

Nutrition and Health – The Association between Eating Behavior and Various Health Parameters: A Matched Sample Study

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Abstract

Studies on a large population have repeatedly proven that our nutrition has an effect on our health. As a result, we sought to examine the variations in health-related characteristics across various eating habit groups. Sample that was utilised to The Austrian Health Interview Survey AT-HIS 2006/07 was used in this cross-sectional investigation. Subjects were initially surveyed. matched based on their age, gender, and financial status (SES). The total number of people that were involved in the matching process was The total number of participants in the study (N = 330 for each kind of diet) was 1320.

less meat-heavy and more meat-heavy diets). It was determined that by doing variance analyses, we could eliminate A person's health (measured by self-reported health, functional impairments, number of chronic diseases, and blood vessel Health care (treatment, immunizations, and regular checkups) and general well-being are other important factors to consider. As a result, there are also differences. Chi-square tests were used to examine the presence or absence of 18 different chronic diseases. Overall, 76.4 percent of all individuals were surveyed. we're a group of women. 40% of those surveyed were under the age of 30, 35% were in the 30 to 49 year age range, and 24% were above the age of 50. years. A

low SES affected 33.3% of the participants, a medium SES affected 48.8%, and a high SES affected 20.9 percent of the participants. According to our findings, a A lower body mass index (BMI) and less frequent alcohol intake are associated with a vegetarian diet. Furthermore, our findings demonstrate that a greater risk of cancer, allergies, and mental health issues are related with a vegetarian diet. a greater need for medical attention and a worsening of health and well-being. There is a dire need for public health initiatives that might help lessen the dietary variables provide a health hazard.

Introduction

Our nutrition affects our health and well-being. A vegetarian diet has been shown to be connected with a decreased risk of heart disease, according to several studies. hypertension and cholesterol issues are more common than people realise, and some of these issues are long-term. diabetes type II and other degenerative illnesses Stroke, gallstones, and a few types of cancer [1–7]. Vegetarianism is a healthy eating option. diets that do not have a lot of saturated fat low-fat diets that emphasise fruits, veggies, and whole grains Whole-grain foods [3,4,8]. Vegetarians, on the whole, have a reduced mortality rate. A greater socioeconomic position is associated with a lower BMI [1,4,5,7,9–12]. healthier lifestyles, i.e., they are

more physically active [13] People who are more active are less likely to drink or smoke. Other than that, on the other side, the mental health benefits of a vegetarian diet or a vegan diet are discussed. Fruits, vegetables, and whole-grain items make up the bulk of the Mediterranean diet. Fish, on the other hand, may be rather different [9,15]. There are other examples, including Michalak et al [16]. A vegetarian diet has been linked to an increased risk of cardiovascular disease. mental illness is quite common. There has been evidence of a low consumption of meat. reduced mortality rates and a longer life expectancy With a diet that allows for limited quantities of red meat [17] The consumption of animal products including meat, fish, and dairy has been linked to coronary heart disease and type 2 diabetes risk reduction In addition, there is evidence that cancer rates are lower in this population. [18] gastrointestinal disorders, such as cancer of the colon, stomach discomfort, and The data on mortality due to all causes, on the other hand, is mixed [5–7,19–22]. It's not only the consumption of particular nutrients like red meat that's important. due to the increased risk of health problems [18,23–26], high-calorie diets are In addition, ingestion has a significant influence [23, 27]. Furthermore, there seems to be a lack of information. may be evidence of the importance of lifestyle variables like physical activity a more important factor in reducing illness rates than food preferences alone [20,28–29]. While plant-based diets, such as the vegan diet, are common, Vegetarian diets seem to provide a certain health benefit. a reduced chance of developing some chronic disordersto enhance one's health [31–32], to be restricting and boring the possibility of nutritional deficiency exists with vegetarian diets [2,18,19,30,33]. According to Baines et al [9], vegetarians are more likely than non-vegetarians to engage in physical activity. vegetarians need more medicine than non-vegetarians. To sum it up, research shows that vegetarian diets are healthier than meat-based ones. and it has been shown that diets low in meat consumption are linked to reduced rates of disease-related death. Inquiry into dietary habits However, Austrian customs are very limited and mostly centred on the use of alcohol. Inheritance [33–

36]. Consequently, the purpose of this research was to explore the health effects of diverse eating habits Adults in Austrian communities.

