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Study relation between in potato and esophagus cancer epidemic in Ardabil province

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Abstract

The present study is carried out to investigate the relation between potato consumption with esophagus cancer in Ardabil city. This research is cross-sectional descriptive and the required data was collected through the completion of questionnaires by patients with esophageal cancer in Ardabil city hospitals, the collected data from questionnaires was analyzed by spss software to study the correlation or relationship between dietary habits. The obtained results show that inappropriate feeding practices and the entrance of poisonous materials to people's body can have a direct relation with this disease, the study performed about the role of people feeding show that drinking hot tea, people's residence place, age levels, education levels, sunflower seed consumption, and potato consumption, tobacco consumption, drink, were the main factors. So, these main problems can be solved by changing people attitude, thinking and raising their awareness via a series of educational programs, brochures, local and regional advertisements, this way we can prevent the occurrence or acceleration of this disease.

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Introduction

Potato in terms of importance and production is one of the important crops in the world and is among the most widely consumed crops (Najam *et al* 2008). The Strategic and nutritional importance of potato in human feeding and the variety of weather in different regions of our country makes regional research essential to achieve higher efficiency in the area unit (Zahedi *et al* 1994). Although proper fertilization is necessary to increase potato production but too much fertilizer consumption decreases the product quantity and quality, increases environmental pollution and threatens public health (Bagherzadeh *et al.*, 2003 and Fazeli *et al.*, 2004). Consumption management and using suitable nitrogen amount in the potato cultivation is very sensitive and accurate. Using Nitrogen more or less than the required amount, and it's early or late usage has effects on the qualitative and quantitative performance of the produced tubers (Rezaei *et al.*, 1995). In human, Nitrates is absorbed quickly from stomach and the beginning of small intestine and at least 25% of it is transferred to saliva. So that, its concentration in saliva is 10 times larger than plasma. In adults, 5 to 7 percent of nitrates entered the body is converted to nitrites. In children and people who suffer from stomach diseases, nitrates conversion is higher due to the low PH level of their stomach (Rostami *et al.*, 2010). Cancer is one of deadly and disturbing diseases that today people are grappling with it, and it's major cause is environmental and genetic factors that effective factors are identified in this case (Wikinson *et al.*, 1999).

Cancer occurrence in each region is related to the racial, geographical and environmental conditions and therefore we observe a significant difference in the prevalence and abundance degree of cancer types in different regions, that the outbreak of esophagus cancer is high in the geographical longitude more than 32 degrees and the impact of environmental fields and geographical conditions and occupation types are related to this disease (Rezavani *et al.*, 1994). Cancer is the second cause of death after cardiovascular diseases in the world and it is the third

cause of death after cardiovascular diseases and accidents in our country. (Esmaili *et al.*, 2000) Müller Hagen *et al* (1993), reported the different figures reaction to different nitrogen consumption. In their study, the effect of different Nitrogen consumption (0, 50, 100, 150 kg pure Nitrogen per hectare) was studied on three potatoes types (Downva, Mthilda and Beet), they reported that the tuber performance is increased in Beet type with increasing nitrogen consumption but the maximum tuber performance in Downva and Mthilda type is obtained with the use of 100 kg nitrogen per hectare.

In this study, usage of high amounts of nitrogen produced bigger tuber. Raeesi *et al* (1992), reported a very significant effect of nitrogen on tuber performance. In this study, four nitrogen levels of 0, 90, 180, and 270 kg in hectare were used. The maximum performance was obtained with the use of 180 kg nitrogen per hectare and increase from 180 to 270 kg nitrogen per hectare did not increase the performance. Keshavarz *et al* (2002) reported that by increasing nitrogen concentration, in the root environment the total nitrogen amount in plant tissues increases. Organic fertilizers compared to mineral fertilizer deliver nitrogen slowly to plants but chemical fertilizers especially Nitrate fertilizers, deliver large amounts of nitrogen, they are absorbed quickly in the plant and increase the nitrate amount. Prospa *et al* (1993) reported that by increasing the use of nitrogen fertilizer, the average tuber weight increases. MC Gelashen (1972) believes that geographical data are increasing in medical studies and data should be collected and completed continuously. The purpose of this study is to investigate the relationship between potato and esophagus cancer in Ardabil city.

