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A STUDY ON LIFESTYLE OF THE FAMILIES OF PATIENTS WITH COLORECTAL CANCER AND THEIR PERFORMANCE IN SCREENING AHVAZ CITY

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ABSTRACT

As it is evident, individuals' unique way of living, spending free time and nutrition can guarantee their health or cause their disease. Today, many people know that selecting their lifestyle is associated with their disease, especially with cancer. From another point of view, lifestyle is a social issue rather than an individual issue. Since most of people live with their families in Iran, the present study aims at investigating lifestyle of the families of patients with cancer and specifically, colorectal cancer, based on screening in Ahvaz city. In such disease, early diagnosis (before symptoms incidence) is of high importance in the way of treatment and its effectiveness. Accordingly, it is necessary to perform screening experiments in these patients. In this regards, 20 patients identified by screening colorectal cancer in Ahvaz city were interviewed. To complete the information of patients' disease progress, their medical documents have been used and their physicians have also been interviewed. The statistical sample has been selected thorough systematic random sampling and the obtained data has been analyzed using SPSS software. Based on the findings of the study, lifestyle of the families of patients with colorectal cancer has highly influenced the patients' diseases progress.

Keywords: *Colorectal Cancer, Screening Ahvaz City, Life Style*

INTRODUCTION

Some studies have studied the relation of demographic features including age, duration of disease, income, and education with health-focused behaviors (Esin, 1994; Kerr and Robins, 1955; and Hablokonglek, 2000). Weitzel (1989) investigated the relation between health promoting lifestyle and age. He reported a negative correlation between age and sport and a positive correlation between health responsibility taking and nutrition. Stromborg *et al.*, (1990) indicated that age, income and education are good predictors for lifestyle promoting cancer patients' health. Using path analysis, Jonson *et al.*, (1993) showed that age, income and education are related with health-focused behavior in healthy individuals. Various studies referred to some of them indicate that health promoting lifestyle with some demographic factors can affect disease intensity of cancer patients. However, this fact has not been investigated enough by domestic researchers. In this regards, the present study has aimed at representing the importance of lifestyle in order to determine the effect of lifestyle in the improvement of patients with colorectal cancer identified in screening of Ahvaz city.

The prevalence of colorectal cancer has been increased from 1970 (Keighley *et al.*, 2004). In the United States, colorectal cancer has recognized as the third common cancer after lung and prostate cancers in men and breast cancer in women which have led to death. In Europe, Colorectal cancer has been recognized as the second common cancer and the third fatal factor after lung cancer in men and breast cancer in women (ACS, 2008). Continuous raise of environmental risk factors for colorectal (obesity, smoking, less physical activity, and inappropriate diet) has brought about the necessity of colorectal cancer prevention not only in Western countries but also in Asia (Ferlay *et al.*, 2008). Such necessity has led to a request from European Commission to its delegation in order to establish national screening programs for colorectal cancer (Sung *et al.*, 2003).

A fecal occult blood test (FOBT) is the commonly used test in colorectal cancer screening. But in the subsequent years, sigmoidoscopy and colonoscopy became more common alternatives (Rex *et al.*, 2009).

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In America and Germany, colonoscopy has been greatly promoted as the first screening method while pre-screening stage with FOBT is still recommended in the countries like England (Landsdrop, 2009).

At the present time, no method has been generally accepted or estimated screened individuals' satisfaction or evaluated the results of colorectal cancer screening process in life quality conditions (Regula *et al.*, 2006). In this regards, some studies has been conducted in Iran and screening results of Ahvaz, as ac se study, has been considered by the present paper.

On the other hand, as previously done studies reported, there is a direct relation between individuals' life style and cancer incidence so that lifestyle plays a more significant role in the incidence of the common cancers such as breast, prostate and colorectal (Weinberg *et al.*, 2008). Preventing cancer includes primary prevention (preventing the incidence of disease) and secondary prevention (early diagnosis). For primary prevention, it is necessary to identify the factors involved in the incidence of cancer. The role of lifestyle is distinguished by the difference of cancer incidence among various nations and the difference of before and after immigrations; so, cancer can be prevented through modifying lifestyle to a great extent (Martin-Moreno *et al.*, 2008). If proper actions of cancer prevention are started performing from now, 2 million deaths due to cancer will be prevented up to 2020. Lifestyle should be modified to prevent cancer and lifestyle should be recognized to be modified (Black, 2009). By identifying people's lifestyle, the required state planning can be provided in order to make healthy environment, life patterns as well as training community. With regard to the necessity of identifying people's lifestyle and helping them modify their life patterns in order to prevent cancer, the present work have been attempted to specify the effect of lifestyle of the patients with colorectal cancer identified in screening of Ahvaz city.