Methods

Design of the study and the population it is aimed at

The AT-HIS (Austrian Health Interview Survey) was used to collect the sample for this cross-sectional investigation, which lasted from March 2006 to February 2007 [37]. Austria's AT-HIS is a standardised survey that is administered on a regular basis (currently every eight years). The people who took part in the poll are a cross-section of Austrians as a whole. They were selected from Austria's central population registration and dispersed among the country's several regions. AT-HIS is an important and high-quality survey that is a component of the European Health Interview Survey (<http://www.euhsid.org/>). In order to conduct the interviews, the Austrian Statistic Agency hired freelancers. Interviewers were required to attend a training session to learn how to perform the survey consistently across all interviews. Measurement of time, analysis of non-responses and analysis of error dialogues were undertaken to verify uniformity across interviewers. In addition, field supervisors monitored all interviews. Computer-assisted personal interviews were conducted with 15474 people ages 15 and older (CAPI; 54.7 percent female; response rate: 63.1 percent). However, just 0.2 percent of the participants in the study were pure vegetarians (57.7 percent female), whereas 0.8% claimed to be vegetarians ingesting milk, eggs, and/or fish and/or milk (77.3 percent female) (76.7 percent female). Of those polled, 23.6% said they eat a carnivorous diet that includes plenty of fruits and vegetables (compared to 67.2% of women), 48.5% said they eat a carnivorous diet that isn't as heavy on the meat (compared to 60.8% of women), and 25.7% said they follow a meat-heavy carnivorous diet (30.1 percent female). Because there were only 343 participants in each of the three vegetarian diet groups, they were evaluated as a single dietary habit group. This is why

we opted to match every vegetarian with one person from the three other dietary groups (carnivorous diet rich in fruits and vegetables, carnivorous diet less meat-heavy, and carnivorous diet that is more meat-heavy) since the vegetarian group was the most tiny.

The Matching Method

A total of 343 vegetarians were discovered in the first phase of the study. According to their gender, age, and socioeconomic class (e.g. 20- to 24-year-olds), all vegetarians were grouped (SES). Each of these vegetarians was then paired with a carnivore who ate a lot of fruits and vegetables, a carnivore who ate less meat, and a carnivore who ate a lot of meat. Since not all vegetarians were matched to a subject of the same sex, age, and SES from a different eating habit group in the analysis, only 96.2 percent of the vegetarians were included. As a result, a total of 1320 people were examined (comprising 330 vegetarians, 330 subjects consuming a carnivorous diet rich in fruits and vegetables, 330 individuals eating a carnivorous diet less rich in meat, and 330 subjects consuming a carnivorous diet rich in meat). Based on the data in Table 1, we've divided up the population into dietary behaviour groups.

Approval of Morals

The research was conducted out in accordance with the Helsinki Declaration's standards. The research did not involve minors or children. All individuals gave verbal agreement, which was observed and documented. This research was authorised by the Medical University of Graz's Ethics Committee (EK number: 24–288 ex11/12) for both the consent process and the conducting of the investigation.

Table 1. Data definition and structure for each of the four dietary habit groups.

