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Health lifestyles in central Asia: the case of Kazakhstan and Kyrgyzstan

William C. Cockerham[a,*], Brian P. Hinote[a], Pamela Abbott[b], Christian Haerpfer[b]

[a] *Department of Sociology, University of Alabama at Birmingham, 237 Ullman Building, 1212 University Boulevard, Birmingham, AL 35226, USA*

[b] *School of Law and Social Sciences, Glasgow Caledonian University, Glasgow, Scotland G4 0BA, UK*

Abstract

There is a growing body of evidence suggesting that negative health lifestyles are the principal social determinants of the mortality crisis in the former socialist states. Little is known, however, about health lifestyles in Central Asia, where the downturn in life expectancy was also experienced. This paper examines health lifestyles in Kazakhstan and Kyrgyzstan in order to fill an important gap in the literature. The data show, consistent with the improved longevity of the Kyrgyz population, that such lifestyles are more positive in Kyrgyzstan despite the somewhat better economic situation in Kazakhstan, where the mortality crisis continues.

Keywords: Lifestyle; Mortality; Central Asia; Kazakhstan; Kyrgyzstan

Introduction

A growing body of literature on the decline of life expectancy in the former Soviet Union and Eastern Europe finds negative health lifestyles to be the primary causal factor (Adevi, Goldstein, Preker, & Ringold, 1997; Cockerham, 1997, 1999, 2000a; Cockerham, Snead, & DeWaal, 2002; Ginter, 1997; Janeĉková, 2001; Kulin & Skakkeback, 1995; Ostrowska, 2001). However, this research typically focuses on the former socialist countries in Europe, while little is known about the more distant Central Asian lands. The purpose of this paper is to fill a gap in the literature by examining health lifestyles in Kazakhstan and Kyrgyzstan and assessing their role in the mortality crisis.

Health lifestyles

Health lifestyles are collective patterns of health-related behavior based on choices from options available to people according to their life chances (Cockerham, 2000b). Health lifestyle practices typically consist of choices concerning alcohol use, smoking, diet, exercise, and sometimes other activities like rest and relaxation, drug abuse, seat-belt use, and preventive checkups by doctors. These practices are either empowered or constrained by a person's life chances. The concept of life chances was introduced by Weber (1978), and according to Dahrendorf (1979), pertains to an individual's capability to find satisfaction for his or her needs and desires. A person's life chances are largely determined by social position and thereby characteristic of particular status groups.

The status group whose health lifestyle practices are primarily implicated in the rise of mortality in the former Soviet bloc is middle-age, working-class males (Carlson, 1989; Carlson & Tsvetarsky, 1992; Cockerham, 1997, 1999, 2000a; Ginter, 1997; Janeĉková and Hniliĉová, 1992; Mezentseva and Rimachevskaya, 1990). Cockerham (1997, 1999) has attempted to explain this development theoretically by utilizing Bourdieu's (1984) concept of habitus. The habitus can be described as an individual's organized repertoire of perceptions that guides and evaluates behavioral choices and options. It is a mindset that produces a relatively enduring framework of dispositions to act in particular

*Corresponding author. Fax: +1-205-975-5614.
E-mail address: wcocker@uab.edu (W.C. Cockerham).

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ways and originates through socialization and experience consistent with the reality of the person's class circumstances. These dispositions generate stable and consistent lifestyle practices that typically reflect the normative structure of the prevailing social order and/or some group or class in which the individual has been socialized.

Under state socialism, life choices and life chances were aligned with a dominant political ideology negating individuality and individual initiative. Individual wants and desires were sacrificed in favor of personal effort in building a socialist society. The government assumed responsibility for health and the belief was prevalent that a person's health depended on the health care system rather than the individual (Dmitrieva, 2001). There is some evidence that this situation promoted a passive orientation toward positive health lifestyles that was reinforced by the absence of any public health policies or programs promoting healthy practices on the part of the individual (Cockerham et al., 2002). Nor was a sense of personal responsibility for one's own health likely to emerge in the immediate aftermath of socialism's fall, as established norms for individual health promotion were lacking.

Rather, a group habitus producing an enduring disposition toward a negative health lifestyle, featuring especially heavy vodka and cigarette consumption emerged among middle-age, working class males in particular (Cockerham, 1999, 2000a). The drinking aspects of this lifestyle were grounded in a Northern European tradition of rapid group consumption of large doses of vodka (binge drinking) with a light snack (Shkolnikov & Nemtsov, 1994). Little or no social stigma is attached to drunkenness, which is the normative expectation and outcome of the experience. While it can be argued that such a habitus is harmful to a participant's health and well-being, the dispositions it produces may nevertheless be the usual lifestyle practices of a person's group or gender. They are reproduced over time by being regularly acted out and become a self-fulfilling prophecy by which individuals adapt to limited opportunities. Bourdieu (1977) describes, for example, how low educational aspirations of French working-class youth were transmitted intergenerationally through socialization to produce a self-defeating form of behavior about advanced schooling.

