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Research Article

Dietary Patterns, Quality of Life, Happiness Index, Alcohol and NCDs in Muslim and Christian Countries 2004

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Abstract

Target: Analysis of NCD risk factors, Dietary Patterns in Muslim and Christian countries.

Methods and Results: The Mann-Whitney U-test was used to assess risk factors for NCDs in Muslims and Christians. Statistically significant differences ($p \leq 0.025$) in the burden of disease among Muslims and Christians in 2004 were found in the following groups: oncological, neuro-psychic, cardiovascular diseases and injuries. Dietary Patterns: Muslims and Christians chose foods according to dietary traditions. In this regard, the Dietary Patterns of Muslims were statistically significantly different ($p \leq 0.025$) from those of Christians. Muslim Dietary Patterns included: 25% animal products, 62% vegetables, 8.6% fruits, 1% alcoholic beverages, 0.6% vegetable oils, 1.8% fish. Dietary Patterns for Christians included: 32% animal products, 50% vegetables, 9.0% fruits, 6.3% alcoholic beverages, 1.2% vegetable oils, and 2.3% fish. Muslims had 6% higher Christians Total Energy (kcal/person/day). However, Muslims had 26% less Christians in Total Energy of Animal Macronutrients ($p \leq 0.025$). Thus, the higher calorie content of Muslims contained 26% less Christian calories of animal products.

Conclusions: Despite the statistically equal economic and geographical characteristics given by the research conditions, between the countries of Muslims and Christians, statistically significant differences were established for the main groups of diseases and injuries, Dietary Patterns and Macronutrients.

Keywords: Muslims; Christians; Quality of Life; Metabolic Syndrome; NCD Risk Factors; Dietary Patterns; Levels of Consumption of Foods; Alcoholic Beverages; Nutrients

Abbreviations

AB: Alcoholic Beverage; AP: Animal Products; BMI: Body Mass Index; BP: Blood Pressure; CD: Communicable, Maternal, Perinatal Diseases; Chol.: Blood Cholesterol; FAO: Food and Agriculture Organization of the United Nations; COPD: Chronic Obstructive Pulmonary Disease; FS: Fruits and Sweeteners; GDP: Domestic Gross Product; Glu.: Blood Glucose; HPI: Happiness Index; IHD: Index of Human Development; LPA: Low Physical Activity; NCD: Noncommunicable Diseases; CV: Cereals and Vegetables; TCL: Total Daily Consumption; UV: Ultraviolet Level

Introduction

In the overall socio-economic burden, the growing aging of the world population leads to an increase in the proportion of non-communicable chronic diseases (NCDs) [1].

In 2016, 71% of the 56.9 million deaths worldwide were due to NCDs. Of these: 4% - in people under 30 years old, 38% - in people from 30 to 70 years old and 58% - in people 70 years of age and older. Cancer, diabetes, cardiovascular and respiratory diseases accounted for 80% of deaths. Task 3. 4 for the Sustainable Development Goals (SDGs) — reduction of NCDs by one third by 2030 relative to the level of 2015 [2].

A 2000-2019 (GBD) study of 204 countries identified five key risk factors for NCDs. NCDs are a global cause of death in low and lower middle income countries [3,4].

The first empirical evidence of in utero environmental influences on lifelong epigenetic changes came from people who experienced intrauterine starvation. A decrease in DNA methylation of the IGF2 gene was found (Holland, 1944-45).

Despite in-depth research into the concepts and mechanisms of intrauterine exposure to NCD risk factors, the full picture remains unclear. The dramatic rise in lifestyle-related NCDs is difficult to explain by specific genes alone. At present, a new theory has been proposed [5-7].

Remarkable breakthroughs in the understanding of epigenetic biology over the past decade have coincided with increased public interest in the impact of diet and lifestyle on health. A balanced diet has been shown to increase life expectancy and prevent or treat NCDs such as obesity, diabetes, cancer, and mental disorders. However, the biological mechanisms underlying these effects are still poorly understood [8].

Alcohol consumption is one of the important contributors to NCDs.

Alcohol can have both positive and negative effects on the cardiovascular system. These effects can be modulated by several factors. Most importantly, the daily dose, as well as ways of consumption: type of drink, regular, or intensive consumption.

Many epidemiological studies have shown the J-curve, with a higher risk of cardiovascular disease in those who do not drink alcohol compared with regular mild to moderate drinkers. But with a higher risk in heavy drinkers depending on the dose.

This article analyzes the complex relationship between alcohol consumption and the risk of coronary and cerebrovascular disease, including cardiovascular mortality. The authors consider alcohol mechanisms of damage to the cardiovascular system.

The lack of controlled trials and the difficulty of not passing the positive threshold is currently discouraged from drinking alcohol to protect the cardiovascular system. The threshold for a safe dose of alcohol has not been established [9-11].

Alcohol can have different effects on immediate and long-term risk. Moderate alcohol consumption was associated with increased cardiovascular risk, which declined after 24 hours and even protected against myocardial infarction and hemorrhagic stroke. Heavy drinking has been associated with a higher risk of heart disease, vascular disease the next day - 6-9 doses: RR = 1.3-2.3. Drinking alcohol in large quantities week -19-30 doses: RR = 2.25-6.2. The authors suggested that there is an immediate higher risk of cardiovascular disease after any alcohol consumption. Drinking alcohol in large quantities leads to an increased risk after 24 hours [12].

