

## RESEARCH ARTICLE

### PATTERN OF HUMAN FASCIOLIASIS IN THE PROVINCE OF GIULAN, IRAN (SINCE 2008-2014)

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#### ABSTRACT

**Introduction** Fascioliasis is caused by two species of parasitic trematode that mainly affect the liver. It belongs to the group of food borne trematode infections and is a Zoonose, meaning an animal infection that may be transmitted to humans. Human cases occurred now increasingly reported from Europe, the Americas and Oceania (where only *Fasciola hepatica* is transmitted) and from Africa and Asia (where the two species overlap). WHO estimates that at least 2.4 million people are infected in more than 70 countries worldwide, in Iran estimates that at least 6 million people are infected in provinces of Giulan, Mazandaran, Tehran, Kermanshah, Ardabil, Khuzestan and Lorestan and Giulan province, especially one of the most important of endemic centers in the World. Most cases in the province of Giulan reported from Anzali city. This study aimed to determine the prevalence and Pattern of Human Fascioliasis the Province of Giulan, Iran (Since 2008-2014).

**Materials and Methods:** This study was an analytic-descriptive and manner descriptive of retrospective study. All episodes (Imported Fascioliasis) of disease from 2008 to 2014 which were documented in Giulan Central Health Service were carefully studied and reported.

**Results:** A total of 375 confirmed reported Fascioliasis patients from 2008 to 2014 were studied, Of the 245 patients (65.2%) in urban areas and 130 (34.8%) were living in rural areas, the difference was significant ( $P < 0.05$ ). Anzali City with 169 cases (45.1%), Rasht, with 77 cases (20.5%) and Lahijan with 70 cases (18.7%) were the most common parasitic infections and other cities *Fasciola* prevalence was low and the difference was significant ( $P < 0.05$ ). Most patients of the female sex, with 246 cases (56.6%) and the lowest for males and 129 (34.2%) and the difference was significant ( $P < 0.05$ ). According to the age of the highest rates of infection in the age group 59-40 years old Fascioliasis with 141 cases (37.6%), the lowest rate in *Fasciola* infection related to age group was 19.0 years, with 30 cases (8%) and no significant difference ( $P > 0.05$ ). Also Fascioliasis in jobs, education and months showed no significant difference ( $P > 0.05$ ).

**Conclusion:** Although Fascioliasis has been designed on elimination program in Iran, but in the province of Giulan has reported imported Fascioliasis yet and its importance in causing intermittent pain, jaundice and anemia. Pancreatitis, gallstones and bacterial super-infections and other infectious disorders is not negligible.

**Key Words:** Human Fascioliasis, Giulan, *Fasciola hepatica*, Iran.

#### INTRODUCTION

Fascioliasis is one of the most important parasitic diseases common among both livestock and humans. Usually is caused by *Fasciola hepatica*, which is a common liver fluke of sheep and cattle. In general, Fascioliasis is more common and widespread in animals than in people. Even so, the number of infected people in the world is thought to exceed 2 million. It is a global disease, and human cases have been reported from more than 75 countries worldwide. Recognized areas of high transmission are the highlands of South America, the Nile valley, the Caspian Sea basin, as well as East Asia and south-east Asia. No countries can be considered free from the risk of Fascioliasis (Mas- coma, 2005; Asadian *et al*, 2012). Until 1989, in Iran human Fascioliasis was sporadic but after occurring two important outbreaks of Fascioliasis in 1989 and 1999, during which the world largest ever out-breaks occurred in Giulan Province, northern Iran and affected more than 10000 people in each of which the feature was transformed and its importance became obvious. Following the occurrence of the various features of human Fascioliasis, the need for

verifying the prevalence in different areas of Iran was palpable. Indeed lots of challenges on the different aspects of the disease, including treatment, diagnosis, following up, incidence, prevalence etc now have been arisen which caused the researcher of the country to focus more on this disease and Although human Fascioliasis has been designed on elimination program in Iran, but is not negligible (Salahi moghadam *et al*, 2013; Hatami *et al*, 2012; maguire *et al*, 2010). This study aimed to determine the prevalence and Pattern of Human Fascioliasis the Province of Giulan, Iran (Since 2008-2014).

#### MATERIALS AND METHODS

This study was an analytic-descriptive and manner descriptive of retrospective study that a cross-sectional study using the criteria of descriptive epidemiology Census, observation and clinical findings, laboratory variation in the population of the Province of Giulan (Since 2008-2014), Iran. All episodes (Imported Fascioliasis) of disease from 2008 to 2014 which were documented in Giulan Central Health Service were carefully studied and reported. All of data collected and the the questionnaire was completed, the data punched and analyzed.

