of medicinal plants has been done since ancient times and may even be considered the origin of modern medicine. Compounds of plant origin have been and still are an important source of compounds for drugs. New compounds, such as one recently discovered in a plant in Madagascar, are likely to provide novel antibiotics and help curb the epidemic of antibiotic-resistant diseases (Wang et al., 2006). Pharmacologic testing of herbs on a broad scale is being done by pharmaceutical corporations as the development of medications from plants develops (Vickers et al., 2001). Today, ethnobotanical research can be a trusted and favored method for finding new drugs and is crucial for biodiversity preservation (Shah and Hussain 2021).

According to the National Cancer Institute, at least 70 percent of new drugs introduced in the United States in the last 25 years are derived from natural sources (Steenhuysen, 2007). As of 2015, few products made from medicinal plants had undergone safety and efficacy testing, and those that had been sold in rich economies and given by traditional medicines to people in underdeveloped nations were of variable quality and occasionally contained harmful pollutants plants (Chan, 2015). Along with other substances and methods, a number of plants are used in traditional Chinese medicine. Ten percent of all vascular plants are used as medicinal plants (Fonnegra et al., 2007) since ancient times, plants have been used in medicine and are still used today (Grover et al., 2002). To create herbal medicines, herbal materials are primarily treated to extraction, fractionation, purification, and concentration; they may be consumed directly or after processing. In addition to their active constituents, herbal remedies may also contain excipients or inactive substances (Shafique et al., 1987).

Since much of Afghanistan's flora is rich in volatile oils but isn't fully utilized, it has a large number of plant species that are used in traditional medicines and should be mentioned that Afghanistan is a mountainous country (National Statistics and Information authority, 2021). The use of traditional remedies predates the introduction of modern medications and is among the world's oldest forms of medicine. A large variety of plant species are utilized in traditional medicines in Afghanistan due to its diverse flora (Pelt, 1967). These traditional medicines can be split into two categories: (i) Greek, Indian, and Islamic medicines are examples of traditional medicines that are based on ancient systems that produced written literature and theories; (ii) folk medicines are based on oral transmission and are used by medicines of all kinds. In Afghanistan, several medicinal plants plant uses are widespread. The most typical conventional method is boiling herbs or creating herbal tea by decocting plant blossoms, leaves, or stems in water, and then the extract is filtered, whereas many people cure their health issues with plants in an unscientific approach. According to estimates from the World Health Organization (WHO), several nations in Asia and Africa have 80% of their people use herbal remedies for some of their fundamental medical needs (Traditional medicine, 2003).

According to the Afghanistan National Statistics and Information Authority, Mazar-e-Sharif is the fourth largest city in Afghanistan in terms of population in 2021. Highways connect it to Kunduz in the east, Kabul in the

southeast, Herat in the southwest, and Termez, Uzbekistan in the north. At Mazar-i-Sharif, the summers are sweltering, arid, and clear and the winters are very cold, snowy, and partly cloudy. The hot season lasts for 3.6 months, from May 22 to September 11, with an average daily high temperature above 33 C°. The hottest month of the year at Mazar-i-Sharif is July, with an average high of 102°F and low of 29 C°. The cool season lasts for 3.5 months, from November 22 to March 7, with an average daily high temperature below 15 C°. The coldest month of the year at Mazar-i-Sharif is January, with an average low of 0 C° and high of 8 C°. Low levels of precipitation typically occur between December and April. It has a fairly hot climate. (The United Nations Human Settlements Programme, 2015).

Local hakim (doctors) use a variety of regional plants and herbs for medicinal plants purposes. Some are gathered for export, particularly artemesia and asafetida. There are numerous pharmacies in every bazaar. A lot of these traditional medicines are used as poultices to treat infections or as purgatives for diarrhea, as well as to treat headaches and cold discomfort. Numerous nostrums with undeniable medicinal efficacy have been developed over generations of unsuccessful experimentation. The hakim refer to the usage of medicinal plants as dawa-yunani, or "Greek medicine," and they assert to be the descendants of the doctors who accompanied Alexander the Great on his travels. But the official authorities in the health sector of Afghanistan did not agree with the common Attars. In May 2013, a research on herbal medication use among children in Taif, Saudi Arabia, found that 70% of parents had previously given their kids herbs. Anise (24.7%) and fenugreek (14.7%) were the herbs most frequently utilized (El-Mawla et al., 2013).