Materials and methods

This study is descriptive and a questionnaire was prepared to obtain the required data. For this purpose, a questionnaire about dietary habits that could be effective in cancer occurrence was prepared and distributed among patients with esophagus cancer in hospitals. The statistical population of this

study is all patients were admitted to hospitals in Ardabil city. Their address was obtained from their hospital records and patients, who were under treatment, were interviewed. The number of respondents was 23 persons. Data obtained from questionnaires were used to evaluate the correlation or relationship between dietary habits, particularly the consumption of potatoes and outbreak of cancer and it was analyzed by spss software.

Findings and conclusions

In this section the results of the field research which were performed about Kido test, are presented. The remarkable point is that the available tables and data are related to tests which a significant relation

between test parameters is observed. Kido test results (X₂), and comparisons between the existing characteristic of human social behavior in everyday life, shows that there is a significant relationship in some cases. The amount and existence of this correlation is extracted from the obtained data from the field research. Then, the data was classified and analyzed statistically in the powerful SPSS software. After the evaluation of the output data, those data with the highest scientific correlation have been selected as the accepted correlation and the results are listed in tables. In each section, the first table represents the collected data from the questionnaire. The second table, shows the statistical parameters which were analyzed as the output data.

Table 1. Relation between potato and cigarette in emergence of esophagus cancer.

		cigarette			Total
		No	Yes	recreational	
Potato	don't eat at all	0	5	9	14
	One or two times in a week	5	1	0	6
	One another day	2	1	0	3
Total		7	7	9	23

	Value	difference	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.367 ^a	4	.002
Likelihood Ratio	22.722	4	.000
Linear-by-Linear Association	11.945	1	.001
N of Valid Cases	23		

Table 2. Relation between Residence place and Beverage in emergence of esophagus cancer.

		Beverage			Total
		Tea	Coffee	Other	
Residence place	city	3	7	6	16
	rural	6	0	1	7
Total		9	7	7	23

	Value	Difference	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.505 ^a	2	.009
Likelihood Ratio	11.068	2	.004
Linear-by-Linear Association	5.505	1	.019
N of Valid Cases	23		

The relationship between potato consumption and tobacco consumption

Kido test results (X₂) and the comparison of two

existing characteristics between potato and different tobacco types consumption showed that there is a significant relationship between these two

characteristics at the level of 97% and 98% and in analyzing data and studying the nitrate accumulation in potato and the role which the existing nitrate in food plays in esophagus cancer, there is a significant and direct relationship between the cancer occurrence, especially due to the available nitrates in

potato tubers. In other words, from the total 23 patients, more than 60% of them were smoking and more than 60% of them consume potatoes weekly, and these two factors have a great impact on the acceleration of this disease.

Table 3. Relation between Potato and Sunflower Seeds in emergence of esophagus cancer.

		Sunflower Seeds			Total
		No	Yes	Recreational	
Potato	We don't eat at all	11	0	3	14
	One time in a week	1	5	0	6
	One another day	0	3	0	3
Total		12	8	3	23

	Value	Difference	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.418a	4	.001
Likelihood Ratio	24.777	4	.000
Linear-by-Linear Association	.379	1	.538
N of Valid Cases	23		

Table 4. Relation between Age and drinking hot tea in emergence of esophagus cancer.