Age	SES	Sex		TOTAL	
		men	women	N	%
15–19	Low	3	22	25	7.6%
	Middle	9	19	28	8.5%
	High	0	1	1	0.3%
20–29	Low	4	11	15	4.5%
	Middle	10	35	45	13.6%
	High	5	13	18	5.4%
30–39	Low	3	10	13	3.9%
	Middle	6	23	29	8.8%
	High	6	11	17	5.2%
40–49	Low	4	6	10	3.0%
	Middle	4	20	24	7.3%
	High	8	16	24	7.3%
50–59	Low	3	7	10	3.0%
	Middle	3	11	14	4.2%
	High	1	6	7	2.1%
60–69	Low	3	7	10	3.0%
	Middle	1	14	15	4.5%
	High	0	2	2	0.6%
70–79	Low	4	8	12	3.6%
	Middle	1	2	3	0.9%
	High	0	0	0	0.0%
80+	Low	0	5	5	1.5%
	Middle	0	3	3	0.9%
	High	0	0	0	0.0%
TOTAL	Low	24	76	100	30.3%
	Middle	34	127	161	48.8%
	High	20	49	69	20.9%
TOTAL		78	252	330	100.0%

Note. Data source: Austrian Health Interview Survey (AT-HIS) 2006/07. N = number of subjects. Analyses were calculated with subjects matched according to their age, sex, and socio-economic status. Each dietary habit group consisted of 330 subjects with the above shown demographic characteristics (330 vegetarians, 330 subjects consuming a carnivorous diet rich in fruits and vegetables, 330 individuals eating a carnivorous diet less rich in meat, and 330 subjects consuming a carnivorous diet rich in meat; N = 1320). SES: A low SES corresponds a SES score between \$3 and #6, a middle SES between .6 and #10, and a high SES a score between .10 and #15. doi:10.1371/journal.pone.0088278.t001

Measurements and Variables

The individuals were questioned about their socio-demographic features, health-related behaviour,

illnesses, medical treatments, and also psychological elements in face-to-face interviews.. People's eating habits were the independent factor in this research. In terms of eating habits, participants were given a choice of six different dietary habits and asked to select the one that best describes their eating habits (1 = vegan, 2 = vegetarian eating milk/eggs, 3 = vegetarian eating fish and/or milk/eggs, 4 = carnivorous diet rich in fruits and vegetables, 5 = carnivorous diet less rich in meat, 6 = carnivorous diet rich in meat).

Instead than offering participants a description of the different food groups, interviewers asked them to explain their eating habits. Vegetarians made up 2.2% of the participants, hence they were considered a single dietary habit category for the purposes of the study. When it comes to animal fat consumption, we developed a scale to represent different eating habits, with 1 denoting vegetarianism, 2 designating a carnivorous diet high in fruits and vegetables, 3 designating a carnivorous diet low in meat, and 4 denoting a carnivorous diet high in meat. We matched the participants based on their demographics, such as gender, age, and socioeconomic status, in order to account for these characteristics' potential effects on health [38–41]. Using net equivalent income, educational attainment, and employment, the subjects' SES (which ranged from 3 to 15 years old) was estimated. The OECD [42] developed an equivalency scale that was used to determine net equivalent income, which was then split into quintiles. Basic education (up to 15 years of age), apprenticeship/vocational school, third grade without a diploma, fourth grade with a diploma, and finally university education were all differentiated using an ordinal variable. For this study, respondents were classified as either "unqualified worker," "apprentice or skilled worker," "self-employed or medium job," "qualified job" or "academic," or "executive." Correlations between the various factors used to compute the SES were calculated to validate their combination. They had r values ranging from .70 to .80. Physical activity, cigarette smoking, and alcohol use were all considered lifestyle variables together with BMI in all studies. The body mass

