The Correlation Between Education Levels and Lifestyles of Patients Admitted Cardiology Clinics: A Subgroup Analysis of Medlife-TR Study

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Abstract

Objectives: The lifestyle, dietary habits, and cardiovascular (CV) risk perception of patients with CV risk factors and/or diseases in Turkish population may vary with education. We aimed to reveal the relationship between education level and lifestyles in patients who participated in the Medications and Lifestyles of Patients with Cardiovascular Risk Factors and/or Diseases in Turkish Population (MedLife-TR) study.

Materials and Methods: This study was conducted between November 2018 and March 2019 with 2793 patients. The male gender ratio was 47.91%, and the female gender ratio was 52.09%. The participants first completed a self-administered questionnaire in four sections: baseline characteristics, awareness of CV risk factors and their CV risk levels,

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Abstract

lifestyle habits (exercise, diet, eating….) and use of drugs. This was a multicenter, national and observational study that included 27 centers in Turkey. Fisher-Freeman-Halton test was used for comparison of qualitative data. A p-value <0.05 was considered statistically significant.

Results: According to the education level of patients, CV risk perception and eating habits vary as education level increases. The ratio of patients to exercise regularly was low. But as the level of education increases, the rate of regular exercise increases (p<0.001). The rate of using herbal products (p=0.086) or vitamins (p=0.384) did not change as the level of education increased. The university-level group stated that smoking was the highest risk factor for CV disease (28.33%). However, the other groups, especially the uneducated group (42.92%) think that hypertension is the most risk factor for CV diseases. The consumption of fast-food products such as hamburgers, pizza, and fries increased as the education level increased. The rate of skipping breakfast (17.69%) was higher in the university-level group than the other groups (p<0.001).

Conclusion: Statistically significant differences were observed between education level and lifestyle of patients with CV risk factors and/or diseases. As the education level increases, the rate of skipping breakfast and the consumption of fast-food products increase; however, the rate of regular exercise and diet increases.

Keywords: Lifestyles, education levels, dietary habits, cardiovascular risk perception

Introduction

Cardiovascular diseases (CVDs) are the leading cause of death worldwide. The association between low socioeconomic status and CVD mortality risk is well documented. Some studies show that the socioeconomic death gradient in cardiovascular (CV) mortality was steeper in women than men when education was used to indicate social standing[1,2]. The education is considered one of the lifelong socioeconomic indicators of the individual[3]. Most prospective studies conducted on European populations have found an increased incidence of coronary heart disease (CHD) among less-educated individuals[4,5].

Some of the causes of social disparity in CHD mortality are the unequal distribution of risk factors such as smoking, low physical activity, unhealthy diet and lifestyle. However, several studies show that behavioral risk factors contribute to the socioeconomic gradient in CHD[6-8]. The educational disparity in CV diseases is evident in many countries, particularly those in northern Europe. Education has been cited as a good indicator of social position in epidemiological studies[9,10].

The World Health Organization (WHO) stated that the determinants of health were physical, social and economic environment and individual characteristics[11]. Studies have shown that the patients' socioeconomic status is also associated with the risk of CV disease[10-12]. Education is a more specific factor[13]. There is a lack of data on the effects of patients' education levels on a diet, physical activity, smoking cessation, and use of pharmacological treatments as recommended.

The lifestyle, dietary habits and CV risk perception of patients with CV risk factors and/or diseases in the Turkish population may vary with the level of education. So, we aimed to reveal the relationship between education level and lifestyles in patients who participated in the Medications and Lifestyles of Patients with Cardiovascular Risk Factors and/or Diseases in Turkish Population (MedLife-TR) study[14].

Materials and Methods

Patients admitted to the cardiology outpatient clinics for diagnostic or therapeutic purposes, who were over 18 years of age and agreed to participate in the study

were included in the study. The patients included in the study were divided into four groups according to their education level; elementary-middle school education (group I), high school (group II), university-level (group III), and uneducated (group IV). A total of 2793 patients participated in this study. There were 1360 patients in group I, 446 patients in group II, 294 patients in group III, and 693 patients in group IV. The participants signed informed consent and completed a self-administered questionnaire in the following sections: baseline characteristics, awareness of CV risk factors and individual CV risk, lifestyle habits, medical behaviors and CV medication. From different country regions, 27 sites in Turkey were in cluded in this study. Patients were enrolled between November 2018 and March 2019. Actual CV risk levels according to Framingham risk score were calculated by the physicians. The ethics committee approval of this multicenter, national, cross-sectional, and observational study was obtained from University of Health Sciences Turkey, Bakırköy Dr. Sadi Konuk Research and Training Hospital on 16.09.2019 with the decision number 2019-18-07.