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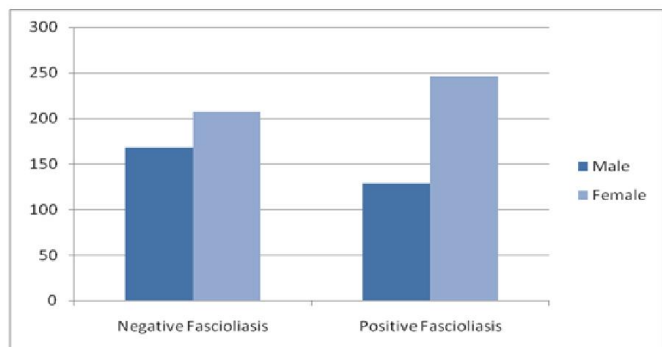
**RESULTS**

A total of 750 individuals that surveyed, 375 individuals confirmed reported with Fascioliasis (from 2008 to 2014) were studied and 375 individuals with the same demographic but without Fascioliasis were studied. Among 375 individuals that were infected, 130 (34.7%) were living in rural areas and 245 (65.3%) were living in urban areas and the difference was significant (P=0.000), according of education showed that: the highest rates of infection in the education to Fascioliasis diploma with 233 cases (62.1%), the lowest rate in the education to Fascioliasis with 7 cases (1.9%) related others and the difference was significant (P=0.002) (Table No.1).

**Table 1. Prevalence of Fascioliasis infection in the Province of Giulan, Iran (Since 2008-2014) according of resident and education**

Groups	Fascioliasis Negative		Fascioliasis Positive		P-value
	N	%	N	%	
	Resident city	290	77.3	245	
village	85	22.7	130	34.7	
Education					0.002
Illiterate	23	6.1	50	13.3	
Diploma	233	62.1	233	62.1	
Academic	112	29.9	83	22.1	
Others	7	1.9	9	2.4	

Prevalence of Fascioliasis according of sex showed that Most patients of the female sex, with 246 cases (55.6%) and the lowest for males with 129 (34.4%) and the difference was significant (P=0.002), (Fig No.1).



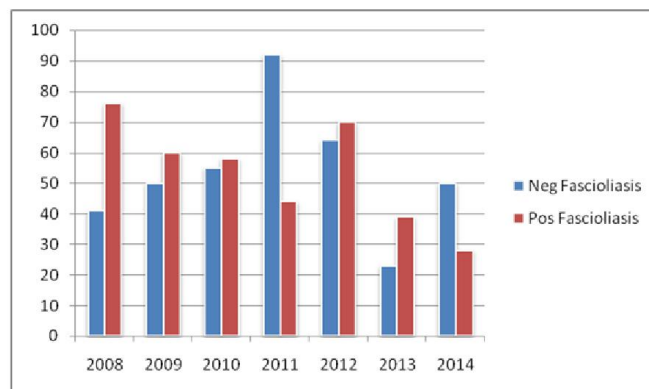
**Fig.1. Prevalence of Fascioliasis in the Province of Giulan, Iran (Since 2008-2014) according of sex**

Prevalence of Fascioliasis according of city showed that: Anzali City with 169 cases (45.1%), Rasht, with 77 cases (20.5%) and Lahijan with 70 cases (18.7%) were the most common parasitic infections and other cities Fasciola prevalence was low and the difference was significant (P=0.000), (Table No.2).

Prevalence of Fascioliasis in the Province of Giulan, Iran (Since 2008-2014) according of year showed that: the highest rates of infection in the year of 2008 to Fascioliasis with 76 cases (20.3%), the lowest rate in the year of 2014 to Fascioliasis with 28 cases (7.5 %) and the difference was (p=0.000), (Fig No.2).

**Table 2. Prevalence of Fascioliasis in the Province of Giulan, Iran (Since 2008-2014) according of city**

Groups	Fascioliasis Negative		Fascioliasis Positive		P-value
	N	%	N	%	
	City				
Anzali	14	3.7	169	45.1	
Rasht	291	77.6	78	20.8	
Lahijan	9	2.4	70	18.7	
Langroud	29	7.7	13	3.5	
Roudbar	4	1.1	5	1.3	
Astane	1	0.3	10	2.7	
Roudsar	9	2.4	3	0.8	
Siahcal	2	0.5	8	2.1	
Astara	0	0	1	0.3	
Rezvan Shahr	3	0.8	2	0.5	
Some Sara	5	1.3	1	0.3	
Nou shahr	1	0.3	1	0.3	
Masal	3	0.8	1	0.3	
Shaft	1	0.3	1	0.3	
Talesh	2	0.5	1	0.3	
manjil	1	0.3	1	0.3	