Literature Review

Heretofore, the roles of nutrition and diet as the components of health lifestyle have been confirmed in individual's health and disease.

Samiee (1389) based on a study conducted on the effect of family consultation in functional scales of life quality of women with breast cancer, concluded that consulting with family improves functional scales of Patients' life quality.

The results reported by Taheri and Amiri (2010) indicated that there is a significant and reverse relation between depression, anxiety and stress and life quality of patients with breast cancer. So, life quality of patients with higher depression, anxiety and stress is significantly lower than the patients with less depression, anxiety and stress.

Banson (2006) also reported that high hope has a positive relation with physical and psychological health, high self-esteem, positive thinking, and social communication. Again, Snider (2006) showed a significant correlation between high hope, low hope and negative emotions so that low hope predicts depression symptoms which is independent of diagnosis symptoms and other comparative skills. Further, Jackson and Lundquist (2003) concluded that there is a direct relation between hope and compatible functions such as psychological compatibility, physical health and problem solving skill.

Ferguson (2006) investigated the relation between hope and spiritual beliefs in adolescents with cancer. Based on the findings, it was revealed that girls obtained higher hope score compared with boys. Moreover, male adolescents between 15-17 years showed more hope in comparison with adolescents between 17-13 years.

MATERIALS AND METHODS

The present research is a descriptive cross-sectional study. The statistical sample includes 20 patients identified by screening colorectal cancer in Ahvaz city selected through systematic random sampling. A questionnaire containing personal information, current study such as primary symptoms, time profile, the onset of disease, consciousness status, blood pressure during admission, and also the information related to the trend of diagnosis and treatment with patient's status during discharge was distributed among the sample. The information obtained from the questionnaire was classified, encoded, saved in computer information bank and then was analyzed through SPSS software.

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The Research Hypotheses

1. Family lifestyle of patients with colorectal cancer identified in Ahvaz's screening test affects the patients' disease progress.
1. Physical activities of patients with colorectal cancer identified in Ahvaz's screening test affects the patients' disease progress.
2. Using appropriate diet in patients with colorectal cancer identified in Ahvaz's screening test affects the patients' disease progress.
3. Using tobacco by patients with colorectal cancer identified in Ahvaz's screening test affects the patients' disease progress.
4. Psychological and stressful factors in patients with colorectal cancer identified in Ahvaz's screening test affects the patients' disease progress.

Data Analysis

To conduct research process to one of science fields is due to achieve a series of results and research findings. Research results include describing and determining matters based on differences and relations. In this study, research hypothesizes are investigated and analyzed using descriptive and inferential statistics with respect to collected data. Descriptive statistics consist of frequency table, figures of data, and central indices and referential statistics contains two-variable and multiple-variable regression test, and correlation test using SPSS software, version 17.

Descriptive Statistics

Descriptive statistics and related tables of sample's features are presented in this section. Recognizing the features of sample is useful to examine the general characteristics of population and determine its general features for further research. Moreover, recognizing these features lead to generalize the findings to other populations or provide some questions for further studies.

Table 1: Frequency distribution based on gender

variables	frequency	Frequency percentage	Valid percentage	Mode
Male	12	60%	60%	1
Female	8	40%	40%	
Total	20	100%	100%	

According to table 1, 60% of the sample is male and 40% is female. Also, the value of mode is 1 which shows that the highest frequency belongs to men. In other words, mode is a central index determining the most frequency in distribution and here, it equals with male gender.