Patients who did moderate exercise at least 3 days a week (at least 30 minutes per day) were considered to be regular exercisers. Those who used antihypertensive drugs or had blood pressure (BP) >140/90 mmHg in at least two measurements during the examinations were considered as hypertensive[15]. BP measurements were made in outpatient clinics with a validated digital sphygmomanometer. Patients who used antidiabetic drugs or insulin or had a fasting blood glucose level higher than 126 mg/dL were considered diabetic[16]. According to lipid guidelines, hyperlipidemia was diagnosed in patients who took lipid-lowering drugs or had higher lipid levels[17].

History of CV interventions (percutaneous coronary interventions or bypass grafting), myocardial infarction, cerebrovascular diseases, peripheral arterial disease, moderate/severe valvular disease, dysrythmia, renal diseases, medication history (including over the counter drugs) were questioned and in the case report form. The investigative cardiologist evaluated the electrocardiography of each patient.

Statistical Analysis

All statistical analyses were conducted using MedCalc Statistical Software version 18 (MedCalc Software bvba, Ostend, Belgium; http://www.medcalc.org; 2018). Continuous variables were presented as mean, standard deviation, and data on frequency were presented as percentages (%) for categorical variables. Chi-square analysis was used for correlation between categorical variables. Where appropriate, categorical variables were evaluated by Fisher's exact and Fisher-Freeman-Halton test. P<0.05 was considered statistically significant.

Results

According to the education level of patients, CV risk perception and eating habits vary as education level increases. In this study the ratio of patients to exercise regularly was low. But as the level of education increases, the rate of regular exercise increases (p<0.001). The rate of regular exercise in patients with high school and university education were 43.05% and 43.88%, respectively.

Regardless of the level of education, the majority of patients did not use any method to lose weight. However, as the level of education increases, the rate of diet and exercise increases. The proportion of those who do not apply any method to lose weight were higher in uneducated group (67.53%) and elementary-middle school group (49.12%) than in other groups (p<0.001). The rate of using herbal products (p=0.086) or vitamins (p=0.384) did not change as the level of education increased. As the education level of the patients increased, the frequency of going to physician controls and using more than five and more drugs decreased.

The patient group with university-level education considers smoking (28.33%) as the riskiest for CV disease. However, the other groups, especially the uneducated group (42.92%) think that hypertension (HT) was the riskiest for CV diseases. The majority of the uneducated

group considered the least risky factor for CV diseases as genetic diseases (24.96%), whereas the majority of the university-level group considered age progression (22.11%). The other groups think immobility was the least risky for CV diseases (Figure 1). Patients with high school (43.15%) and university (41.16%) level education

thought that cholesterol drugs were harmful compared to other groups (p<0.001) (Figure 2).