		Drinking hot tea			Total
		Hot and warm	warm	Very hot	
Age	0-50	0	6	5	11
	50-100	7	4	1	12
Total		7	10	6	23

	Value	Difference	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.042a	2	.007
Likelihood Ratio	12.974	2	.002
Linear-by-Linear Association	8.879	1	.003
N of Valid Cases	23		

The relationship between potato consumption and tobacco use in the occurrence of esophagus cancer

The Relationship between the residence place and type of beverage

Kido test results (X2) showed a relationship between the residence place of patients and the consumption of different beverages at the level of 96%. So that among the studied patients, 30 % of them were living in rural areas and 49 % of patients have

recently migrated to the cities whom constitute about 79 % of patients and the rest of patients live in the cities. In the second stage of the test (X2) among the studied patients, 39 % of them drink too much tea and 30 % of them drink coffee frequently and the rest which constitute 31% of patients are people who use a variety of beverages and these people usually drink hot beverages, and these hot or semi hot beverages have a positive impact on the occurrence or acceleration of this cancer.

The relationship between the residence place and beverage type in esophagus cancer occurrence

The relationship between potato consumption and Sunflower Seeds consumption

The results of Kido test (X2) showed that there is a significant relation between the potato consumption and sunflower seeds consumption at the level of 98%, and because potato, a significant relation between

these two materials and their nitrate content and their role in cancer occurrence can be estimated and in the second step of Kido test (X2) , which is related to the sunflower seeds consumption, the patients used it more than one time a week, so in the next steps of the test and data analysis, it can be concluded that there is a significant relationship between potato consumption and sunflower seeds consumption and the occurrence of cancers .

Table 5. Relation between Age and Sunflower Seeds in emergence of esophagus cancer.

		Sunflower Seeds			Total
		Yes	No	Recreational	
Age	0-50	10	1	0	11
	50-100	2	7	3	12
Total		12	8	3	23

	Value	Difference	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.814 ^a	2	.002
Likelihood Ratio	14.999	2	.001
Linear-by-Linear Association	8.687	1	.003
N of Valid Cases	23		

Table 6. Relation between Age and Cigarette in emergence of esophagus cancer.

		Cigarette			Total
		No	Yes	recreational	
Age	0-50	1	1	9	11
	50-100	6	6	0	12
Total		7	7	9	23

	Value	Difference	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.130 ^a	2	.000
Likelihood Ratio	20.358	2	.000
Linear-by-Linear Association	12.016	1	.001
N of Valid Cases	23		

The relationship between potato consumption and Sunflower Seeds consumption

Relationship between age and consumption of hot tea

Kido test results (X2) showed a significant relationship between age and drinking hot tea at a

level of 98% and 97%, that among studied patients ,47% percent were under 50 years and 53% were older than 50 years. In the next step of test, a comparison is made between age of patients and hot tea consumption. From 23 persons, 43% of them drink warm tea and 30% of them drink very hot tea and the other 35% of patients drink both hot and warm tea, so we can conclude that there is a significant correlation

between the consumption of hot tea and related diseases.

Relationship between age and consumption of hot tea in esophagus cancer occurrence

The relationship between sunflower seeds consumption and patients age

Kido test results (X₂) showed a significant relationship between sunflower seeds consumption and age of patients at a level of 97% and 98% , that in the test corresponded to the patients age criteria,

their age was classified in to two groups, the first group are under 50 years old and the second group are above 50 years old that people above 50 years old constitute 53% of patients and 47% of patients were under 50 years old and in the second step of Kido test (X₂) , which is related to the sunflower seeds consumption and patients ages,13% of patients often consume sunflower seeds the patients and 53% of patients consume sunflower seeds always and 34% of patients consume it rarely, so there could be a relationship between people older than 50 years old and consuming sunflower seeds.

Table 7. Relation between Job and Education in emergence of esophagus cancer.

		Education			Total
		Illiterate	Just able to read and write	Guidance school diploma	
Job	Farmers and ranchers	14	6	0	20
	Housekeeper	2	0	0	2
	Free or officer	0	0	1	1
Total		16	6	1	23

	Value	Difference	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.862a	4	.000
Likelihood Ratio	9.574	4	.048
Linear-by-Linear Association	3.911	1	.048
N of Valid Cases	23		

Table 8. Relation between Beverage and Cigarette in emergence of esophagus cancer.

