Psychiatric disorders are currently widespread across the globe. Anxiety and depression are two highly prevalent disorders in all human societies [1-3]. By definition, anxiety is a kind of natural feeling that is experienced in threatening situations. Clinical features of anxiety disorders are similar to and do not differ in type from those of normal anxiety, but differ in duration and severity. Anxiety disorders are one of the major humans’ issues [4]. Reduced synaptic threshold during anxiety increases the defensive response to normal stimuli. Studies have demonstrated the wide role of neurochemical systems in anxiety [5,6]. Anxiety is a type of mental uneasiness, perturbation and concern accompanied by physiological changes such as increased heart rate, hypertension, increased respiratory rate, and increased muscle tone, leading to the patient’s

### Keywords
Neurological disorders, Anxiety, Depression, Ethnobotany, Medicinal plants.
preparation for escape or defense [7-9]. Anxiety and depression are two of the major health issues in human communities, so that more than 20% of the US population suffer from the two disorders. Typically, chemical drugs used for anxiety disorders cause certain side effects, including dependency, drug withdrawal syndrome if the drug discontinued, sleepiness and lethargy [10]. Depression can dramatically decrease the performance of the patient in all areas including occupation and social and family relationships, and also leads to the lack of pleasure and emotional and mental pressures. Patients with depression may reach such a state of hopelessness that thoughts of suicide occur in them [11]. Depression in today’s society is considered a serious illness. This disease is one of the most common chronic diseases so that one out of ten outpatients suffers from major depressive disorder [12]. Depression is a common disease and most of patients with depression need treatment to improve. Although many compounds are used to treat depression, most of them lead to several unwanted reactions, including anticholinergic effects, orthostatic hypotension, and arrhythmias. Therefore, effective drugs with less toxicity are needed [13]. Accordingly, research attempts are being made to seek out effective drugs with less side effects. One of the options available to achieve this purpose, is medicinal plants that are used in the treatment of various diseases. The use of medicinal plants for the treatment of various diseases dates back to centuries ago [14]. Today, although a large proportion of the drugs used are chemical, it is estimated that at least one third of all medicinal products are plant-based, or are transformed after isolation from the plant. This drug source is used in the treatment of various diseases [15-26]. People have constantly been thinking of using medicinal plants to heal their illnesses and relieve their pain. These drugs have been used since old times and are the basis of the ethnobotany science. Ethnobotany deals with the use of medicinal plants in traditional medicine in different cultures. The purpose of the present study was to report medicinal plant species that local people use in Shahrekord as antianxiety and antidepressant agents.

**Materials and Methods**

**Studied region and data collection protocol**  
The present ethnobotanical study was carried out to report and obtain indigenous information and knowledge about antianxiety and antidepressant effects of medicinal plants in Shahrekord in 2017 via face-to-face interviews and a questionnaire distributed among 29 traditional therapists. The questionnaire that had previously been prepared was administered to the traditional therapists by the interviewers. The questionnaire included information about the location and demographic characteristics of the respondent, the local name of the plant and its organ(s) used. The interviewers referred to respondents in person to elicit their pharmacological and ethnobotanical knowledge, and then record their viewpoints related to herbal medicine. Out of 29 people, eight were female and 21 male. Their education level was from high school diploma to master’s degree. The data of the questionnaires were meticulously and appropriately tabulated, and were finally analyzed by the Excel software. In this study, the frequency of plant use was calculated per the formula below,

\[
\text{The frequency of use of the plant} = \left( \frac{\text{Number of people reporting the plant’s effect} \times 100}{\text{total number of people filling out the questionnaires}} \right)
\]

**Results**

Results showed that 13 species of medicinal plants in Shahrekord are used as antianxiety/antidepressant agents (Table 1, Fig. 1 & 2).

Figure 1 shows the distribution of plant families. As illustrated in Figure 1, the Lamiaceae family has the highest number of medicinal plants with antianxiety and antidepressant effects. The distribution of the number of other plant families is indicated in Fig. 1.

Figure 2 also illustrates the percentage of the frequency use of plants organs. Accordingly, the most frequently used plant organ for treatment of anxiety and depression was flower (33%) followed by leaf (29%). Additional information on the use of other plant organs is illustrated in Fig. 2.