Table 2: Frequency distribution based on marital status

variables	frequency	Frequency percentage	Valid percentage	Mode
Single	7	35%	35%	2
married	13	65%	65%	
Total	20	100%	100%	

According to table 2, 35% of the sample is single and 65% is married. Also, the value of mode is 2 indicating that the highest frequency belongs to married patients. In other words, mode is a central index determining the most frequency in distribution and here, it equals with married individuals.

Table 3: Frequency distribution based on age

variables	frequency	Frequency percentage	Valid percentage	Mean
Below 25	2	10%	10%	43.4
Between 25-35	5	25%	25%	
Between 36-45	7	35%	35%	
Between 46-55	2	10%	10%	
Over 55	4	20%	20%	
Total	20	100%	100%	

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According to table 3, the age of 10% of the sample is below 25 years, 25% is between 25 to 35 years, 35% is between 36 to 45 years, 10% is between 46 to 55, and 20% is over 55 years. Also, the mean of age has been computed as 43.4 years.

Table 4: Frequency distribution based on occupational status

variables	frequency	Frequency percentage	Valid percentage	Mode
Unemployed	3	15%	15%	2
Employed	12	60%	60%	
Retired	5	25%	25%	
Total	20	100%	100%	

According to table 4, 15% of the sample is unemployed, 60% is employed and 25% is retired. Also, the value of mode is 2 indicating that the highest frequency belongs to employed patients. In other words, mode is a central index determining the most frequency in distribution and here, it equals with employed ones.

Table 5: Frequency distribution based on family history of disease

variables	frequency	Frequency percentage	Valid percentage	Mode
There is history	12	60%	60%	1
There is no history	8	40%	40%	
Total	20	100%	100%	

According to table 5, 60% of the sample has a family history of colorectal and 40% of the sample has no family history of the disease. Also, the value of mode is 1 indicating that the highest frequency belongs to the patients with family history of colorectal disease.

Referential statistics

Normality and fitness test

Kolmogorov–Smirnov test is used to evaluate normality distribution of variables (lifestyle, physical activity, using tobacco, psychological factors, and disease progress). In the one-sample case of the test, observed accumulative distribution function is compared with expected accumulative distribution function in a variable. In other words, distribution of an attribute in a sample is compared with the distribution given for the population. To interpret the obtained results, as the level of observed error is greater than 0/05, observed distribution will be similar to theoretical distribution and there will be no difference between them. That is, obtained distribution will be a normal distribution. But as significance value is less than 0/05, observed distribution will be different from expected distribution and distribution won't be normal.

Table 6: Absolute, negative and positive differences estimated for variables

	Absolute difference	Positive difference	Negative difference	K-S statistic's value	P-Value
Sport	0/187	0/163	-0/187	0/836	0/487
Diet	0/198	0/198	-0/152	0/883	0/416
Tobacco	0/181	0/181	-0/140	0/811	0/526
Stress	0/234	0/234	-0/166	1/047	0/223
Disease progress	0/183	0/183	-0/166	0/816	0/518
Lifestyle	0/124	0/124	-0/068	0/556	0/917

According to table 6, absolute difference indicates the most difference between observed and expected accumulative distribution. Positive difference also indicates the value of the point in which observed accumulative distribution function value is more than expected one while negative difference indicates the value of the point in which observed accumulative distribution function value is less than expected one. Based on obtained value of Kolmogorov–Smirnov as well as observed error level, it can be

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concluded that there is no significant difference between observed accumulative distribution and expected accumulative distribution; therefore, the distribution of all variables is normal.

Testing research hypotheses

The main hypothesis: “Family lifestyle of patients with colorectal cancer identified in Ahvaz’s screening test affects the patients’ disease progress.”

H₀: There is no significant relation between family lifestyle of patients with colorectal cancer identified in Ahvaz’s screening test and the patients’ disease progress.

H₁: There is a significant relation between family lifestyle of patients with colorectal cancer identified in Ahvaz’s screening test and the patients’ disease progress.

To investigate the intensity and direction of the relation between lifestyle of patients with colorectal cancer and their disease progress, two-variable regression test is used and the results are then interpreted. In this regards, after computing lifestyle index (through computing the compound mean of variables of physical activity level, diet control level, tobacco usage level, physiological factors, etc.), it is encoded into 1: very unhealthy lifestyle, 2: unhealthy lifestyle, 3: so-so lifestyle, 4: healthy lifestyle, and 5: very healthy lifestyle.