People in Mazar-e-Sharif are traditionally quite willing to employ herbal medicines to treat common ills including gastrointestinal illnesses, urinary tract infections, respiratory issues, skin conditions, cardiovascular diseases, etc. People believe that chemical drugs have replaced medicinal plants in many cases. The experience of the last few decades shows that despite chemical drugs full efficiency, they have many unpleasant and unfortunate side effects. However, Attars are one of the significant traditional medicines offering traditional medical care in Mazar-e-Sharif. They do not have license or formal medical education only they can obtain trading license that is provided under supervision of Afghanistan Ministry of Commerce.

Current research was to compile a list of the plants employed in the 12 principal towns of Mazar - e -Sharif. In this research, it is the first time that the supply and consumption of medicinal plants in Mazar - e -Sharif have been reported on. Similar studies are encouraged to be conducted, though, for local health records and for compiling a list of the medicinal plants utilized throughout Afghanistan. It can be proudly noted that Balkh province is the birthplace of Abu Ali Sina, the founder of traditional medicine and a great Afghan scientist, unfortunately, no significant work has been done on traditional medicine in Mazar-e-Sharif.

MATERIAL AND METHODS

To study the economic features as well as the supply and consumption methods of medicinal plants in the Attaris of Mazar - e -Sharif in summer 2022, a survey was conducted in the Attaris of study area (Figure 1). Information was obtained from traditional medicines in 12 principal towns of Mazar - e -Sharif by distributing of relevant questionnaires with specifications such as, name of the medicinal plant, place of origin (local or imported), and plant parts used among the 102 eligible Attaris. In order to increase the information accuracy, the Attaris that had been established at least in the last three years were studied.

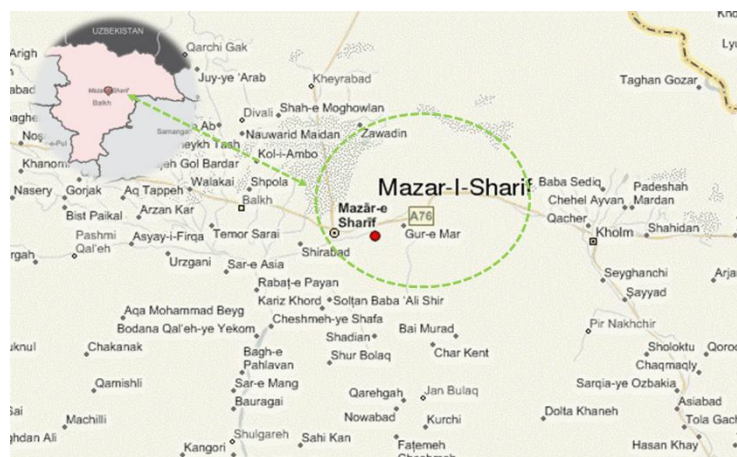


Figure 1. Map of the study area.

The questions were asked to people who had at least three years of working experience in the studied Attaris. Through experienced people in Mazar Sharif city's Attaris center, the Attaris that had the necessary criteria's were identified, which are more than 100 Attaris that were precisely studied. The names of the best-selling medicinal plants in different seasons of the year, as well as the characteristics of the most important plants available in Attaris such as the average annual sales, average annual sales price, and supply point/location of medicinal plants, use of medicinal plants, and the consuming methods were determined. Some other information such as gender, age, marital status, level of education, work experience as Attari, as well as the number of employees in each Attari, and the monthly income and economic status of the customers were evaluated. Finally Data entry was done using Microsoft Office Excel, after which SAS software version 9.2 was used to import and analyze the data.