The consumption of fast-food products such as hamburgers, pizza, and fries increased as the education level increased. The rate of using butter (23.13%) and olive oil (38.44%) at home were higher in the university
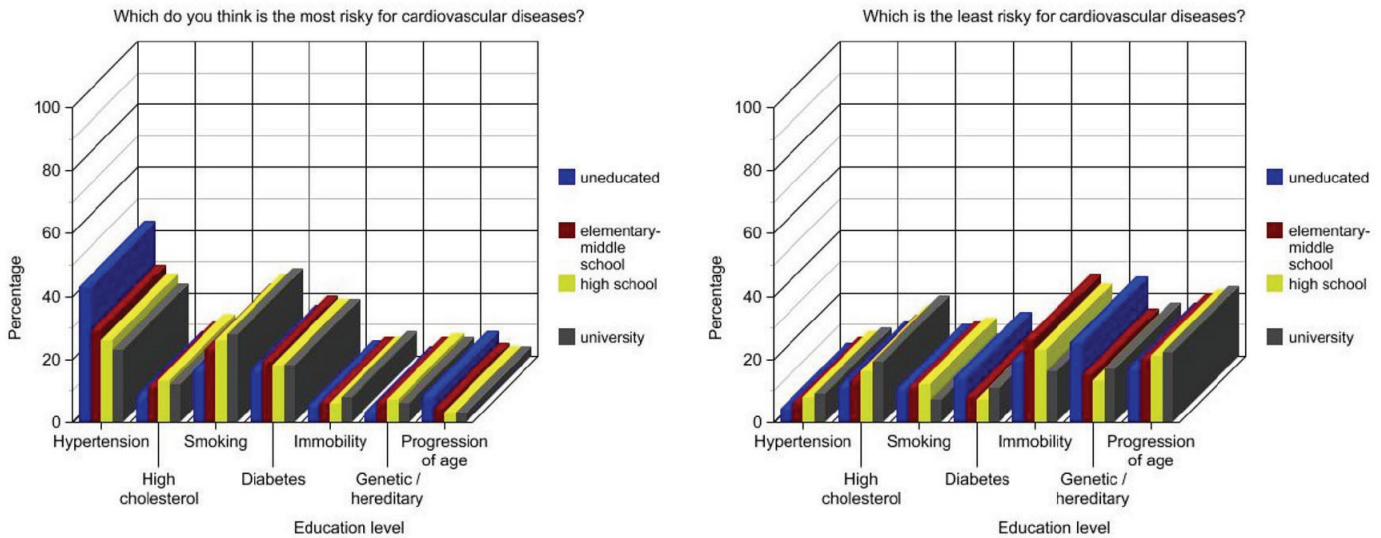

Figure 1. Distribution of factors that the study population considers the riskiest and least risky for CVD. The patient group with university-level education considers smoking (28.33%) as the riskiest for CVD. However, the other groups, especially the uneducated group (42.92%) think that hypertension is the riskiest for CVD
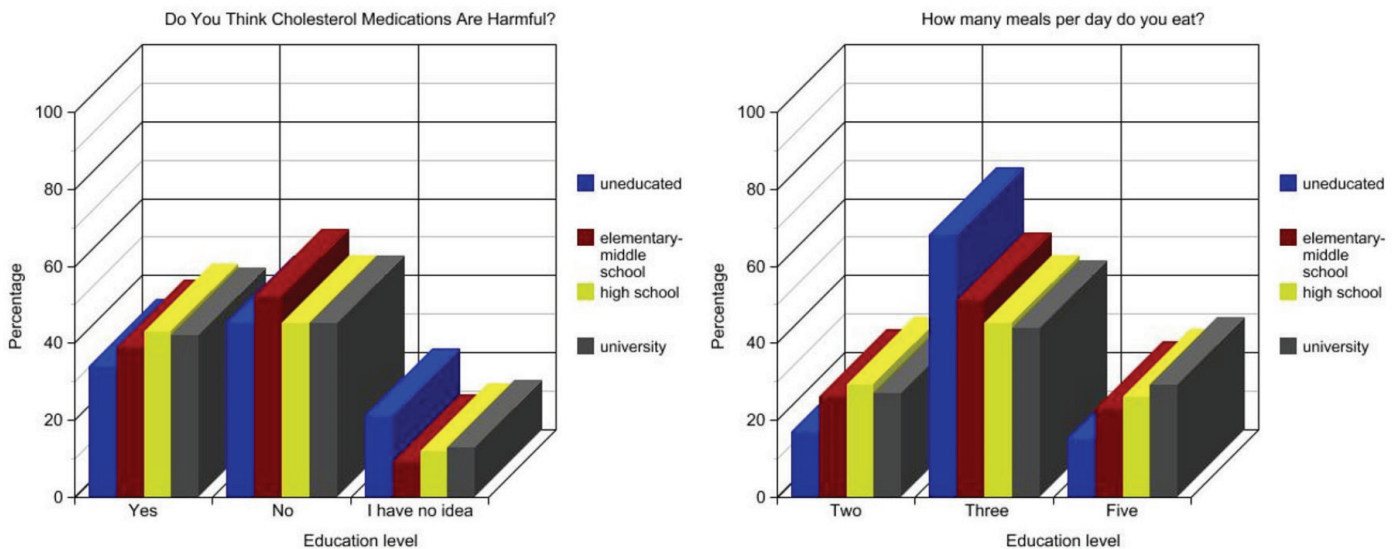
CVD: Cardiovascular diseases