Table 7: Regression test’s results

	R	R ²	F statistic	P-value	Constant coefficient	Beta
Lifestyle and disease progress	0/795	0/627	30/317	0/000	-0/036	0/880

According to table 7 and considering F-value as well as the observed error level (P-value<0/05), it can be concluded that the relation is significant at the confidence level of 0/99. In other words, there is a significant relation between lifestyle of the patients’ families and their disease progress. Therefore, the null hypothesis is rejected and the alternative hypothesis is confirmed.

Moreover, with respect to the value of correlation coefficient and determination coefficient, it can be stated that the correlation between two variables is strong, positive and direct; also, the value of determination coefficient is strong, i.e. families’ lifestyle affect the patients’ disease progress as much 63%. The diagram of the disease progress based on the patients’ families’ lifestyle is presented in the following.

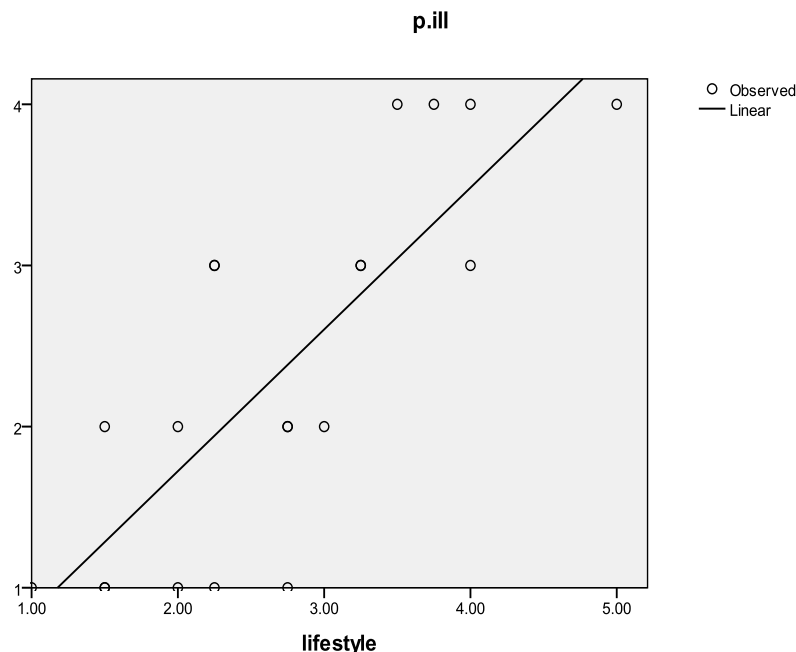


Figure 1: The diagram of the disease progress based on the patients’ families’ lifestyle

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The secondary hypotheses

The first hypothesis: “Physical activities of patients with colorectal cancer identified in Ahvaz’s screening test affects the patients’ disease progress.”

H_0 : There is no significant relation between physical activities of patients with colorectal cancer identified in Ahvaz’s screening test and the patients’ disease progress.

H_1 : There is a significant relation between physical activities of patients with colorectal cancer identified in Ahvaz’s screening test and the patients’ disease progress.

To investigate the intensity and direction of the relation between physical activities of patients with colorectal cancer and their disease progress, two-variable regression test is used and the results are then interpreted.

Table 8: Regression test’s results

	R	R ²	F statistic	P-value	Constant coefficient	Beta
physical activities and disease progress	-0/640	0/10	12/510	0/000	4/306	-0/637

According to table 8 and considering F-value as well as the observed error level ($P\text{-value} < 0/05$), it can be concluded that the relation is significant at the confidence level of 0/99. In other words, there is a significant relation between physical activities of the patients and their disease progress. Therefore, the null hypothesis is rejected and the alternative hypothesis is confirmed.

Moreover, with respect to the value of correlation coefficient and determination coefficient, it can be stated that the correlation between two variables is strong, positive and direct; also, the value of determination coefficient is average, i.e. physical activities affect the patients’ disease progress as much 41%. The diagram of the disease progress based on the patients’ physical activities is presented in the following.