RESULTS

Almost a quarter of the drugs prepared in the world are of herbal origin are either directly extracted from plants or they are based on herbal composition, modulated, and synthesized. As it is mentioned earlier a total of 102 Attaris were covered in the study, the results showed that the average age of the people working in the Attaris of Mazar-e-Sharif is 48.8 years old (Table 1).

This indicated that if training facilities and support are provided by the respected authorities, Attars are prone to receive specialized training on the use of medicinal plants. The average working experience of Attaris is 15.3 years (Table 1), which shows that people who work in this sector can rely on it as the main source of income and they are satisfied with their job. Among the people who were studied, about 72 % were married and the remaining 28 % were single. Out of the 102 Attaris, about 15 Attars (20 %) had university degrees but not related to medicinal plants science, about 17 (24%) had a diploma, 30 (40 %) had secondary school education and the remaining 12 Attars (16%) had primary education (Figure 2). The study showed that 90% of respondents did not participate in training courses related to traditional medicine, while the remaining 10% could receive a short special training course that was scheduled by the Afghanistan Ministry of Health. The average monthly income of the studied Attaris was analyzed which is 27466.6 Afg. About 87 percent of the total Attars who agreed to be interviewed, stated that Attaris is their main occupation and the remaining 13% admitted that Attaris is their secondary job. It revealed that people who have accepted Attaris as their main job

tried to provide more services to their customers to improve the level of customer satisfaction and create mutual trust. More than 90% of the shops were rented, which had a direct negative impact on Attaris income (Table 1).

Table 1. Major traits of Attaris in Mazar - e -Sharif city

Age	48.8 ± 18.2(year)
Work experience	15.3 ± 6.3(year)
Monthly income	27466.6 ± 15673.3 (Afg.)
Marital status	Married 72 and single 50 person
Special training course taken	Attended course 12 person, not attended 90 person
Shop status	93 rented shops and 9 owned shops
As main occupation	84 person as main occupation and 8 as second job

*Afg. Refers to Afghanistan currency.

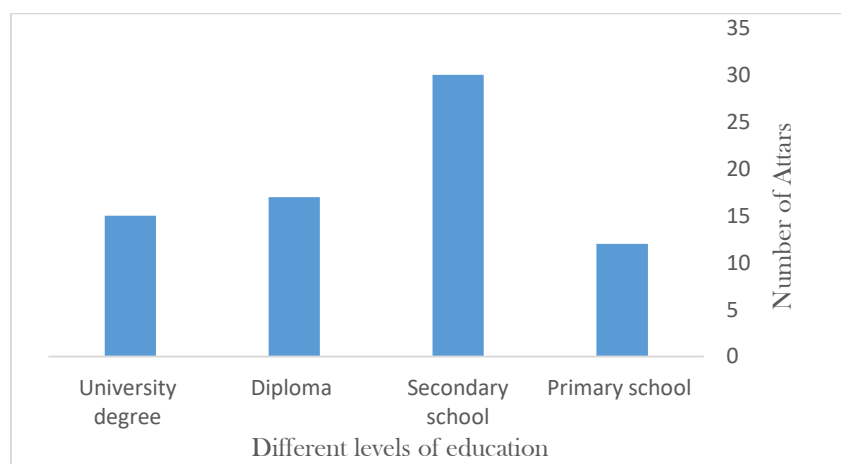


Figure 2. Education level of the Attaris of Mazar - e -Sharif city

The results showed that 41% of studied Attaris, could provide only one job opportunity, in 38% of the Attaris two people were worked and in the remaining 21% of Attaris more than two people were worked (Figure 3). Regarding the length of work experience, a significant correlation between the work experience and monthly income was noticed. Unlike the length of work experience, no significant correlation was observed between education level and monthly income. It showed that work experience in medicinal plants can be more profitable than attending a training course on medicinal plants.



Figure 3. The number of employees who were engaged in Attaris

Almost 50% of the Attaris' customers were rich people, while others were poor. Based on use of medicinal plants by rich and poor people, it was concluded that poor people depend on traditional medicine due to the poor economic situation, while wealthy people have become dependent on traditional medicine in order to avoid the side effects of chemically synthesis modern drugs. Medicinal plant sellers admitted that some of their customers visited them many times to buy medicinal plants. The study showed that those who were interested in traditional medicine have visited medicinal plant sellers at least twice in a year.