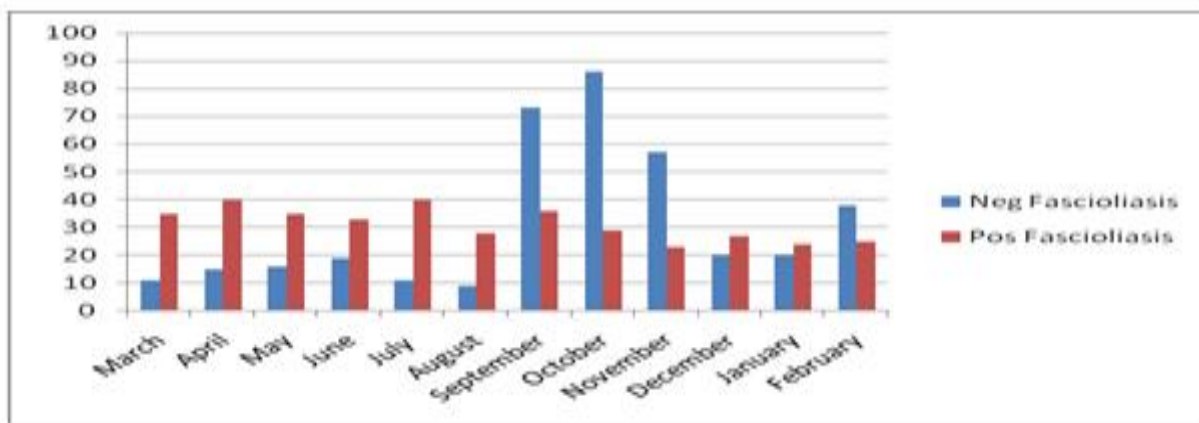
P Value=0.000

**Fig.2. Prevalence of Fascioliasis in the Province of Giulan, Iran (Since 2008-2014) according of year**

Prevalence of Fascioliasis according to the age of the highest rates of infection in the age group 59-40 years, Fascioliasis with 141 cases (37.6%), the lowest rate in Fasciola infection related to age group was 19.0 years, with 30 cases (8%) and showed significant difference (P=0.000), and according of job groups showed that: the highest rates of infection in the house job group with 154 cases (41.1%), the lowest rate in the worker job group with 10 cases (2.7%) was and showed significant difference (P=0.000), (Table No.3).

**Table 3. Prevalence of Fascioliasis in the Province of Giulan, Iran (Since 2008-2014) according age and job**

Groups	Fascioliasis Negative		Fascioliasis Positive		P-value
	N	%	N	%	
	Age groups				
0-19(n=86)	35	9.3	30	8.0	
20-39(n=27)	180	48.0	112	29.9	
40-59(n=86)	96	25.6	141	37.6	
60-79(n= 130)	64	17.1	92	24.5	
Job Groups					0.000
Worker	12	3.2	10	2.7	
Farmer	73	19.5	12	3.2	
House	76	20.3	154	41.1	
Student	79	21.1	29	7.7	
Employee	41	10.9	42	11.2	
Self- employee	58	15.5	27	7.2	
Un- employee	12	3.2	14	3.7	



P Value=0.000

Fig.3. Prevalence of Fascioliasis in the Province of Giulan, Iran (Since 2008-2014) according of month

## DISCUSSION

There was significant difference as regards place of residence (Village or city), literacy, and city of residence, year, age groups, job and months of the year. This study follows the continuous studies conducted in Iran to determine the situation of human Fascioliasis. This province has required criteria as regards involving with parasitic diseases (10-12). Among these criteria ecological situation, adjacent to endemic areas of Fascioliasis, culture, food habitation, etc might be named. It shows that further monitoring is needed to detect the real situation of the disease in the area. Similar to other serological studies it is not possible to judge the real rate of infection and further diagnostic methods such as stool exam are necessary. Although in Iran, two outbreaks of human Fascioliasis during the years of 1989 and 1999 have been occurred called the world's largest ever outbreaks (5, 6), Human Fascioliasis has been increased during the last four decades and it has been estimated that 2,400,000 of human cases are found in 61 countries with 180 million inhabitants at risk. In comparison to other countries of the world especially those of nearby region, it shows that Fascioliasis is a disease of immediate topic for consideration not only in Iran but in all other countries. The population at risk of human Fascioliasis in Pakistan is considered the 0.31% prevalence of human Fascioliasis has been reported in Lahore, based on fecal exams performed in 2003-2005 (Qureshi et al, 2005). In Yemen human Fascioliasis was identified in 0.5% of 37,000 people during the period 1980-1982; *Fasciola* ova were found 185 cases (Frag, 1985). In Egypt, where 27.7 million people estimated to be at risk and the prevalence rate is between 7 and 17% in its rural areas, the infection becomes an emerging health problem (El-Khoby T, 1997).

## Conclusion

Obtained pattern of human Fascioliasis in the province of Giulan shows although a reduction in the prevalence and severity of human Fascioliasis. But considering the importance of the disease and its endemicity, the preventive measures should be taken against human Fascioliasis in Iran and a global study to detect the rate of Fascioliasis is necessary in Iran. Health authorities should pay attention to prevent of spreading the disease through public education, mass treatment, ecological consideration etc.

The ease of sending local foods from endemic areas and frequency of intermediate hosts has prepared a situation which increases the possibility of involving with the disease.

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## Authors' Contributions

Study design, literature review and manuscript preparation; Ali Fattahi Bafghi, data collection, funds collection and data interpretation; Yasman Alijany and Mustafa Mirza Nejad

## Financial Disclosure

There is no conflict of interest.

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