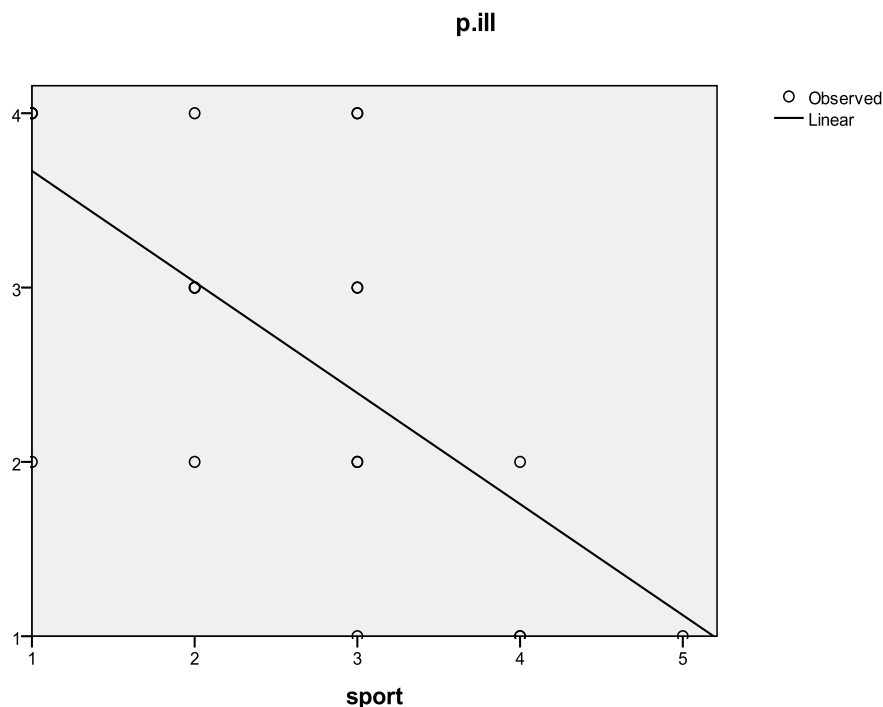


Figure 2: The diagram of the disease progress based on the patients’ physical activities

The second hypothesis: “Using appropriate diet in patients with colorectal cancer identified in Ahvaz’s screening test affects the patients’ disease progress.”

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H₀: There is no significant relation between using appropriate diet in patients with colorectal cancer identified in Ahvaz's screening test and the patients' disease progress.

H₁: There is a significant relation between using appropriate diet in patients with colorectal cancer identified in Ahvaz's screening test and the patients' disease progress.

To investigate the intensity and direction of the relation between using appropriate diet in patients with colorectal cancer and their disease progress, two-variable regression test is used and the results are then interpreted.

Table 9: Regression test's results

	R	R ²	F statistic	P-value	Constant coefficient	Beta
using appropriate diet and disease progress	-0/527	0/328	8/767	0/008	4/281	-0/572

According to table 9 and considering F-value as well as the observed error level (P-value<0/05), it can be concluded that the relation is significant at the confidence level of 0/99. In other words, there is a significant relation between using appropriate diet in the patients and their disease progress. Therefore, the null hypothesis is rejected and the alternative hypothesis is confirmed. Moreover, with respect to the value of correlation coefficient and determination coefficient, it can be stated that the correlation between two variables is average, negative and reverse; also, the value of determination coefficient is average, i.e. physical activities affect the patients' disease progress as much 33%. The diagram of the disease progress based on using appropriate diet in the patients is shown in the following.