index (BMI) is computed by multiplying a person's weight in kilogrammes by their height in metres squared (kg/m^2). [43]. For this study, a self-reported questionnaire called the International Physical Activity Questionnaire (IPAQ) short version was used to collect data on how much exercise participants had engaged in during the previous week. There is no distinction between leisure and non-leisure time physical activity in the IPAQ's short version, For the overall MET score, an estimated weekly MET energy expenditure was applied to each activity's reported minutes per week [44]. The number of cigarettes smoked per day was used as a measure of smoking habits. The number of days in the last 28 days on which people drank alcohol was used as a measure of alcohol use. Self-perceived health, ranging from 1 (very excellent) to 5 (extremely terrible), and impairment to health, ranging from 1 (highly impaired) to 3 (moderately impaired), were the dependent variables (not impaired). The presence of 18 specific chronic conditions was also assessed (asthma, allergies, diabetes, cataract, tinnitus, hypertension, heart attack, apoplectic stroke, bronchitis, arthritic complaints, osteoporosis, urinary incontinence, gastric or intestinal ulcer, cancer, migraine, anxiety disorder or depression) A present (1) or an absent (0) value was assigned to each condition (0). For each chronic ailment (0–18, sum index), we derived a total frequency score. Other factors included "hypertension" and "enhanced blood cholesterol level," as well as diabetes and smoking (0–4, total index). A present (1) or an absent (0) value was assigned to each variable (0). The sum index of the number of physicians consulted in the previous 12 months (0–8) was used to build a health care dependent variable. An ENT physician, an internist, an orthopedist, and an obstetrician-gynecologist-dermatologist were among the medical specialists whose services were either "consulted" (1) or "not consult" (2). (0). How many T's are there?

Table 2. Differences in health and health care between the different dietary habit groups

Measure	vegetarian N=330		carnivorous diet rich in fruits and vegetables N=330		carnivorous diet less rich in meat N=330		carnivorous diet rich in meat N=330		p-value
	M	SD	M	SD	M	SD	M	SD	
Health									
Self-reported health generally ¹	1.78	0.94	1.50	0.90	1.46	0.87	1.57	0.87	.000 ²
Impairment ²	2.62	0.66	2.71	0.62	2.23	0.59	2.73	0.61	.000 ²
Chronic conditions ³	1.29	1.60	1.00	1.14	0.92	1.29	1.03	1.50	.000 ²
Vascular risk ⁴	2.02	0.74	1.96	0.75	2.01	0.71	1.98	0.73	.150 ²
Health care									
Medical businesses (number of visits to the doctor) ⁵	1.69	1.33	1.68	1.17	1.43	1.02	1.60	1.22	.000 ²
Number of vaccinations ⁶	3.22	2.28	3.65	2.15	3.59	2.02	3.61	2.13	.000 ²
Number of preventive health care offices used ⁷	1.15	1.07	1.39	1.07	1.29	1.07	1.26	1.05	.000 ²

Note. Data source: Austrian Health Interview Survey (AT-HIS) 2006/07. M=mean, SD=standard deviation, N=number of subjects, p=probability.
¹ Higher score means worse health, ² higher score means better health, ³ individual test result, ⁴ result of univariate comparison. Analyses were calculated with subjects matched according to their age, sex, and socio-economic status controlling for BMI, physical activity (total MET score), smoking behavior (number of cigarettes per day), and alcohol consumption (number of days on which alcohol was consumed during the last 28 days) (N=1220). doi:10.1371/journal.pone.0088278.t002

Table 3. Differences in suffering from various chronic conditions between the different dietary habit groups.

Chronic condition	Vegetarian	Carnivorous diet rich in fruits and vegetables	Carnivorous diet less rich in meat	Carnivorous diet rich in meat	p-value (χ^2)
Asthma	4.8%	3.3%	3.9%	4.5%	.772
Allergies	30.6%	18.2%	20.3%	16.7%	.000
Diabetes	2.7%	4.2%	2.4%	2.4%	.455
Cataract	4.2%	3.0%	3.3%	1.8%	.348
Tinnitus	4.8%	4.8%	4.8%	3.0%	.840
Hypertension	11.5%	10.6%	12.4%	15.5%	.260
Cardiac infarction	1.5%	1.5%	0.9%	0.6%	.610
Apoplectic stroke	1.2%	1.8%	1.5%	1.8%	.610
Bronchitis	3.9%	3.6%	2.4%	3.0%	.701
Arthritis	8.5%	7.6%	8.8%	10.3%	.662
Sacrospinal complaints	26.7%	24.8%	18.2%	23.9%	.060
Osteoporosis	6.4%	4.8%	3.6%	5.8%	.415
Urinary incontinence	2.1%	3.9%	2.7%	6.4%	.023
Gastric or intestinal ulcer	4.2%	4.2%	1.5%	3.6%	.169
Cancer	4.8%	3.3%	1.2%	1.8%	.022
Migraine	15.8%	11.8%	9.1%	12.1%	.074
Mental illness (anxiety disorder or depression)	9.4%	4.8%	5.8%	4.5%	.036
Any other chronic conditions	8.8%	5.5%	5.8%	6.7%	.308