Moderate alcohol consumption increases plasma HDL levels. This reduces the risk of cardiovascular disease by temporarily increasing postprandial lipemia. Alcohol-mediated increase in triacylglycerol-rich postprandial lipoprotein flux promotes an increase in HDL cholesterol levels and increased reverse cholesterol transport in humans [13].

When evaluating a wide range of risk factors for cardiovascular disease, alcohol consumption or smoking at any dose failed to detect a cardioprotective effect. Smoking is a risk factor for many cardiovascular diseases, even after adjusting for alcohol. The authors point to a causal relationship between alcohol, smoking and the risk of cardiovascular disease [14].

Obesity is a risk factor for glucose tolerance, type 2 diabetes, and cardiovascular morbidity. Diet, lifestyle, and pharmacological

treatments, including bariatric surgery, show efficacy. The authors summarized the main aspects of diabetes prevention in obesity and elucidated some of the molecular pathways contributing to the progression of diabetes and its complications [15].

Obesity reduces life expectancy, reduces quality of life in cardiovascular disease, type 2 diabetes, osteoarthritis and cancer. There are differences in obesity risk that have led to the concept of metabolically healthy obesity (MHO). Normal levels of glucose and lipid metabolism usually serve as criteria for the diagnosis of MSO. Biological mechanisms of MSO: less visceral and liver fat. Higher fat deposition in the legs. Ability to increase subcutaneous adipose tissue. Preserved sensitivity to insulin and beta function of cells. Better cardio-respiratory endurance. But MLO should not be considered a completely safe state [16].

Cardiovascular disease can be attributed to a small number of modifiable risk factors. Some factors have global implications (hypertension and education). Other factors (household air pollution and poor nutrition) vary depending on the economic level of the country [17].

Health indicators in Afghanistan are among the lowest in the Region. About 37% of adult Afghans die from NCDs. 5897 people were examined: 54% - women 39.56 years old. The illiteracy rate is 61.5%. Smoking and snuff use accounted for 8% and 11.1%, respectively. The subjects consumed fruit 2.76 and vegetables 3.85 days per week. overweight, overall and abdominal obesity were 19%, 33.7% and 57.1%, respectively. 32.4% had high blood pressure and 12.5% had high blood sugar. Thus, in large cities of the country, modifiable NCD risk factors prevailed. The identification of modifiable risk factors for NCDs is vital for Afghanistan [18].

Papadopoulos V., *et al*. reported that there are few data on the incidence of NCDs in the Muslim population worldwide. Muslims in Thrace (Greece) have fewer strokes than Christians (87.2 versus 173.9 cases/100,000 person-years). Muslims have lower rates of diabetes (p = 0.019) and atrial fibrillation. The contribution of diet and occupation remains to be explored in further studies [19].

Research objectives

Conduct an analysis of risk factors for the burden of major NCD disease groups, predictors of Metabolic Syndrome, Quality of Life, Dietary Patterns, alcohol consumption and Macronutrients in men in Muslim and Christian countries

Materials and Methods

Muslims	IPC 2000	% Religiosity	Christians	IPC 2000	% Religiosity
Albania	4027	58,8	Angola	2781	88,2
Algeria	2781	99	Argentina	11810	85
Azerbaijan	3534	96,9	Belarus	5995	71,2
Bangladesh	1301	90,4	Brazil	9013	90,2
Bosnia and Herzegovina	4526	50,7	Bulgaria	6371	84,1
~~Brunei~~	65035	78,8	Burundi	598	94,1
Burkina Faso	829	61,5	Cameroon	1987	70,8
Chad	787	58	Cape Verde	3040	89,1
China	2933	45	Central African	649	89,8
Comoros	1174	98,3	Chile	9608	89,5
Djibouti	1678	97	Colombia	6585	92,5
Egypt	5856	92	Congo R	3551	85,9
Eritrea	1331	51,6	Costa Rica	7830	90,9
Guinea	896	89,1	Dominican Republic	6312	89

Guinea-Bissau	1078	45,1	Ghana	1791	75
Indonesia	4602	87,2	Guatemala	4812	95,2
Iran	9436	99,4	Haiti	1379	87
Jordan	5735	97,2	Jamaica	6287	77,1
Kazakhstan	7888	70,2	Kenya	1690	85
Kuwait	55421	74,6	Lesotho	1412	96,8
Kyrgyzstan	1644	80	Liberia	665	85,6
Lebanon	9936	57,7	Luxembourg	55306	70,4
Libyan	17 436	97	Madagascar	1145	74,5
Malaysia	12928	61,3	Malawi	686	82,7
Mali	1160	95	Mexico	10429	95,2
Mauritania	2181	99,9	Namibia	4840	97,6
Morocco	5998	99	Nicaragua	2739	85,9
Niger	597	98,3	Norway	36928	86,2
Nigeria	2258	51,6	Paraguay	4823	96,8
Pakistan	2770	96,5	R Moldova	1840	97,5
Saudi Arabia	34140	98,2	Romania	5873	99,0
Senegal	1512	96,1	Russian F	6825	74
Sierra Leone	723	78,6	Rwanda	623	93,4
Sudan	1812	97	Slovenia	18036	79,3
Syrian AR	3497	87	Solomon Islands	1371	97,5
Tajikistan	935	97,9	Swaziland	4628	82,9
The Gambia	1237	95,7	Switzerland	35675	82,9
Tunisia	6003	99,8	Uganda	846	86,7
Turkey	9576	89,5	Ukraine	3803	83,8
Turkmenistan	4227	93,7	United States of America	36450	80
Tanzania	1174	35,2	Guyana	3577	64,9
United Arab E	81819	92	Vanuatu	2238	93,3
Uzbekistan	1984	88,7	Zambia	1667	97,5
Yemen	3086	99,2	Zimbabwe	2038	79
44 countries	*8553*	*82,4*	44 countries	*7649*	*83,1*

Table 1: List of countries Muslims and Christians.