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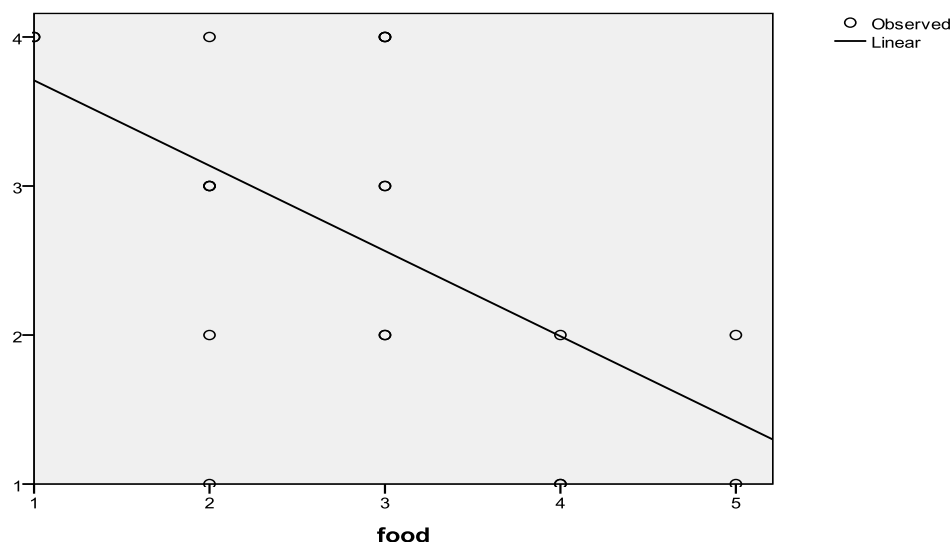


Figure 3: The diagram of the disease progress based on using appropriate diet in the patients

The third hypothesis: "Using tobacco by patients with colorectal cancer identified in Ahvaz's screening test affects the patients' disease progress."

H₀: There is no significant relation between using tobacco by patients with colorectal cancer identified in Ahvaz's screening test and the patients' disease progress.

H₁: There is a significant relation between using tobacco by patients with colorectal cancer identified in Ahvaz's screening test and the patients' disease progress.

To investigate the intensity and direction of the relation between using tobacco by patients with colorectal cancer and their disease progress, two-variable regression test is used and the results are then interpreted.

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Table 10: Regression test's results

	R	R ²	F statistic	P-value	Constant coefficient	Beta
using tobacco and disease progress	0/792	0/628	30/350	0/000	0/638	0/623

According to table 10 and considering F-value as well as the observed error level ($P\text{-value} < 0/05$), it can be concluded that the relation is significant at the confidence level of 0/99. In other words, there is a significant relation between using tobacco by the patients and their disease progress. Therefore, the null hypothesis is rejected and the alternative hypothesis is confirmed.

Moreover, with respect to the value of correlation coefficient and determination coefficient, it can be stated that the correlation between two variables is strong, positive and direct; also, the value of determination coefficient is strong, i.e. tobacco affects the patients' disease progress as much 63%. The diagram of the disease progress based on using tobacco by the patients is shown in the following.

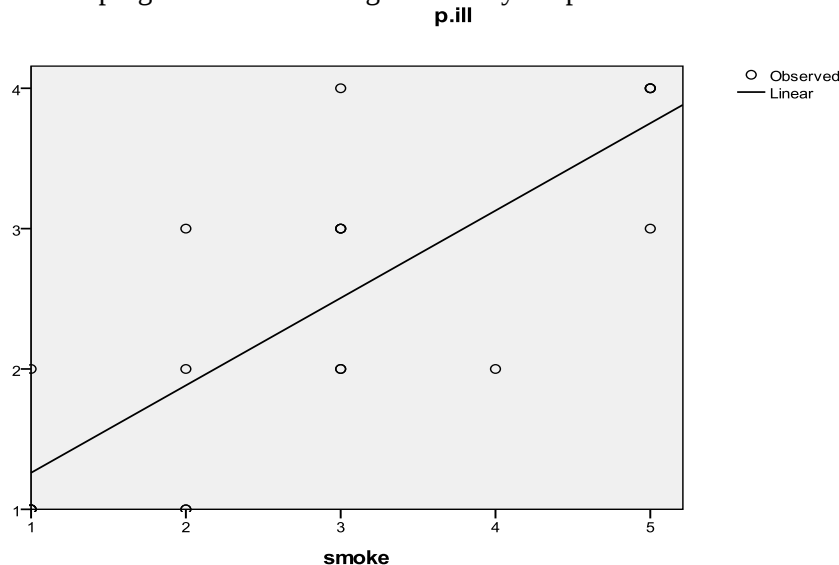


Figure 4: The diagram of the disease progress based on using tobacco by the patients

The fourth hypothesis: "Psychological and stressful factors in patients with colorectal cancer identified in Ahvaz's screening test affects the patients' disease progress."