Note. Data source: Austrian Health Interview Survey (AT-HIS) 2006/07. Percentage of subjects suffering from the different chronic conditions. p (χ^2): probability value of Chi-Square-Test. Analyses were calculated with subjects matched according to their age, sex, and socio-economic status (N=1220). doi:10.1371/journal.pone.0088278.t003

There were eight different immunizations included in this study, and the results were assessed using a total index ranging from zero to eight. Each immunisation was categorised as either present or missing (0). Preventive health care was also evaluated by calculating the total index of the variables 'preventive check-ups,'mammography, prostate gland check-up, and Papanicolaou test (0–4, sum index). A present (1) or an absent (0) value was assigned to each variable (0). WHOQOL-BREF was used to assess the dependent variable's level of well-being (quality of life) [45]. The results were broken down into four

categories: bodily well-being, mental well-being, interpersonal connections, and the physical surroundings. Between 4 to 20 were the scores for each of these domains.

Analyzing data using statistical methods

Carnivorous diets rich in fruits and vegetables and low in meat (vegetarian, carnivorous diet high in meat, carnivorous diet low in meat) were matched with people of varying gender, age and socioeconomic status. Multivariate analysis of variance was used to compare the lifestyle differences (BMI, total MET score, daily cigarette intake, and alcohol consumption in the previous four weeks) across the various dietary habit groups. Health (self-reported health, impairment due to health issues, quantity and frequency of chronic conditions, vascular risk) and Health Care (number of doctor's visits and vaccinations received and used; quality of life) were used to compare dietary habits between different groups. Multivariate ANOVAs were then used to examine the differences between these groups (physical and psychological health, social relationships, and environment). With this in mind, analyses of variance were performed to address any potential biases in lifestyle factors that affect health (BMI, physical activity, smoking behavior, and alcohol consumption). An ordinal scale was initially used to measure the two variables "self-reported health" and "impairment owing to health issues" in the "health" domain. As a consequence, non-parametric tests were used to monitor our findings (Kruskal Wallis Test). Only the findings of the analyses of variance are presented since the results were the same. For the 18 chronic illnesses listed above, chi-square tests were performed to determine which one occurs more often in relation to diet. It was deemed statistically significant when the p value was less than.050. The IBM SPSS programme for Windows (version 20.0) was used to perform all of the analyses.

Results

Descriptions of Participants' Personality and Lifestyle Differing perspectives on

the Different Types of Eating Habits A total of 1320 individuals' data was examined in this study (330 in each dietary habit group). Based on the data in Table 1, we've divided up the population into dietary behaviour groups. A total of 23.6 percent of the participants were male, while 76.4 percent were female. 40.0 percent of the participants were under the age of 30, 17.8 percent between the ages of 30 and 39, 17.6 percent between the ages of 40 and 49, 9.4 percent between the ages of 50 and 59, 8.4 percent between the ages of 60 and 69, and 2.4 percent above the age of 80 or older. Thirty-three percent of the participants had a low socioeconomic status (SES score of #6), forty-eight percent had an intermediate level (SES of #6 to #10), and twenty-nine percent had a high level (SES.10). People's food habits were shown to have a significant main influence in our multivariate lifestyle analysis ($p = .000$).