Study design: statistical analysis of observations (Figure 1).

For the purposes of this study, two groups of countries were prepared. Group 1: 44 countries in which more than 50% of the male population professes the Muslim religion. Group 2: 44 countries in which more than 50% of the male population professes the Christian religion.

Figure 1: Percentage of religiosity in countries Muslims and Christians.

Figure 2: Income 2000-2016, UV 2004 and Total CL in countries 2003-05 in Muslim and Christian countries.

The second condition of the research: groups 1 and 2 of countries should not have statistically significant differences in economic and geographical conditions. Namely, Income, latitude, longitude and Ultraviolet of the 1st group of countries (Muslims) did not differ statistically significantly from Income, latitude, longitude and Ultraviolet of the 2nd group of countries (Christians). From the GBD 2004 Geneva, 2009 [20] database, sex- and age-standardized total burden (DALE) data were selected for NCDs, cardiovascular disease, diabetes mellitus, alcoholism, bipolar depression, chronic obstructive pulmonary disease, nephritis, lung cancer, pancreatic gland, melanoma and colorectal cancer (ICD-10 codes -10-10) (Table 1 - List of countries).

To characterize the "quality of life" (QoL) in countries, a number of indicators were used: per capita income, or gross domestic product 2000 - 2016 (USD per person per year) (Figure 2) [21]; geographical position of countries by latitude and level of ultraviolet radiation in the capital of countries (UV) (J/m^2 2004) [22]. Prosperity Rating [23]: Rating Educations, Rating of the Social capital; Rank of corruption 2016, Rating of peacefulness;, Happiness Index HPI 2016, Index of human development, Ecological efficiency index [24], Life expectancy for men and women (LE) [25]; Access to health care, Clean water and Clean air [26].

The work analyzed the predictors of the Metabolic syndrome - the percentage (%) in the country of men with a Body Mass Index (BMI) ≥ 30 kg/m^2); The level of cholesterol in the blood (CholL. ≥ 6.2 mmol/l); The level of glucose in the blood (Glu. ≥ 7.0 mmol/l); Blood pressure (BP ≥ 140/90 mm Hg); Low physical activity (LPhA) ≤ 60 min/day walking [27].

We studied the Total Food Consumption Level (TCL) (g/person/day) (50 types of food). Data on food consumption for each country was selected from the FAO database for 1992 - 2005 [28].

The structure of nutrition (SN) of countries is presented in the form of 6 blocks in absolute and percentage terms: 1 - products of animal origin (AP); 2 - cereals and vegetables (GV); 3 - fruits and sweeteners (FS); 4 - alcoholic drinks (AB); 5 - Vegetable fats (Oil); 6 - Fish (Fish) [28].

Statistical analysis of the study results was performed using the nonparametric Mann-Whitney-Wilcoxon U test. The U indicator is the numerical value of the Mann-Whitney test. The central trend in the distribution of the sample data was represented by the Median with a Quartile Range and the Mean with a Standard Deviation. The variance of the data in the samples was estimated using the quartile range (QR) between the first and third quartiles, i.e. between the 25th and 75th percentiles.

The level of statistical significance, which reflects the degree of reliability of the conclusion about the differences in the indicators of countries of groups 1 and 2: two levels of accuracy were assessed: (1) $p \leq 0.01$, error probability 1%; (2) $p \leq 0.05$,

error probability 5%. In addition, we used Bonferroni correction to assess the significance of the study results, taking into account two hypotheses p ≤ 0. 025 for multiple comparisons. All calculations were carried out using the STATISTICA program (version 13).

Research results

Burden of NCDs metabolic syndrome in Muslims and Christians

		Muslims				Christians			
Variable	**p ≤ 0,05**	**Mean 1**	**Median 1**	**Quartile 1**	**Standard 1**	**Mean 2**	**Median 2**	**Quartile 2**	**Standard 2**
Population ('000) (e)	0,3330	30047	5258	11702	15505	13197	4442	8093	4090
Male Death/100 000	0,4729	1426	1292	929	93	1884	1446	1234	365
Infectious and parasitic diseases DALY/100 000	0,6225	6736	3293	9854	1062	10219	2805	18378	1937
HIV/AIDS	0,0052	874	114	1259	235	5386	725	5993	1539
Hepatitis B (g)	0,0000	59	43	64	8	30	12	25	8
Hepatitis C (g)	0,0002	26	16	25	4	12	5	12	2
Upper respiratory infections	0,0162	65	25	58	13	34	12	40	8
NCD Noncommunicable diseases DALY/100 000, 2004	0,1845	14259	13888	3426	413	13402	13551	3331	399
Malignant neoplasms DALY/100 000, 2004	0,7894	1341	1408	601	65	1390	1398	508	58
Mouth and oropharynx cancers	0,5647	94	83	80	9	85	79	74	8
Oesophagus cancer	0,3166	74	33	83	11	85	53	69	13
Stomach cancer	0,4781	124	75	94	15	131	109	129	13
Colon and rectum cancers	0,1352	75	64	60	7	98	77	104	10
Liver cancer	0,9335	186	112	225	30	141	81	159	20
Pancreas cancer	0,0276*	31	27	15	3	44	40	44	4
Trachea, bronchus, lung cancers	0,8478	202	142	191	24	210	141	221	24
Melanoma and other skin cancers	0,0047	14	9	15	2	21	19	17	2
Breast cancer	0,0109	0	0	0	0	1	0	2	0
Prostate cancer	0,0001	106	56	89	17	161	150	99	13
Bladder cancer	0,0033	68	56	41	8	42	41	35	4
Lymphomas, multiple myeloma	0,0340*	121	109	72	9	96	92	42	6
Leukaemia	0,4938	74	63	54	6	65	67	41	4
Other neoplasms	0,2393	59	51	52	8	40	35	29	3