Regarding seasonal plants sales, the bestselling medicinal plants from March to September were Flixweed, Lemon balm, Mint. Subsequently Sweet fennel, Starflower, Ispaghula husk, Common jujube, Common mugwort, Garden heliotrope, English lavender, Indian laburnum, Cardamom, Turmeric, Myrobalan, Opium poppy, Black seed, Black pepper, Common ginger, Cinnamon, and Cumin were the bestselling medicinal plants from October to February (Table 2). In terms of volume, Cinnamon, Common ginger, Flixweed, Common jujube, Black seed, and Chebulic myrobalan respectively were the bestselling plants throughout the year. The most valuable plants available in the Mazar - e -Sharif Attaris respectively were *Ferula assa-foetida L*, *Crocus sativus*, *Orchis mascula L.*, *Nigella sativa L.* *Cuminum cyminum. L.* (Figure 4).

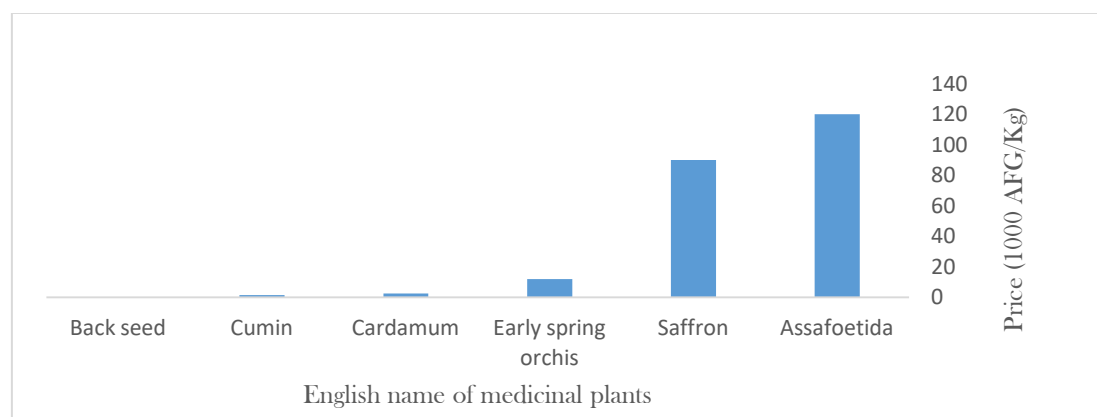


Figure 4. The most precious medicinal plants available in Mazar - e –Sharif's Attaris based on local market.

The research results showed that some special medicinal plants are imported from foreign countries (*Sisymbrium sophia L* from Iran, *Curcuma longa* from Pakistan and *Zingiber officinale* from India and China) and some medicinal plants are provided from some specific provinces in Afghanistan and the remaining medicinal plants could be boating from entire provinces of Afghanistan (Figure 5).