that the overall health behaviours of the various eating habit groups varied. Only BMI and alcohol intake differed across the food habits groups in the univariate analysis. Meat-eating carnivores had the second-lowest mean BMI ($M = 23.4$), followed by those who eat an abundance of fruits and vegetables ($M = 23.5$), as well as those who consume a diet high in protein ($M = 24.9$). The BMI of meat eaters is considerably higher than that of any other group ($p = .000$). There was no significant difference in total MET scores across the different dietary habit groups ($p = .631$) when it came to physical activity. The number of cigarettes smoked per day did not vary across the varied eating habits ($p = .302$). People who eat more fruits and vegetables in their diet ($M = 3.0$ days) or a vegetarian diet ($M = 2.6$ days) use alcohol less often than those who eat more meat ($M = 4.4$ days) or those who consume more meat ($M = 4.8$ days) in their diets, according to the results of this study.

Disparities in health outcomes across dietary habit types

Individuals' eating habits had a significant main influence on health in the context of multivariate

analysis of variance ($p = .000$). In general, vegetarians have a worse health status than those who follow other eating habits. There is a substantial difference in self-reported health between vegetarians and non-vegetarians ($p = .000$). These patients also report greater degrees of disability from diseases ($p = .001$). Chronic illnesses are more common among vegetarians ($p = .000$; Table 2) than in carnivores who consume less meat. Vegetarians are more likely than other dietary groups to have allergies, cancer, and mental health problems (such as anxiety or depression) (Table 3). Urinary incontinence is more common in those who follow a carnivorous diet that includes a lot of meat ($p = .023$). In terms of cardiovascular risk, there were no differences between those who consumed various types of diets ($p = .150$; Table 2).

Health Care Disparities Among Dietary Habit Groups

There is a significant main impact for dietary behaviours ($p = .000$) and it has been established that people with a reduced animal fat consumption have worse health care practises overall ($p = 0.0001$). Those who are vegetarians and those who consume a diet high in fruits and vegetables are more likely to see a doctor than those who eat a diet low in meat. There is also a significant difference in the frequency of vaccinations among vegetarians, as well as the frequency of preventative checkups, between those who eat a carnivorous diet rich in fruits and vegetables and those who follow a plant-based diet.

Dietary Habits and Life Satisfaction: A Comparison

There was no significant difference in quality of life between the eating habits groups in multivariate analysis of variance ($p = .291$). There was a significant difference between vegetarians and carnivorous respondents when it came to "physical health" ($p = .002$) and "environment" ($p = .007$) according to the findings of the univariate analyses of variance. A high-fruit and vegetable-based carnivore

diet is associated with higher "social connections" quality of life than is the case for vegetarians.

Table 4. Differences in quality of life between the different dietary habit groups.

Measure	vegetarian N=230		carnivorous diet rich in fruits and vegetables N=330		carnivorous diet less rich in meat N=330		carnivorous diet rich in meat N=330		p-value
	M	SD	M	SD	M	SD	M	SD	
Quality of life									.201 [†]
HRQOL, physical health [‡]	17.36	3.28	17.52	2.95	17.08	2.90	17.40	2.86	.026 [‡]
HRQOL, psychological health [‡]	16.50	2.74	16.75	2.42	16.88	2.33	16.66	2.24	.316 [‡]
HRQOL, social relationships [‡]	16.59	2.02	16.99	2.40	16.96	2.38	16.88	2.63	.040 [‡]
HRQOL, environment [‡]	16.36	2.26	16.44	2.11	16.56	1.98	16.45	2.08	.887 [‡]

Note: Data source: Austrian Health Interview Survey (HFHS) 2006/07. M=mean, SD=standard deviation, N=number of subjects, p=probability.
[†]A higher score means better result, [‡]multivariate test result, [§]result of univariate comparison. Analyses were calculated with subjects matched according to their age, sex, and socio-economic status controlling for BMI, physical activity (total MET score), smoking behavior (number of cigarettes per day), and alcohol consumption (number of days on which alcohol was consumed during the last 28 days) (N=1520).
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or those who consume a meat-heavy diet (p=.043). Table 4 summarises the findings.