H₀: There is no significant relation between psychological and stressful factors in patients with colorectal cancer identified in Ahvaz's screening test and the patients' disease progress.

H₁: There is a significant relation between psychological and stressful factors in patients with colorectal cancer identified in Ahvaz's screening test and the patients' disease progress.

To investigate the intensity and direction of the relation between psychological and stressful factors in patients with colorectal cancer and their disease progress, two-variable regression test is used and the results are then interpreted.

Table 10: Regression test's results

	R	R ²	F statistic	P-value	Constant coefficient	Beta
psychological and stressful factors and disease progress	0/688	0/473	16/165	0/000	0/358	0/752

According to table 10 and considering F-value as well as the observed error level ($P\text{-value} < 0/05$), it can be concluded that the relation is significant at the confidence level of 0/99. In other words, there is a significant relation between psychological and stressful factors in the patients and their disease progress. Therefore, the null hypothesis is rejected and the alternative hypothesis is confirmed.

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Moreover, with respect to the value of correlation coefficient and determination coefficient, it can be stated that the correlation between two variables is strong, positive and direct; also, the value of determination coefficient is average, i.e. tobacco affects the patients' disease progress as much 47%. The diagram of the disease progress based on psychological and stressful factors in the patients is shown in the following.

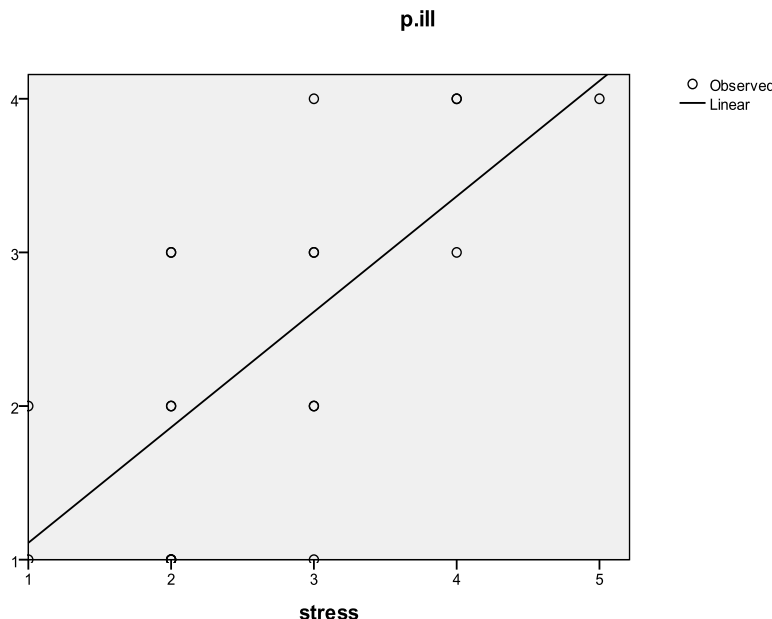


Figure 5: The diagram of the disease progress based on psychological and stressful factors in the patients

Regression analysis

Multi-variable regression is a statistical analysis method determined variations of one or more dependent variables(s) relative to one or more independent variables(s). In other words, it is a strong statistical technique investigating the effects of one or more independent variables(s) in one or more dependent variables(s). In this method, net effect of dependent variable (the disease progress) in independent variables (physical activity, diet, using tobacco, and psychological and stressful factors) is determined.

Therefore, multiple-variable regression method is used to investigate the effects independent variables and discover the fitted model. Lack of errors' correlation is a condition needed to use regression analysis. To determine this fact, Durbin-Watson test should be used in which errors' independency (the difference between real values and anticipated values by regression equation) is specified.

Table 10: Durbin-Watson test result

Durbin-Watson test value	
Model	2/008

Durbin-Watson test statistic should be in the interval of 1/5 to 2/5 and here, the obtained value is 2/008; so, the assumption of errors' independency is not rejected and regression test can be used.

Table 11: The entered and remover variables

Model	Entered variables	Removed variables	Regression method
First	Above mentioned independent variables	-	ENTER

According to table 11, all the variables under investigation have been entered into the model without any specific order to be analyzed.