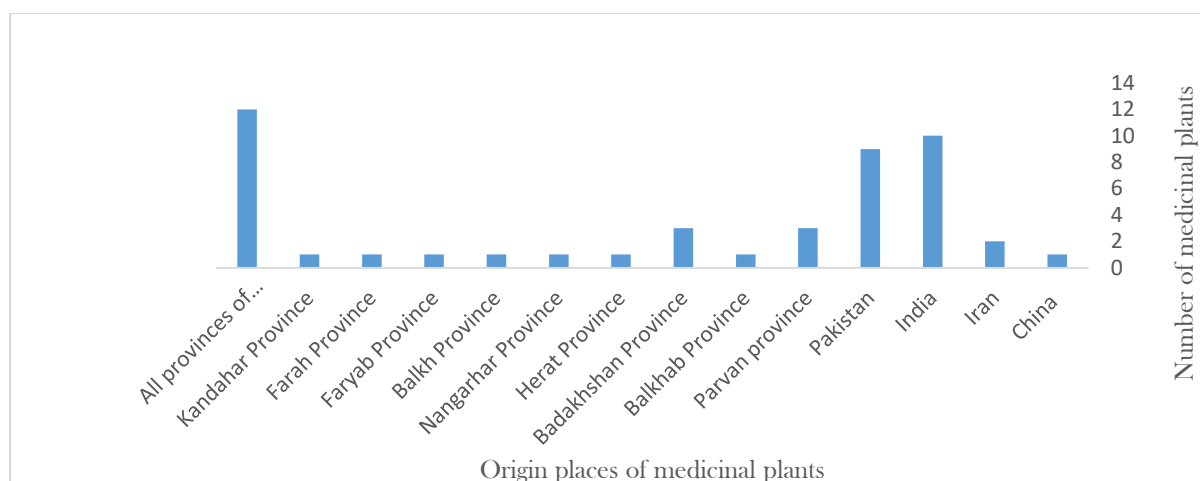


Figure 5. Different Supply places of medicinal plants used in Mazar-e-Sharif's Attaris

Table 2. Seasonal bestselling medicinal plant in Mazar - e -Sharif city.

S/N	Hot season in Mazar - e -Sharif (March to September)	English names	Local names (Dari)	S/N	Cold season in Mazar - e Sharif (October to February)	English names	Local names (Dari)
1	<i>Sisymbrium sophia L</i>	Flixweed	خاکشیر	1	<i>Cassia fistula</i>	Indian laburnum	فلوس
2	<i>Melissa officinalis L</i>	Lemon balm	بادرنجبویه	2	<i>Elettaria cardamomum (L.) Maton</i>	Cardamom	هل
3	<i>Mentha piperata L.</i>	Mint	نعناء	3	<i>Curcuma longa</i>	Turmeric	زرد چوبه
4	<i>Foeniculum vulgare Mill.</i>	Sweet fennel	بادیان	4	<i>Terminalia chebula</i>	Chebolic myrobalan	هليله سیاه
5	<i>Barago officinalis L.</i>	Starflower	گل گاوزبان	5	<i>Papaver somniferum</i>	Opium poppy	کونکار
6	<i>Plantago ovate</i>	Ispaghula husk	اسپرزه	6	<i>Nigella sativa L.</i>	Black seed	سیاه دانه
7	<i>Ziziphus jujuba</i>	Common jujube	عناب	7	<i>Piper nigrum</i>	Black pepper	مرچ سیاه
8	<i>Artemisia vulgaris L.</i>	Common mugwort	بوی مادران	8	<i>Zingiber officinale</i>	Common ginger	زنجبیل
9	<i>Valeriana officinalis L.</i>	Garden heliotrope	سنبل الطیب	9	<i>Cinnamomum zeylanicum</i>	Cinnamon	دارچین
10	<i>Lavandula angustifolia</i>	English lavender	خیری دشتی	10	<i>Cuminum cyminum. L</i>	Cumin	زیره خوشبو

It was also found that leaves were the most common consumption parts of medicinal plants in Mazar - e -Sharif city, followed by seeds, herb, fruits, roots, bark, stigma, and flower, as shown in Figure 6. In terms of consumption methods, out of the 66 medicinal plants, 54 plant species were consumed orally, 7 plant species applied topically, and 5 plant species used for gargle.