TABLE 1. Ethnobotanical information about medicinal plants with antianxiety and antidepressant property in the Shahrekord region.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Herbal name</th>
<th>Local name</th>
<th>Frequency of use</th>
<th>Organs used</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Fritillaria imperialis L.</em></td>
<td>Liliaceae</td>
<td>Laleh vajgoun</td>
<td>24%</td>
<td>Bulb</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Ducrosia anethifolia L.</em></td>
<td>Apiaceae</td>
<td>Moshkak</td>
<td>31%</td>
<td>Aerial organs</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Anchusa italica Retz. (L.) DC.</em></td>
<td>Boraginaceae</td>
<td>Gavzaban</td>
<td>34%</td>
<td>Folwer, root, leaf</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Dracocephalum multicaule Montbr &amp; Auch.</em></td>
<td>Lamiaceae</td>
<td>Zarrin giah</td>
<td>44%</td>
<td>Leaf</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Stachys lavandulifolia</em></td>
<td>Lamiaceae</td>
<td>Chaye kouhi</td>
<td>3%</td>
<td>Leaf, stem</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Thymus vulgaris</em></td>
<td>Lamiaceae</td>
<td>Avishan</td>
<td>24%</td>
<td>Leaf</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Tripleurospermum parviflorum L.</em></td>
<td>Asteraceae</td>
<td>Babounch kazeb</td>
<td>1%</td>
<td>Flower</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Crataegus persica</em></td>
<td>Rosaceae</td>
<td>Zalzalak</td>
<td>6%</td>
<td>Leaf, fruit</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Hypericum scabrum L.</em></td>
<td>Hypericaceae</td>
<td>Gole raei</td>
<td>6%</td>
<td>Flower</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Valeriana officinalis</em></td>
<td>Caprifoliaceae</td>
<td>Sonboilatieb</td>
<td>6%</td>
<td>Root</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Centaurea cyanus</em></td>
<td>Asteraceae</td>
<td>Gole gandom</td>
<td>3%</td>
<td>Flower</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Rheum ribes L.</em></td>
<td>Polygonaceae</td>
<td>Rivas</td>
<td>6%</td>
<td>Leaf, flower, stem</td>
<td>Anti-anxiety/depression</td>
</tr>
<tr>
<td><em>Melissa officinalis L.</em></td>
<td>Lamiaceae</td>
<td>Badranjboyeh</td>
<td>3%</td>
<td>Aerial organs</td>
<td>Anti-anxiety/depression</td>
</tr>
</tbody>
</table>

![Fig. 1. The distribution of plant families.](image-url)
Discussion

In the process of modulating anxiety, several receptors such as GABA, serotonin, catecholamines and sex hormones are involved [27]. GABA is the most important inhibitory neurotransmitter in the brain. The binding of the GABA to the receptor opens the chloride ion channel and causes the inhibition and hyperpolarization of neurons [28]. Glutamate is also the most important excitatory neurotransmitter in the central nervous system and its effects are exerted through receptors in the membrane called ionotropic receptors and metabotropic receptors. The glutamate concentration is far more in the nervous system than in other tissues of the body, and in synaptic transmission, long-term changes are involved in the irritability of neurons and neuronal development. In spite of the many impacts of glutamate in the physiological function of the neurons, this compound is also a potent neurotoxin, and is involved in many disorders of the central nervous system, including neurodegenerative disorders, ischemia, and trauma [29]. Antidepressants increase the concentration of one or more of the chemical substances of the brain, namely, neurotransmitters that the brain nerves use to establish communication with each other. Neurotransmitters that are affected by antidepressants include norepinephrine, serotonin and dopamine. In depression, serotonin and noradrenaline are impaired [30,31]. Medicinal plants reported in this study are likely to produce antianxiety and antidepressant effects through a mechanism similar to that of chemical drugs. Antianxiety and antidepressant properties of some of these plants or other ones have been confirmed in experimental and clinical trials [32-36]. However, the mechanisms involved in their actions are not clear.

It has been shown that there is an association between oxidative stress and neuropsychiatric disorders including anxiety and depression. In fact, development of anxiety or depression is associated with a decrease in antioxidant status and increase in oxidative stress. Depression therapy, even with conventional drugs is also associated with increase in antioxidant levels and reduction in damages induced by oxidative stress [37].

Antioxidants scavenge free radicals such as reactive oxygen species (ROS) and reactive nitrogen species (RNS) and reduce oxidative stress preventing neuronal damage caused. This may result in reduction of anxiety and depression symptoms. The relation between oxidative stress and anxiety or depression opens a novel target for treatment of neurodegenerative and neuropsychiatric disorders [37]. The plants mostly, including the presented plants in this article have antioxidant activities. In this regard a lot of medicinal plants with antioxidant activity have been shown to be effective against anxiety and depression [38-47]. Furthermore, these patients mostly have other disease and plants usually are...
effective against a number of diseases [48-51]. Therefore, these plants might be beneficial for them more than conventional drugs. These plants or their components due to having antioxidant activity may also be useful if they can be used as complementary with traditional drugs to reduce their toxic effects [51].

Authors’ Contributions
S.A, H.T. and B.F. designed and planned this study. All authors shared samples collection, performing the tests, manuscript writing, drafted, revised the manuscript and approved the final manuscript.

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