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Table 12: Estimation of regression model summary

Row	Model	Multiple correlation coefficients	determination coefficient	Balanced determination coefficient
1	Above variables	0.834	0.711	0.633

Table 12 indicates the relation between the independent variables (physical activity, diet, using tobacco, and psychological and stressful factors) and dependent variable (the disease progress). According to the table, the multiple correlation coefficients of the independent variables with the variable of the disease progress equals with 0/84. The determination coefficient (effect and predication) of the independent variables equals with 0/71 and the balanced determination coefficient based on the degree of freedom of the variables equals with 0/63. In other words, the amount of the variations of the disease progress based on the above mentioned variables` effects equals with 0/71 which is 0/63 with precise computation of degree of freedom (this value is the average coefficient indicating the relative efficiency of the model). Therefore, 63% of the variations of the variations of the disease progress is predicted and determined by the above mentioned variables.

Table 12: ANOVA analysis and determining the significance level of the model

Model	Squares sum	Degree of freedom	Mean squares	F statistic	Sig
Determined (regression)	17.446	4	4.361	9.209	0/001
Residual	7.104	15	0.474		
Total	24.550	19			

According to Table 12 and considering the value of F statistic as well as the observed level of error (P-Value< 0/05), it can be concluded that there is a significant relation between the independent variables (physical activity, diet, using tobacco, and psychological and stressful factors) and the patients` disease progress at the confidence level of 99%. Therefore, the null hypothesis is rejected and the alternative hypothesis is confirmed.

Table 13: Regression weight coefficients

Model factors	Non-standard B	Standard B	t value	Sig
Constant coefficient	0.038	-	0/079	0/938
Physical activity	-0.503	-0.590	4/608	0/000
Diet control	-0.358	-0.301	2/641	0/020
Using tobacco	0.587	-0.747	12/974	0/000
Stress	0.076	0.070	0/291	0/775

According to table 13, the value of the weight coefficients of each independent variable on the standardized and non standardized dependent variable (Beta), t test value and the observed error level of each variable with the dependent variable have been considered. Accordingly, with respect to t-value, all factors except than psychological and stressful factors have a significant internal relation with the dependent variable (the disease progress) and using tobacco has the most significant effect in the disease progress. Hence, firstly, the regression equation of the disease progress can be stated based on the independent variables and the constant coefficient value and secondly, the amount of each independent variable`s effect can be anticipated for one unit of change in the dependent variable.

Conclusion and Recommendations

Considering the results obtained from the study regarding the effect of lifestyle in disease, especially in colorectal cancer, and by observing the findings extracted from the collected data, the following conclusions can be drew:

- Physical activities of patients with colorectal cancer identified in Ahvaz`s screening test affects the patients` disease progress.

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- Using appropriate diet in patients with colorectal cancer identified in Ahvaz's screening test affects the patients' disease progress.
- Using tobacco by patients with colorectal cancer identified in Ahvaz's screening test affects the patients' disease progress.
- Psychological and stressful factors in patients with colorectal cancer identified in Ahvaz's screening test affects the patients' disease progress.
- Family lifestyle of patients with colorectal cancer identified in Ahvaz's screening test plays an important role to prevent the patients' disease progress.

Based on the findings of the study, the following recommendations can be presented:

- Increasing public awareness regarding appropriate lifestyle through TV and institutes
- Presenting an act for further supervision on foods' quality
- Encouraging people to participate in daily sport programs
- Providing sport facilities with low cost for all society classes
- Culture building to have proper and good nutrition
- Training families of patients (especially cancer patients) regarding the ways of preventing disease
- Allocating enough budget to treat cancer disease and similar disease in order to prevent financial stress for patients
- Establishing institutes for creating hope in patients (psychotherapy)
- Using spiritual affairs to give hope to patients

For further studies, the following suggestions are also recommended:

- Investigating culture building for proper and good nutrition
- Investigating the way of creating a mentally healthy environment for refractory patients
- Investigating the effect of spiritual beliefs in disease progress prevention
- Investigating the effect of training families of patients to create a peaceful environment for patients in order to prevent their stress

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