High death rates, especially from heart disease, but also from alcohol poisoning, and alcohol-related accidents among middle-age, working-class (especially manual workers) men, triggered the rise in male mortality in the former socialist nations (Carlson & Vågerö, 1998; Chenet, McKee, Leon, Shkolnikov, & Vassin, 1998; Cockerham, 1999, 2000a; Notzon et al., 1998). The most extreme outcome was in Russia where the average length of life at birth for a male decreased over seven years between 1987 (64.9 years—a modern high) and 1994 (57.6 years—a modern low). In 2002, the average life expectancy for Russian males was only 58.5 years. Environmental pollution, infectious diseases, and medically avoidable deaths are not the major causes of the premature deaths, while the precise contribution of stress is questionable (Bobak & Feachem, 1995; Cockerham, 1999; Hertzman, 1995). Rather, it falls to the negative health lifestyles of middle-age, blue-collar males, featuring excessive alcohol consumption, heavy smoking, high-fat diets, and lack of health-promoting physical exercise, to bear the principal responsibility for the shortened life spans (Cockerham, 1999, 2000a; Palosuo, 2000, 2003; Palosuo, Uutele, Zhuravleva, & Lakomova, 1998). Female health lifestyle practices have not been as negative and their life expectancy not as severely curtailed as that of males.

Prior to this study, however, the health lifestyle situation in the formerly socialist countries of Central Asia was virtually unknown. It is also not known whether a negative health lifestyle is especially characteristic of middle-age, working-class males. The data for this paper will help clarify the existing pattern for Kazakhstan and Kyrgyzstan. We will begin by briefly providing background information on health indicators in each country, followed by a description of our data and methods, and a presentation of our findings.

Kazakhstan

Kazakhstan is the largest of the Central Asian countries with a landmass about the size of the European Union. It shares a long northern border with Russia, the Caspian Sea and Russia are to the west, China is to the east, and Kyrgyzstan, Uzbekistan, and Turkmenistan lie to the south. Kazakhstan was reluctant to declare its independence from the former Soviet Union, but did so in December 1991, some 4 months after Kyrgyzstan. Kazakhstan joined the loosely confederated Commonwealth of Independent States (CIS) at that time. Abbott (2003) notes that GDP of Kazakhstan has improved since the mid-1990s, but in 2001 was still below 1989 figures. Some 15.7 percent of the population lived below a per capita poverty line of $2.15 per day and 31.6 percent below $4.15 per capita daily in 1999–2000. The population of 14.8 million people in 2001 is 52 percent Kazakh, with ethnic Russians—numbering about five million—constituting the second largest ethnic group. Some 1.3 million Russians, including many of the best-educated people, left the country between 1990 and 1998, but the Russian presence is still extensive (Burke, 2000).

As elsewhere in the former socialist countries, the leading cause of death is heart disease (Abbott, 2003; Interstate Statistical Committee of the Commonwealth of Independent States, 1995; McKee & Chenet, 2002).

Heart disease mortality rates for both sexes have risen consistently the past few decades, although female rates now appear to be declining somewhat (Abbott, 2003). Alcohol consumption, smoking, diets high in fats and low in antioxidants, and poor detection and treatment of hypertension are considered major contributing factors to the increase in cardiovascular mortality (McKee & Chenet, 2002). In 1989, life expectancy averaged 63.9 years for Kazakh men, but stood at 59.8 years in 2000—a decline of 4.1 years. Life expectancy for females was 73.1 years in 1989 and 71.3 years in 2000, for a loss of 1.8 years.

The reliability and validity of life expectancy data in the former socialist countries, including those in Central Asia, have been questioned in the past. However, it is now well established that the rise in adult mortality in these countries is real and not a statistical artifact, as a result of improvements in vital registration systems after the collapse of communism (Field, 1994; Leon et al., 1997; Redmond, 2002).

Even though both genders in Kazakhstan saw their average years of life expectancy decline between 1989 and 2000—the loss is much greater for males. Between 1989 and 1999, mortality rates *increased* 240.5 per 100,000 for 25–39 year-old males and 328.0 per 100,000 in the 40–59 year-old age group (Abbott, 2003). For males 60 and over, the increase was only 7.8 per 100,000 during the same period. Similar to elsewhere in the former Soviet bloc, it is middle-age men who are experiencing the highest rise in mortality.