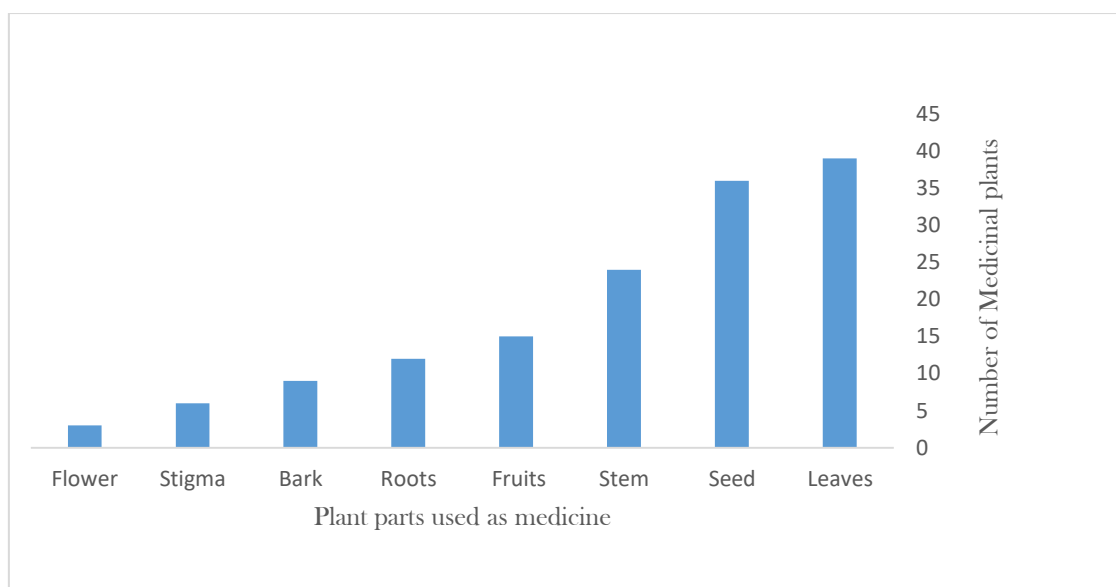


Figure 6. Plant parts used as medicine by Attaris in Mazar - e -Sharif city.

DISCUSSION

The present study aimed to investigate the supply and consumption methods of medicinal plants in Mazar - e - Sharif, the results of the study revealed that in different seasons (hot season from March to September and cold season from October to February), and different medicinal plants are used, that is also reported by Hossaini et al., (2008). Most of the people who visited Attaris in Mazar-i- Sharif, expected to treat their illness such as colds, kidney, arthritis, diabetes, Stomach upset and high blood cholesterol by consuming advised medicinal plants by Attars that a study by Mojab et al., (2003) indicated the same result. Except few medicinal plants such as Cardamom, Cinnamon, Common ginger, Flixweed, and Starflower that are imported from Iran, Pakistan, India and china, the majority of medicinal plants can be supplied from the other provinces of Afghanistan. Hosseini et al (2017) stated that proper planning by officials can accelerate the production and supply of commonly used medicinal plants in the natural habitats inside the Shiraz province, Iran. Although 20% of Attars in Mazar - e -Sharif had a university education but their education was not linked to their job (Attari) and it is indicated that most of the Attars gained their ethno botanical Knowledge from their ancestors or working in Attaris as medicinal plants sellers or trainee. It is concluded that local traditional knowledge of medicinal plants is the main platform for providing services in Mazar - e -Sharif Attaris'.

CONCLUSION

The large number of medicinal plant shops (Attaris) in the center of Mazar-e-Sharif city indicates that the citizens of Balkh province are familiar with medicinal plants and their uses. It is estimated that the people who sell medicinal plants in Mazar-e-Sharif city have sufficient knowledge about the use and consumption methods of medicinal plants. On one hand the unfavorable economic situation of some people who referred Attaris in Mazar-i- Sharif showed that the existence of traditional medicine systems (Attaris) is considered to be one of the urgent needs of the Mazar - e -Sharif society. On the other hand, the study showed that equally beside the poor people the rich people also visited Attaris and it is confirmed that the modern medical service/system in Mazar - e -Sharif is not very reliable. Analyzing the level of people's interest in the demand for medicinal plants and clarifying the supply capacity led to the design of long-term programs with the aim of

providing and facilitating cheap and accessible health services. It is inferred that due to the limited services of the modern medical system in Mazar - e -Sharif, officials, and planners must focus on cultivating medicinal plants and increasing awareness of the traditional medicine system to provide effective and cheap health services in Mazar - e -Sharif.

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CONFLICTS OF INTEREST

The authors declared no conflicts of interest.

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