Diabetes mellitus DALY /100 000, 2004	0,7959	412	410	249	26	405	383	163	24
Neuropsychiatric conditions DALY/100 000, 2004	0,0039	2648	2598	421	51	3072	3009	1168	99
Unipolar depressive disorders	0,0261*	677	711	184	18	644	556	177	18
Bipolar disorder	0,0417*	220	216	19	2	213	206	39	3
Schizophrenia	0,0000	258	250	31	4	230	232	23	3
Alcohol use disorders	0,0000	226	151	196	37	669	580	682	78
Alzheimer and other dementias	0,0145	129	124	28	3	151	150	64	6
Parkinson disease	0,8674	26	25	8	2	28	24	10	2
Multiple sclerosis	0,6166	19	17	3	1	18	17	10	1
Drug use disorders	0,2231	206	105	159	36	211	125	203	29
Post-traumatic stress disorder	0,0048	30	30	1	0	29	29	2	0
Obsessive-compulsive disorder	0,0000	93	100	1	3	99	101	14	3
Panic disorder	0,0000	70	70	2	0	68	69	2	0
Insomnia (primary)	0,0001	45	51	50	4	65	69	0	1
Migraine	0,0020	44	44	40	3	60	70	48	5
Sense organ diseases DALY/100 000, 2004	0,0951	1677	1909	367	64	1381	1123	1030	79
Cardiovascular diseases DALY/100 000, 2004	0,0027	4111	3851	1399	232	3289	3075	1834	247
Rheumatic heart disease	0,0000	67	44	55	11	25	22	17	3
Hypertensive heart disease	0,0005	313	202	204	45	179	146	123	19
Ischaemic heart disease	0,0002	1904	1757	998	143	1429	1084	656	150
Cerebrovascular disease	0,6049	1037	1032	512	68	966	980	697	69
Inflammatory heart diseases (k)	0,1901	189	189	143	19	158	142	124	16
Chronic obstructive pulmonary disease DALY /100 000, 2004	0,0401*	526	514	275	43	414	427	268	24
Nephritis and nephrosis	0,0159	265	229	187	19	205	174	213	22
Peptic ulcer disease	0,1267	122	117	143	13	95	85	100	10

Cirrhosis of the liver	0,7638	288	201	141	38	355	199	335	47
Injuries /100 000									
Intentional injuries	0,0022	1110	724	1196	199	1835	1408	1538	238
Self-inflicted injuries	0,0053	224	196	150	29	360	304	228	44
Metabolic syndrome (predictors) % men in the country									
Male BMI ≥ 25 (kg/m^2)	0,3564	36	33	38	3	40	42	40	3
Male BMI ≥ 30 (kg/m^2)	0,3564	11	8	16	1	12	11	17	1
Male Chol. ≥ 5.0 (mmol/L)	0,4401	31	32	17	2	34	28	25	2
Male Chol. ≥ 6.2 (mmol/L)	0,4352	6	6	4	1	8	5	8	1
Male Glu. ≥ 7.0 (mmol/L)	0,7607	9	9	3	0	9	9	4	0
Male BP1≥140/90 (mm Hg)	0,0103	31	31	8	1	34	34	7	1
Male BP2≥140/90 (mm Hg), pharmacological correction	0,0021	40	40	7	1	43	42	6	1
Male NPA (t ≤ 60 minutes/day walking)	0,5051	30	30	21	3	32	33	27	3

Table 2: Burden of NCDs and Metabolic Syndrome in Muslims and Christians 2004 GBD U-test Mann, Whitney (p0.05).

Legend

MS - Metabolic Syndrome

DALY - Disability-adjusted life.

Table 2 shows that Median total population size, total male mortality, infectious and non-communicable disease burden were not statistically significantly different between Muslims and Christians in 2004 (Figure 3). However, the Median HIV/AIDS burden for Muslims was statistically significantly 6 times lower than for Christians.

But Muslims had a statistically significantly higher Median Hepatitis B (g) and Hepatitis C (g) 3 times compared to Christians. Muslims were 2 times higher than Christians Median Upper respiratory infections were statistically significant.

Figure 3: CD Communicable conditions and NCD Noncommunicable diseases.

In the Malignant neoplasms group, the median burden of Pancreas cancer, Melanoma and other skin, Breast cancer and Prostate cancer was 2 times statistically significantly higher in Christians compared to Muslims. But Muslims had a statistically significantly higher Median Bladder cancer and Lymphomas, multiple myeloma by 1.3 times compared to Christians.

