



Factors affecting the demand for medicinal plants: Implications for rural development in Rasht, Iran



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ABSTRACT

Medicinal plants (MDPs) play a critical role in the healthcare provision of much of the world's population, with undoubtedly increasing demand both in the number of species and in the volume of plant material being traded, but what drives demand for MDPs is not well understood. This study was conducted to evaluate factors affecting the demand for MDPs in the area of Rasht in northern Iran. A questionnaire was used as the primary means of data collection from consumers who were familiar with MDPs. The mean scores of identified favouring and disfavoured factors along with the bootstrapping confidence interval and Shannon's entropy were used for ranking consumers' attitudes. The main promoters of the demand were: the low complication by the consumption of MDPs, the consumers' recommendation to others about the use of MDPs, and the lower prices of MDPs than common chemical medicines. Exploratory factor analysis revealed that the main promoters could be grouped into three factors related to i) health benefits and availability of MDPs, ii) effectiveness and suitability of MDPs, and iii) price and tradition. On the other hand, the lack of insurance coverage of MDPs consumers, the lack of proper processing and packaging of MDPs, and the lack of adequate information about MDPs use by the authorities were the most important inhibiting factors of consumers' demand for MDPs. Factor analysis revealed that the main deterrents could be grouped into four factors related to i) limited support of MDPs, ii) poor access to processed MDPs, iii) lack of alternatives and spatial limitations, and iv) uncertainty and lack of confidence. The data provide a useful snapshot of the factors affecting the demand for MDPs in Rasht of northern Iran. The information sheds some light on what drives the acceptance of MDPs by the consumers and provides interesting policy insights into the development of production concerning the sector of MDPs in northern Iran. Methodologically, the study could constitute a base for the formation of a theory for the demand of MDPs in future research.

1. Introduction

Medicinal plants (MDPs) are globally valuable sources of herbal products and of the most important sources of human food and medicines (Chen et al., 2016). They are an integral component of an alternative health care system in many societies, particularly in the developing countries (Hamilton, 2004). Over the past few years, the MDPs have regained a wide recognition due to an increasing faith in herbal medicine derived from its fewer side-effects compared to conventional medicine in addition to the necessity of meeting the requirements of medicine for an increasing human population (Dubey et al., 2004; Kala et al., 2006; Noorhosseini et al., 2011; Sen et al., 2011). Up to 80% of

the people in developing countries are totally dependent on herbal drugs for their primary healthcare and over 25% of the prescribed medicines in developed countries are derived from wild plant species (Dubey et al., 2004; Hamilton, 2004; Jasemi et al., 2016). Thus, demand of MDPs in different countries is increasing day by day. This seems to be due to the proved effectiveness of many of these materials in the scientific community. Therefore, there is a global trend of increasing acceptance for many popular and effective species in Europe, North America, and Asia, growing between 8 and 15% per year (Grünwald and Büttel, 1996).

Iran has a great history in the use of herbal plants for medicinal purposes (Sharafzadeh and Alizadeh, 2012). The flora of Iran contains

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more than 8000 species, of which 1100 are used in traditional Iranian medicine (Padasht, 2006; Omidbaigi, 2011; Mashayekhan et al., 2016). About 4000 t of medicinal herbs are harvested every year and almost 40 million ha of Iran's land is considered suitable for growing medicinal herbs. In addition, about 500,000 ha of rangelands and forests are earmarked for the cultivation of herbal plants, according to the sixth national development plan of Iran (Iran Daily, 2015). World trade volume of MDPs is more than 43 billion dollars and has been predicted to reach to 5 trillion dollars in 2050 (Mashayekhan et al., 2016). According to ethnobotanical studies, there are about 1000 plant species in Guilan Province, half of which can be used as medicinal herbs (Akbarzadeh et al., 2010; Iravani et al., 2013). It is therefore imperative to recognize the economic importance of MDPs and help raise awareness of these plants as an important natural resource. In general, demand for herbal medicines is increasing in developing countries, whereas there are signs that many consumers in developed countries are also turning to herbal medicines. Based on previous research, studies on MDPs demand concerning the attitude of consumers will be important (Iravani et al., 2013; Dehghanpur and Dehghanizadeh, 2014; Javanbakht and Esmaili, 2014). The demand potential of the MDPs trade had been largely unknown in the past in Iran and most likely in other developing countries and consequently poorly developed. The consumers of indigenous MDPs come from a wide range of social strata, with major differences in buying power and belief systems. However, the market only supplies a uniform range of raw or semi-processed products, with practically no choice as to the quality of the products, processing, and packaging. Thus, there are large opportunities to supply different types of medicinal products to suit the demands of a diverse consumer group.