Figure 2. Graph of the distribution of those who think that cholesterol drugs were harmful in the study population and the comparison of the number of daily meals. Patients with high school and university level education thought that cholesterol drugs were harmful compared to other groups

education group than the other groups (p<0.001). However, the rate of using sunflower oil (55.44%) was lower at the group of university-level compared to other groups (p<0.001). As the level of education increases, the rate of eating three meals per day decreases (p<0.001). In the patient group receiving education at university level, the rate of skipping morning breakfast (17.69%) is higher than the other groups (p<0.001) (Table 1).

Discussion

Our study concluded that patients' perceptions of nutrition, lifestyle, and awareness of CV risk varied according to education level. Some of the interesting results of our study were that as the level of education increases, the rate of skipping breakfast and consumption of fast-food products were increased, and cholesterol drugs were thought to be harmful. In addition, the rates of regular exercise and dieting were increased.

Despite the decline in CV mortality rates in many countries, the number of patients with CV disease increases. In addition to creating physical and psychological effects on patients, this situation also causes an increase in costs to the health system[18]. Low physical activity and irregular diet cause an increase in CV disease rate. However, there were not enough information about the effects of common eating behaviors on CV disease.

The habit of eating breakfast was associated with a lower risk of HT. It has also been shown that it can prevent blood vessel occlusion, bleeding and CV events[19,20]. In a study examining the relationship between breakfast frequency and the 10-year risk of atherosclerotic CVD, it was shown that participants who never had breakfast were more likely to be in the high-risk group compared to participants who had breakfast >5 times a week. Even breakfast consumption, even once a week could prevent

Table 1. The relationship between the lifestyle, dietary habits and perception of cardiovascular risk in patients with education level

		Elementary-middle school	High school	University	Uneducated	p-value
Are you doing regular exercise (3 days a week, at least 30 minutes)?	Yes	475 (34.93)	192 (43.05)	129 (43.88)	203 (29.29)	**<0.001**
Do you use vitamins?	Yes	218 (16.03)	75 (16.82)	52 (17.69)	132 (19.05)	0.384
Do you use herbal products?	Yes	203 (14.94)	50 (11.21)	51 (17.35)	93 (13.42)	0.086
How do you the most follow the information you are wondering about your disease?	- Asking my doctor - From TV programs - Newspapers/journals (s) from health corners - Researching by the Internet* - Not interested	1110 (81.62) 87 (6.40) 7 (0.51) 79 (5.81) 77 (5.66)	310(69.51) 48(10.76) 11 (2.47) 51 (11.43) 26 (5.83)	199 (67.69) 32 (10.88) 2 (0.68) 35 (11.90) 26 (8.84)	522 (75.32) 41 (5.92) 2 (0.29) 15 (2.16) 113 (16.31)	**<0.001**
How often do you apply to a doctor?	<3 monthly* Once in 3-month 3-6 months >6 months	262 (19.28) 393 (28.92) 558 (41.06) 146 (10.74)	83 (18.61) 127 (28.48) 163 (36.55) 73 (16.37)	55 (18.71) 74 (25.17) 124 (42.18) 41 (13.95)	204 (29.44) 262 (37.81) 179 (25.83) 48 (6.93)	**<0.001**
How do you define yourself in terms of cardiovascular diseases?	Low risk Medium risk High risk	457 (33.60) 649 (47.72) 254 (18.68)	174 (39.10) 195 (43.82) 76 (17.08)	124 (42.18) 117 (39.80) 53 (18.03)	121 (17.46) 386 (55.70) 359 (26.84)	**<0.001**
Do you use additional table salt for your meals?	Yes	547 (40.22)	193 (43.27)	133 (45.24)	359 (51.80)	**<0.001**
Do you skip morning breakfast?	Yes	115 (8.46)	52 (11.66)	52 (17.69)	39 (5.63)	**<0.001**
How often do you consume fast food (hamburger, pizza, fried potato, etc.)?	- Once a week - More than once a week* - Once in a month - I never eat	141 (10.37) 80 (5.88) 308 (22.65) 831 (61.10)	67 (15.02) 55 (12.33) 118 (26.46) 206 (46.19)	51 (17.35) 35 (11.90) 84 (28.57) 124 (42.18)	92 (13.28) 34 (4.91) 222 (32.03) 345 (49.78)	**<0.001**