Thus, out of 14 types of cancer, there were statistically significant differences in 6 types of cancer between Muslims and Christians (Figure 4).

Figure 4: Cancer burden in Muslim and Christian countries men 2004 GBD.

There were no statistically significant differences between Muslims and Christians in the burden of Diabetes mellitus.

The median group of Neuropsychiatric conditions was 1.2 times statistically significantly higher in Christians compared to Muslims. In this group Median Unipolar depressive disorders at 1.3, Bipolar disorder and Schizophrenia at 1, 1 times were statistically significantly higher in Muslims compared to Christians.

The median burden of alcohol use disorders in Christians was 4 times statistically significantly higher than in Muslims (Figure 5).

Christians had a statistically significant 1.2 times higher Median burden of Alzheimer and other dementias. Christians had statistically significantly higher Median Obsessive-compulsive disorder, Insomnia and Migraine.

Figure 5: Burden of Alcoholism among Men in Muslim and Christian Countries.

In comparison with Christians, Muslims had a statistically significantly higher Medan burden of the Cardiovascular diseases group by 1.3 times. In particular, Muslims had 2 times the Median of Rheumatic heart disease (Figure 6), 1.5 times the burden of Hypertensive heart disease (Figure 7), and 1.9 times the burden of Ischaemic heart disease (Figure 8).

Figure 6: Burden of Rheumatoid Heart Disease in Men in Muslim and Christian.

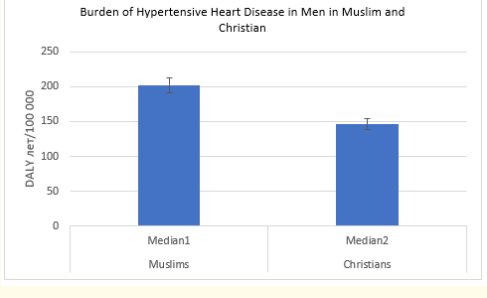

Figure 7: Burden of Hypertensive Heart Disease in Men in Muslim and Christian.

Figure 8: Burden of Coronary Heart Disease in Men in Muslim and Christian Countries 2004 GBD.

However, the Median burden of Cerebrovascular disease and Inflammatory heart disease did not differ between Muslims and Christians.

Muslims had a 1.2-fold higher Median burden of Chronic obstructive pulmonary disease and 1.3-fold higher Nephritis and nephrosis than Christians.

Muslims had 2 times significantly lower Median Intentional injuries and 1.5 times lower Median Self-inflicted injuries compared to Christians.

Metabolic syndrome in Muslims and Christians (% men in the country)

Table 2 shows that Median Predictors BMI ≥ 25; BMI ≥ 30; Chol. ≥ 5.0; Chol. ≥ 6.2; Glu. ≥ 7.0 and NPA do not differ statistically significantly between Muslims and Christians. But there is a noticeable trend towards a higher rate of predictors of ML in Christians.

Median predictors of MS BP1≥140/90 and BP2≥140/90 (pharmacological correction) Muslims were statistically significantly lower than that of Christians.

Quality of life of Muslims and Christians

		Muslims				Christians			
Variable	**p-value**	**Mean 1**	**Median 1**	**Quartile 1**	**Standard 1**	**Mean 2**	**Median 2**	**Quartile 2**	**Standard 2**
% relig.	0,3704	82,4	91,2	31,3	2,9	86,2	86,5	12,0	1,3
IPC Per Capita Income 2000	0,2892	8458	2776	4722	2604	7649	3690	5027	1740
IPC Per Capita Income 2016	0,8609	14535	6507	14329	2957	14815	7883	14906	3105
Gini Index 2021	0,1839	0,723	0,707	0,091	0,009	0,736	0,743	0,077	0,011
Lat LatLatitude°	0,5761	24	22	23	2	23	18	29	3
UV Ultraviolet rad J/ m2 2004	0,1278	4449	4975	2045	176	4176	4901	2048	205
Lon Longitude°	0,6254	45	38	47	5	49	35	46	6
Prosperity Rating	0,1119	91	90	47	5	78	72	55	6
Rating Educations	0,2360	91	84	56	5	79	80	51	5
Rating of the Social capital	0,7166	79	72	65	6	79	72	51	6
Rank of corruption 2016	0,0271*	118	126	67	6	95	103	81	7
Rating of peacefulness	0,0551*	96	101	63	6	80	82	53	6

HPI Happiness Index 2006	0,9800	41	41	15	2	41	42	24	2
HPI Happiness Index 2016	0,1329	4,835	4,996	1,241	0,139	5,291	5,333	2,264	0
IHD Index of human development	0,2495	0,645	0,696	0,280	0,026	0,689	0,706	0,303	0,026
EEI Ecological efficiency index	0,2706	43	42	24	2	48	47	17	2
Access to the street. medicine1990	0,3746	69	72	40	4	74	78	34	3
Access to clean water1990	0,4176	51	37	66	6	55	49	59	5
Air pollution for children under 5 years old 2004	0,0001	240	123	338	43	107	25	86	34
LE Female life expectancy	0,6583	65	70	24	2	65	73	24	2
LE Male life expectancy	0,9302	61	62	22	2	60	64	21	2
Gender LE2000	0,7894	4	4	2	0	4	4	5	1
LR Female life expectancy	0,4750	70	73	12	1	71	75	16	1
LE Male life expectancy 2019	0,7737	66	68	13	1	66	67	14	1
Gender Le 2019	0,0081	4,1	4,0	2	0	5,3	5,1	3	0

Table 3: Quality of life of Muslims and Christians U-test Mann, Whitney (p0.05).