		Cigarette			Total
		No	Yes	Recreational	
Beverage	Tea	6	3	0	9
	Coffee	0	3	4	7
	Others	1	1	5	7
Total		7	7	9	23

Pearson Chi-Square
Likelihood Ratio
Linear-by-Linear Association
N of Valid Cases

The relationship between sunflower seeds consumption and patient’s age in esophagus cancer occurrence.

The relationship between sunflower seeds consumption and patient’s age in esophagus cancer occurrence.

The relationship between patient’s age and smoking cigarette

Kido test results (X₂) and studying the existing relation between the patient’s ages and smoking cigarettes showed a significant relationship at a level of 99%, 47% of patients were under 50 years old and 53% of patients were older than 50 years old. In the second step of Kido test (X₂), which studies the

correlation of Tobacco, among the patients, 30% of them smoke cigarette and other kinds of tobaccos and 30% of patients did not smoke, and 40% of them smoke recreationally, in other word, more than 70% of patients smoke cigarette and other kinds of tobaccos so there could be a significant relationship between patients age and smoking.

The relationship between patient's age and smoking cigarette in esophagus cancer occurrence.

The relationship between occupation and education

Kido test results (X_2) showed that there is a significant relation between occupation and education of patients, at a level about 97% , which in this test, 86% of patients had jobs in agriculture, animal husbandry, and 8% of patients were housewives and 6% of them had free works and most of them (81%) were Illiterate or were just able to read and write. The results of data analysis showed us that there is a significant relationship between occupation and education level of patients.

The relationship between occupation and education in esophagus cancer occurrence.

The relationship between beverages and smoking cigarettes

Kido test results (X_2) showed that there is a significant relation between smoking and consuming different hot beverages at a level about 99% , which about smoking, 30% of patients did not smoke, and 30% of them smoke frequently and the 40% of patients smoke recreationally, so we can say more than 70% of patients smoke. In the second step of Kido test (X_2), which is related to drinking different hot beverages, 40% of patients drink very hot tea ,and in 30% of patients drink coffee frequently and 30% drink other types of hot beverages. This information helped us to define a significant relationship between smoking and hot beverages which are effective in the occurrence of cancer disease.

The relationship between smoking and consumption of beverages in the occurrence of esophagus cancer

Conclusions

Environmental factors are one of the main causes of Esophagus cancer, which there are factors among the environmental causes which can be corrected through correcting people life styles and prevent this disease or even prevent its progression, one of the major factors in esophagus cancer is related to patients feeding, and among feeding factors, some important factors are considered, the results of research show that inappropriate feeding practices, causes toxic substances enter the human body, and at next steps of research on the role of feeding in patients who suffer from esophagus cancer, hot tea is the most important factor that stimulates the stomach lining too much and make it vulnerable against the disease, also we can refer to drinking water that these patients often lived in the rural and drink well water which is polluted by the entrance and deposition of the nitrate fertilizers which are used in agriculture, and one of the dangers of nitrate fertilizers is it's usage as fertilizer for potato, In Azerbaijan and Ardabil region, potato is a main crop for farmers, and these fertilizers make potatoes grow fast and become excessively big, unfortunately in this region, people use potato too much and this made potato one of their main food, so we can identify hot tea, the residence place, the age level, the education level, sunflower seeds and potato consumption , smoking, beverages as the main factors, that can be improved by changing people attitude and mentality about the above factors via a series of training programs - brochures - and local and regional advertisement, and prevent the occurrence or progression of this deadly disease by raising people awareness level and educating them. Strategies: 1. Informing the authorities and farmers; 2. Research and study to increase foods that are repulsive of nitrate and nitrite; 3 Use non-chemical drugs such as Algumad and Spirulina to remove toxic substances from the body 4. Modification of lifestyle and diet of people.

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