The values in the table are given as n (%). * showed that the result with the most significant difference in meaning

CVD[21]. One of the interesting results of our study was that the rate of skipping breakfast in patients with university-level education was higher than in the other groups.

Psychological variables such as stress, personality, anxiety and lifestyle, HT, obesity, lack of exercise, smoking and high blood cholesterol contribute to the development of CV disease[22]. On the relationship between educational differences and the incidence of major CV events, in a study that included 5084 participants with no previous CV event, it was found that lower education was associated with higher mean body mass index (BMI), higher prevalence of diabetes and smoking in men. Less-educated women had higher mean systolic BP, BMI and high-density lipoprotein cholesterol and were more likely to have diabetes. Men and women in the lower education class had a 2-fold increase in the incidence of ischemic stroke and CHD, respectively, after controlling for major risk factors[23].

The WHO has stated that 80-90% of people who have died from CHD since 1990 have one or more lifestyle-related risk factors[6]. Lifestyle is a person's way of life. Lifestyle is one of the main factors that show a strong relationship with CHD[7,24]. A healthy lifestyle and diet have been found to have positive effects on blood cholesterol[8,24]. Another interesting result of our study was that the higher the education level groups more than consumption of fast-food products such as hamburger, pizza and french fries, and the use of butter (23.13%) and olive oil (38.44%) compared to other groups.

Often referred to as the "gold standard" for treating high levels of LDL, statins are one of the most widely used drugs globally. In our study, the underlying reason why cholesterol drugs are thought to be harmful in patients with high school and university education compared to other groups may be due to the fact that there was more medical misinformation that appears to be "real" on the internet. The rate of searching for health-related information on the internet was higher in these groups compared to the low-educated/non-educated group.

Diet, sleep patterns, smoking and alcohol consumption habits affect health[8,22]. Tobacco use, whether smoking or chewing tobacco, increases the risk of CV disease[25]. In our study, as the level of education increases, the number of patients who think that smoking was the most important risk factor for CV disease were increases. However, patients with lower education thought that HT was the most important risk factor.

Study Limitations

The survey in our study was conducted before the coronavirus disease-2019 (COVID-19) pandemic that occurred in recent years. COVID-19 pandemic may have increased the awareness of patients about their disease. Although this situation caused a limitation in our study, we do not think it significantly impacted our study since we aimed to reveal the relationship between education level and CV risk perception/lifestyle. Since the patient population included in the study was the patients who applied to cardiology outpatient clinics, the study results may not reflect the entire population.

Conclusion

Statistically significant differences were observed between education level and lifestyle of patients with CV risk factors and/or diseases. Perception of CV risk varies with education level. As the education level increases, the rate of skipping breakfast and the consumption of fast-food products increase; however, the rate of regular exercise and diet increases.

Ethics

Ethics Committee Approval: Ethics committee approval of our study was obtained from the University of Health Sciences Turkey, Bakırköy Dr. Sadi Konuk Training and Research Hospital Clinical Research Ethics Committee on 16.09.2019 with the decision number 2019-18-07.

Informed Consent: Signed voluntary consent forms were obtained from all patients included in this study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: Kış M, Design: Kış M, Data Collection and/or Processing: Kış M, Öz A, Yenerçağ M, Analysis and/or Interpretation: Öz A, Bekar L, Tanık VO, Supervision: Kış M, Tanık VO, Literature Search: Kış M, Öz A, Bekar L, Tanık VO, Karabulut D, Yenerçağ M, Yıldırımlı MK, Kudat H, Zoghi M, Writing: Kış M.

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