IPC - Per Capita Income

Lat - Geographic Latitude

UV rad j/m^2 - Ultraviolet of the Country's Capital

Lon - Geographical.

We purposefully selected 2 groups of Muslim and Christian countries (44 countries per group) in a special way. In the Muslim group and in the Christian group IPC (Income), the modifiable factor, was not statistically significantly different (Figure 9). At the same time, the Muslim group and the Christian group included countries of different wealth.

Equalizing the Income of Muslims and Christians resulted in an equalization of the median characteristics of 22 out of 25 Quality of Life indicators. Only 3 measures of Quality of Life differed statistically significantly between Muslims and Christians.

Figure 9: Quality of life of Muslims and Christians.

Medians of Corruption Rank and Residential Air Pollution were statistically significantly higher for Muslims than for Christians. But Christians in 2016 had a statistically significantly higher gender difference in life expectancy LE (Table 3), (Figure 9).

Dietary patterns, alcohol, macronutrients, Musulman and Christian

		Muslims				Christians			
Variable	**p ≤ 0,05**	**Mean 1**	**Median 1**	**Quartile 1**	**Standard 1**	**Mean 2**	**Median 2**	**Quartile 2**	**Standard 2**
Total consumption level 2003-05 (g/person/day)									
Total CL (g/person/day)	0,8806	1223	1214	1079	92	1263	1125	1125	103
Animal Products AP 2003-05									
Bovine Meat	0,1138	20	17	14	2	34	22	38	5
Pig meat	0,0003	12	4	12	3	29	10	40	5
Mutton and Goat Meat	0,0000	13	9	15	2	3	2	4	1
Red meat	0,2873	45	35	34	5	66	47	72	9
Poultry Meat	0,0961	30	14	27	6	38	30	45	5
Meat, Other	0,0708	24	22	22	2	29	32	22	2
Offals, Edible	0,3027	6	5	6	1	7	6	6	1
Milk, Whole	0,5647	168	121	204	25	175	167	225	23
Milk, Skimmed	0,3008	24	11	39	5	25	7	21	7
Eggs	0,5904	13	9	17	2	15	10	22	2
Cheese	0,8185	5	2	7	1	8	3	9	2
Butter, Ghee	0,8090	2	1	4	0	2	1	3	1
Fats, Animals, Raw	0,0005	3	2	4	0	5	6	6	1
Freshwater Fish	0,4016	6	4	9	1	7	3	8	1
Demersal Fish	0,8971	5	3	8	1	6	2	9	2
Pelagic Fish	0,4328	12	7	13	2	13	9	15	2
Marine Fish, Other	0,3146	5	2	4	1	5	2	3	2
Molluscs, Other	0,5215	1	0	1	1	2	0	2	0
Fish amount	0,3970	29	23	35	4	33	23	34	4
AP amount	0,4859	347	324	344	33	404	374	455	43
% AP	0,4040	28	25	14	2	29	32	14	2
Grains and Herbal Products GV 2003-05									
Wheat	0,0197	242	253	356	27	138	101	145	16

Rice	0,0549*	92	55	119	15	56	17	91	10
Maize	0,0017	45	28	53	9	109	70	116	17
Barley	0,8740	5	0	3	3	3	0	4	1
Beans	0,0102	4	2	4	1	13	7	17	3
Rye	0,2396	1	0	1	0	6	0	2	3
Nuts	0,0434*	5	2	6	1	3	1	5	1
Grains and legumes	0,0150	392	398	213	23	322	329	132	16
Potatoes	0,1826	70	38	74	13	102	49	121	18
Tomatoes	0,0446*	72	37	117	11	36	36	47	5
Onions	0,0043	27	25	44	3	13	10	19	2
Vegetables, Other	0,0358*	166	147	182	20	103	79	115	11
Soyabean Oil	0,2495	6	3	7	1	9	5	11	2
Sunflowerseed Oil	0,4526	3	1	5	1	6	1	8	2
Olive Oil	0,7924	1	0	0	1	1	0	0	1
Oil amount	0,0555	10	8	13	2	17	12	25	2
% Oil	0,0115	0,7475	0,58	0,73	0,73	1,299	1,190	1,345	0,189
GV amount	0,1609	735	644	758	60	591	516	318	40
% GV	0,0059	60	62	13	2	52	50	24	2
Fruits and sweeteners FS 2003-05									
Oranges	0,4205	29	24	47	5	40	16	35	9
Lemons, Limes	0,8516	7	2	7	2	6	3	5	1
Apples	0,8152	19	11	31	3	20	6	22	5
Honey	0,1073	1	0	1	0	1	0	1	0
Sugar (Raw Equivalent)	0,4182	57	54	61	5	65	63	72	6
Coffee	0,0057	3	1	3	1	6	3	5	1
Tea	0,4704	3	3	1	0	3	3	2	1
FS amount	0,3970	110	104	117	11	135	116	144	16
% FS	0,2911	9	9	6	1	10	9	8	1
Alcoholic Beverages drinks AB 2003-05									
Beverages, Alcoholic	0,0000	3	0,0	2	1	10	5,5	13	2
Wine	0,0130	2	0,0	2	1	17	2,0	17	5
Beer	0,0000	15	7,5	15	3	75	54,5	99	11
AB amount	0,0000	20	10,0	18	4	101	65,0	122	16
% AB	0,0000	2	1,0	2	0	7	6,3	6	1
Total consumption level in terms of pure alcohol 2016									