Discussion

Overall, our data show that vegetarians have a worse quality of life, are more likely to seek medical attention, and are more likely to be hospitalised. One of our goals was to create a variable that would indicate an individual's consumption patterns with regard to animal fats (vegetarian = 1; carnivorous = 2; less carnivorous = 3; meat-heavy = 4) for the 'eating habit' variable. As the quantity of animal fat consumed increases, so does the mean body mass index (BMI) of the participants. This is consistent with prior research demonstrating that vegetarians had a reduced BMI [1,4,5,7,9–12]. Those who eat a plant-based diet are more likely to suffer from long-term health issues and to have a worse quality of life. If this is true, it suggests that the vegetarians in our research eat this way because they have health or weight issues, as a vegetarian diet is often advocated as a way to lose weight (10) or improve health (46). Because of this, calorie intake was not taken into account, which is a shame. In order to better understand the connection between health and food patterns, further research is needed. We observed that vegetarians had a considerably greater risk of cancer than those who ate a more conventional diet. Vegetarians had lower incidences of cancer, stomach discomfort, and all-cause death, according to earlier research [5–7,19–22]. Since there were no differences in smoking and physical activity between

Austrian adults and those from other countries, it is possible that the higher cancer incidence in vegetarians in our study is due to factors other than the general amount of animal fat intake, such as health-conscious behaviour. [9,13,14] For this reason, greater research is needed in Austria in order to better understand the prevalence of various forms of cancer and its link to dietary variables. Many research have shown that vegetarianism has varying impacts on mental health [9, 15, 16]. In our research, vegetarians had considerably higher rates of anxiety and/or depression than non-vegetarians. The quality of their physical, social, and environmental well-being suffers as a result. Health care use also varied considerably across our study's food behaviour groups. Others who adopt a vegetarian diet need greater medical attention than those who follow a different diet.

However, this may be attributable to the increased prevalence of chronic illnesses among vegetarians. Our research has a number of advantages, including a large sample size, the ability to match participants based on gender, age, and socioeconomic status, and the use of standardised measurements for all variables. In addition, we took into account the impact of weight and other lifestyle variables, such as physical activity and smoking, on health. The survey was based on cross-sectional data, which may have introduced some bias into our findings. It is impossible to say if vegetarians' bad health is due to their dietary habits or whether they eat this way because of their poor health. The only thing we can say with certainty is that there is a correlation, not a cause-and-effect link. As a result, we are unable to provide any information on the long-term effects or death rates of a particular diet. Consequently, we will need to conduct more long-term research in order to verify our findings. Subjects were asked how they would categorise their eating habits, however there was no clear explanation of the different dietary habit categories given to them before they were asked this question. Individuals' eating habits and weight and drinking habits are linked, which indicates the validity of the variable. Another drawback is the absence of comprehensive nutritional data (e.g. the

amount of carbohydrates, cholesterol, or fatty acids consumed). As a result, additional in-depth studies of Austrian individuals' dietary habits and their impact on their health are needed. Further research is needed to examine the impact of varied food patterns on cancer incidence. To the best of our knowledge, this is the first research to look at food patterns and how they affect health in Austria. In order to accommodate a huge number of participants, we had to simplify our survey questions. As a whole, we believe that our findings are of particular interest, notwithstanding certain limitations about causes and consequences.

Conclusions

According to our findings, vegetarianism is associated with worse health outcomes for Austrian adults, including higher rates of cancer, allergies, and mental health issues, as well as shorter lifespans and more frequent visits to the doctor. For this reason, it is imperative that Austria's public health programme continue at a high level. Further research into the health impacts of various food habits is urgently needed in Austria, as shown by our findings.

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