A great deal of interest in MDPs for their potential to yield useful drugs has been developed in recent years worldwide. The increasing popularity of herbal medicinal products in developed countries has given new dimension to the demand of MDPs in the international market (Samsam Shariat and Moattar, 1990). The sheer magnitude of the people using plants for health care and the huge number of plant species used in these practices hinder the assessment of demand and supply of MDPs in the country. Also, the demand for MDPs reflects distinct cultural preferences and the relative opacity of the MDPs trade at the level of gatherers, traders, and the industry makes the assessment even more difficult. The lack of any mechanism for the maintenance and strengthening of information pertaining to supply, demand, and consumption of botanicals at the national and state level adds to the difficulty in making the demand and supply estimation for the country (Yesilada, 2005). In Iran, healthcare authorities have tried to integrate traditional medicine into the main healthcare system of the country and nowadays there are trained doctors and physicians who get specialized in traditional medicine and rely mainly on processed herbal products in their prescriptions (WHO, 2001). Most of the herbal products targeted and used in this sector are under strict regulatory and safety control. There is also another aspect of herbal medicine market in Iran that includes traditional herbal shops or *Attaris*.

Rural development in Iran was mainly designed for transforming the social lives of the villagers, including actions and initiatives taken to improve the standard of living in the countryside and remote villages (Azkia and Hooglund, 2011). Towards that direction, agricultural activities would play a key role and economic activities would relate to the primary sector, production of foodstuffs, and raw materials. However, in practice, relevant transformations that could facilitate the above targets were not materialized. The rural development plans were designed and implemented in a top-down, centralized model and, consequently, the rural people did not have a real standing in such plans. In addition, plans were not problem-oriented and were rather extrinsic in nature, somehow embarking on distribution of resources. The unfairness of this distribution intensified social inequalities. Despite this fact, local populations in rural areas can bring about endogenous initiatives for development.

The MDPs sector and its development are identified as one of the neglected areas in the strategies for rural development of Iran. Iran established its national policy on traditional medicine and regulation of herbal medicines in 1996, developing the main framework of laws and regulations (WHO, 2005). No national program currently exists. A national office for traditional medicine and regulation of herbal medicines was established within the Ministry of Health in 1981 as a part of the Department of Pharmaceutical Affairs and then an expert committee was established in 1995. Also, a national research institute on herbal medicines was founded in 1999. Most available herbal products are considered as dietary supplements and thus are not required to meet the standards for normal drugs. Due to the significance of MDPs for the country, the Iranian Academy of Medical Sciences has taken steps to promote traditional and herbal medicines and to integrate Iranian traditional medicine into the scientific conventional medical system (Bodeker et al., 2005). However, little has been done at the farmers' level, except from some micro-projects that focused on participatory approaches. Generally speaking, there are rather inappropriate conditions for the development of Iranian rural communities due to a lack of a coherent strategy for sustainable rural development, unavailability of appropriate infrastructures in rural areas, lack of coordinated programs in rural development, weak management of governmental structures, and lack of diversification in non-agricultural activities (Namdar and Sadighi, 2013). Lately, the Ministry of Agriculture has been drawing special attention towards the expansion of MDPs cultivation and a high professional committee observes and monitors all activities in this regard. Reorganizing the production, distribution, markets, and exports are among the main aims of the rural development in Iran. The objective of this study, in view of the growing interest in herbal products, was to assess the determinants of MDPs demand in Rasht of northern Iran, so that resource management strategies and policy interventions could be suitably modified in view of potential changes in the demand pattern. The information is expected to shed some light on what drives the acceptance of MDPs by the consumers and provide interesting policy insights into the development of MDPs production in northern Iran.

2. Methodology

2.1. Study location and selection of sample

The study was conducted in Rasht city of northern Iran. A distinct aspect of the herbal medicine market in Iran is the traditional herbal shops named *Attaris*. Most of the herbal products in this market sector are raw or partially processed herbal material. Consumers in this group mainly get prescription from herbal shop vendors or traditional healers. The present study considered this part of MDPs users. Accordingly, the statistical society was all consumers of MDPs in Rasht who approach these traditional herbal shops (*Attaris*) and the sample consisted of 100 people who bought or used MDPs and were generally familiar with the consumption of MDPs. It should be noted that the number of the units in this study may be small for a big city like Rasht and it may not reliably reflect the entire population. This is a serious limitation of the study concerning statistical inference, but given that improved understanding of the determinants of MDPs demand was considered more important than quantifying magnitudes and generalizing the results over the entire population, the sample was considered sufficient to map out different patterns of MDPs demand observed in the dataset. Participants were selected through a purposive sampling method. Purposive sampling is a non-probability sampling technique in which the researcher relies on his (her) own judgment when choosing members of the population to participate in the study (Baxter and Babbie, 2003). The primary consideration in purposive sampling is the judgment of the researcher as to who can provide the best information to achieve the objectives of the study with significant saving in time and money (Black, 2011). Purposive sampling can be very useful for

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