both sexes' 2016	0,0000	3	1,4	4	1	7	6,7	5	1
men 2016	0,0000	5	2,3	8	1	11	10,7	7	1
Odds									
Ba/wine	0,1299	0,98	0,00	0	0	0,81	0,07	1	0
Ba/beer	0,0250	0,19	0,00	0	0	0,24	0,08	0	0
Ba/Ab	0,0109	0,10	0,00	0	0	0,14	0,07	0	0
Red m/Gl	0,0826	0,13	0,10	0	0	0,21	0,16	0	0
Fat a/ Oil v	0,5178	0,46	0,19	1	0	0,64	0,24	0	0
Tobacco smoking									
men Daily Age 2008	0,6810	27	23	28	3	25	22	20	3
Macronutrients									
Energy (kcal/person/ day) 1990-92	0,1962	2491	2440	760	83	2347	2285	610	79
Energy (kcal/person/ day) 2003-05	0,7894	2602	2610	905	74	2601	2520	810	83
Proteins (g/person/ day) 1990-02	0,2176	66	69	29	3	61	58	21	3
Proteins (g/person/ day) 2003-05	0,4833	72	74	34	3	69	64	33	3
Fats (g/person/day) 1990-02	0,2653	61	57	29	4	60	48	38	5
Fats (g/person/day) 2003-05	0,9834	67	64	36	3	73	62	49	6
Proteins/Fats 2003-05%	0,2930	111	104	41	4	116	99	45	10
Percentage Composition of Total Energy									
Carboh%E 1990-92	0,9209	68	66	7	1	67	68	12	1
Carboh%E 2003-05	0,9501	66	65	8	1	66	67	11	1
Proteins%E 1990-92	0,3487	11	11	2	0	11	10	2	0
Proteins%E 2003-05	0,1054	11	11	2	0	10	11	2	0
Fats%E 1990-92	0,7823	22	23	6	1	22	22	13	1
Fats%E 2003-05	0,6553	23	24	7	1	24	25	11	1
AP Macronutrients									
AP Energy% 1990-92	0,2027	12	11	11	1	15	13	16	1
AP Energy% 2003-05	0,1609	12	11	13	1	16	16	14	1
AP Protein% 1990-92	0,0118	29	28	14	2	36	38	24	2
AP Protein% 2003-05	0,0279*	30	29	18	2	38	39	25	2
AP Fat% 1990-92	0,1017	33	30	24	3	40	38	30	3

AP Fat% 2003-05	0,0734	32	26	25	2	38	39	26	2
Diversification Food Structures									
E% 2003-05	0,0069	42	40	16	1	50	49	18	2
P% 2003-05	0,0009	46	44	15	2	55	57	20	2
F% 2003-05 18	0,4087	88	90	10	1	87	92	14	2

Table 4: Dietary Patterns, Alcohol, Macronutrients, Musulman and Christian, FAO (1992-2005) U-test Mann, Whitney (p0.05).

Legend

TDC - Total Consumption Level; TE - Total Energy; AP - Animal Food Energy; AP - Animal Products; GV - Grains, Vegetables; FS - Fruits and Sweeteners; AB - - Alcoholic Drinks; DE - Energy Diversification; SS - Smoking Smgaret.

The daily consumption level included 50 types of products (Total CL - g/person/day). Total CL included 4 product groups. 1. AP - products of animal origin; 2. GV - Cereals, vegetables and vegetable oils; 3. FS - Fruits and sweeteners; 4. AB - Alcoholic drinks (strong spirits, wine, beer and pure alcohol).

Table 4 shows that the Median Total CL of Muslims and Christians were not statistically significantly different: 1214 and 1125 (g/person/day) respectively.

In group 1, AP: Muslims consumed statistically significantly 4.5 times as much as Christians: Mutton and Goat Meat (9 vs. 2 g). Christians consumed statistically significantly 2.5 times more than Muslims Pig meat (10 vs 4g) and 3 times more Fats, Animals, (6 vs 2g) (Figure 10).

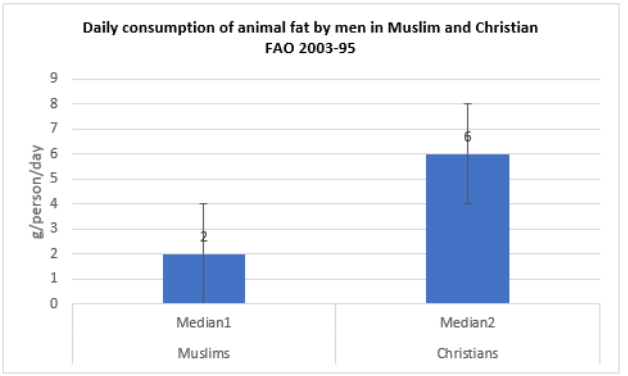

Figure 10: Daily consumption of animal fat by men in Muslim and Christian countries 2003-05 FAO.

In Group 2 GV: Muslims consumed statistically significantly more than Christians: Wheat (253 vs. 101 g); Nuts (2 vs 1g); Grains and legumes (398 vs. 329 g); Tomatoes (37 vs 36g); Onions (25 vs. 10 g); Vegetables, Other (147 versus 79 g); % GV (62 vs 50%).

Christians consumed statistically significantly higher than Muslims: Maize (70 vs. 28g); Beans (7 vs 2g); % Oil (1.19 vs. 0.58g).

In Group 3, FS: Christians consumed statistically significantly more than Muslims: Coffee (3 vs. 1g).

In group 4 AB: Christians consumed statistically significantly more than Muslims: Beverages, Alcoholic (5.5 vs. 0.0 g); Wine (2.0 vs. 0.0 g); Beer (54.5 vs 7.5g); AB amount (65.0 vs. 10.0 g); % AB (6.3 vs 1.0%); pure alcohol man (10, 7 vs 2.3 g); pure alcohol both sexes' (6.7 vs. 1.4 g). the proportion of strong alcohol in the AB amount (0.07 vs. 0.00%) (Figure 11).

Figure 11: Share (%) in Dietary Patterns of Alcohol, Vegetable oils and fish in men in Muslim and Christian countries.

Macronutrients

Table 4 SEE THAT Total Energy (kcal/person/day) in 1990-92 and 2003-05 had no statistically significant differences between Muslims and Christians. However, it is clearly seen that the General Energy increased from 1990-92 to 2003-05 by an average of 106.9% for Muslims and 110.2% for Christians. In 1990-92, Muslims had a Total Energy of 6, 4% higher than Christians. In 2003-05, the Total Energy of Muslims was 3.5% higher than that of Christians.

At the same time, AP Energy (Energy of Animal Products) in 1990-92 for Muslims was 15.4%, and in 2003-05 31.3% below Christian Energy AP. The share of AP Proteins in 1990-92 and in2003-05 among Muslims was statistically significantly lower than Christians at 26.3% and 25.7%. The share of AP Fats among Muslims was in 1990-92 and in 2003-05 21.1% and 33.4% below Christians.

The discussion of the results

Thus, the Common Energy and its structure for Muslims and Christians had differences in 1990-92 and in 2003-05.

The discussion of the results

In accordance with the goals set, the Mann-Whitney U test was used to assess the risk factors for NCDs among Muslims and Christians. Statistically significant ($p \leq 0.025$) differences in the burden of morbidity among Muslims and Christians in 2004 were established in the groups: oncological, neuropsychiatric, cardiovascular diseases and injuries. Thus Despite the absence of statistically significant differences in economic and geographical characteristics, statistically significant differences were observed between the countries of Muslims and Christians in the main groups of diseases and injuries.

In the early 2000s, the world achieved a twofold reduction in infectious diseases. In many developed countries of the world, life expectancy has begun to increase. Non-communicable chronic diseases (NCDs) took the first place. In the overall socio-economic burden, the growing aging of the world population has begun to lead to an increase in the proportion of NCDs [1].

In 2016, 71% of the 56.9 million deaths worldwide were due to NCDs, of which 58% were people over 70 years of age [1,2]. Based on special global studies, the World Health Organization (WHO) has identified 5 modifiable risk factors for NCDs: unhealthy diet, obesity, physical inactivity, alcohol abuse and smoking.

Moreover, the greatest threat of NCDs for countries with middle and low incomes [3,4]. It has been shown that NCD risk factors begin to act from the onset of fetal development [5-7]. However, the biological mechanisms underlying these factors are still poorly understood [8].

The median daily food consumption levels for Muslims and Christians were not statistically different: 1214 versus 1152 g/person/day. However, Muslims and Christians chose foods according to their dietary traditions. In this regard, the Dietary Patterns of Muslims differed from those of Christians. So, Muslim Dietary Patterns included: 25% animal products, 62% vegetables, 8.6% fruits, 0.6% vegetable oils, 1.8% fish. Dietary Patterns for Christians included: 32% animal products, 50% vegetables, 9.0% fruits, 6.3% alcoholic beverages, 1.2% vegetable oils, and 2.3% fish.

Muslims had 26% less Christians in Dietary Patterns of Animal Macronutrients. However, Muslims had a 6% higher Total Energy than Christians. Thus, the higher calorie content of Muslims contained 26% less Christian calories of animal products. This is in line with modern ideas. about the role of animal products and alcohol in the predisposition to cancer [29,30].

However, the higher prevalence of cardiovascular and neuropsychiatric diseases in Muslims compared to Christians cannot be explained by differences in Dietary Patterns. There is evidence that cardiovascular disease is often associated with anxiety and depression. Various interpretations of this comorbidity are given in the literature.

Controlled studies and meta-analyses show that depression and cardiovascular disease often co-occur.

But depressive illnesses are an independent risk factor in the development and progression of coronary heart disease. Depressive and anxiety disorders in patients with heart failure (HF) are associated with adverse outcomes [17,31-36].

Papadopoulos V., *et al*. reported that there are few data on the incidence of NCDs in the Muslim population worldwide. Muslims in Thrace (Greece) have fewer strokes than Christians (87.2 versus

173.9 cases/100,000 person-years). Muslims have lower rates of diabetes (p = 0.019) and atrial fibrillation. The contribution of diet and occupation remains to be explored in further studies [19].

Conclusion

To study the risk factors and incidence of NCDs in Muslims and Christians, 2 groups of 44 countries were selected, the average Income of which had no statistically significant difference. As a result, using the U-Mann Whitney test, statistically significant differences in oncological, neuropsychic and cardiovascular diseases were revealed, presumably due to the traditional features of the Dietary Pattern of Muslims and Christians.

Conflict of Interest

The authors have no conflict of interest.

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