Kazakhstan introduced mandatory national health insurance in 1996, but the program was short-lived, as contributions from payroll taxes were unable to sustain the costs of health care delivery (Kulzhanov & Healy, 2002). A high rate of unemployment was a major factor in this outcome. In response, a new government agency, the Medical Service Payment Center, was established to pay for health care from general revenue monies, while the central government funded some services directly. The state still owns most health care facilities. Private practice is allowed, but is mainly offered by state employed doctors to supplement their income because of the low purchasing power of the general population. The state spent 3.5 percent of the country's GDP on health in 1998. Kazakhstan remains a relatively poor country with major unresolved health problems, including a significant increase in heart disease.

Kyrgyzstan

Kyrgyzstan is small and poor with agriculture dominating the economy. Kazakhstan lies to the north, China to the east, and the country borders Tajikistan and Uzbekistan in the south and west. More than half of the population in Kyrgyzstan lives in rural areas and slightly less than half of all workers are employed in agriculture, compared to 22 percent of all workers in Kazakhstan. About half of the population (49.1 percent) also lived below the poverty line of a per capita income of $2.15 per day, and 88.0 percent lived below a poverty line of $4.15 per capita daily in 1999–2000. Kyrgyzstan is not only more rural and much poorer than Kazakhstan, but it is also predominately Sunni Muslim. The latter should have an important effect on health lifestyles in that alcohol consumption should be considerably less than in Kazakhstan.

The population in 2001 numbered 4.9 million, with about 60 percent native Kyrgyzs. The remainder are largely Russians and Uzbeks. Male life expectancy in 2000 was 64.9 years—some 5.1 years higher than in Kazakhstan the same year—and 0.6 years higher than in Kyrgyzstan in 1989. Male life expectancy decreased in the mid-1990s, reaching a low of 61.4 years in 1994, but subsequently increased slightly past the 1989 level. Female life expectancy stood at 72.4 years in 1989, dropped to 70.4 years in 1995, and returned to the 1989 average of 72.4 years by 2000. Unlike Kazakhstan, mortality rates for males in the 40–59 year-old age group *decreased* by 2.5 per 100,000 between 1989 and 2000. These figures suggest that the mortality crisis in Kyrgyzstan is easing and that the health lifestyles of middle age Kyrgyz men are better than their Kazakh counterparts.

Kyrgyzstan introduced mandatory national health insurance in 1997 supported by payroll taxes, but the insurance system covers only some 4.3 percent of health care costs (Sargaldakova, Healy, Kutzin, & Gedik, 2002). The state and patient out-of-pocket payments (paying about half of all health expenditures) cover the remaining costs. The high out-of-pocket costs are due to the low level of revenue that can be provided by insurance and the state. The state still owns all health care facilities and about 3 percent of the GDP are spent on health. Despite much greater poverty, however, the Kyrgyz population lives longer than their neighbors do in Kazakhstan, and their health profile is much better.

Data and methods

Data were collected by face-to-face interviews conducted by trained interviewers in the homes of respondents in Kazakhstan and Kyrgyzstan in November 2001. The survey was conducted by national organizations experienced in survey research, which were the Center for Study of Public Opinion in Kazakhstan and the International Center of Sociological, Political and Social-Psychological Research in Kyrgyzstan. The study was funded by the Copernicus Program of the European Union as part of the Living Conditions, Lifestyles and Health (LLH) Project.

The survey consisted of a representative sample of the national adult population age 18 years and over. Samples were selected using multi-stage random sampling with stratification by region and area (urban/rural) in Kazakhstan and by area in Kyrgyzstan. There was no over- or under-sampling of subgroups. The number of primary sampling units was 54 in Kazakhstan and 200 in more sparsely populated Kyrgyzstan. Within each primary sampling unit, households were selected using standardized route procedures and within each household the adult with the nearest birthday was selected for the interview. If, after three visits (different days/times), there was no one at home, the next household on the route was selected. The total number of respondents in each country is 2000, as this size sample provides reliable estimates of proportions that represent 3 percent or more of the population at the national level with a precision level of 0.75 percent. The response rate was 82 percent in Kazakhstan and 71 percent in Kyrgyzstan. The percentage of eligible respondents who were not contacted after three visits and refusals after contact were not reported for Kazakhstan, but in Kyrgyzstan there was no contact with 15 percent of the sample and refusals were 14 percent.

Nine exogenous variables were employed in the analysis: (1) *Kazakhstan*, coded as resident of Kyrgyzstan = 0, Kazakhstan = 1; (2) *male*, coded as female = 0, male = 1; (3) *age*, coded in years; (4) *married*, coded as single, divorced, widowed = 0, married = 1; (5) *education*, coded as primary or without education = 1, non-finished secondary education = 2, secondary education = 3, secondary vocational education (i.e., medical, technical, pedagogical college) = 4, non-finished higher education = 5, higher education = 6; (6) *disposable income*, coded as not enough for nutrition = 1, just enough for food/clothes = 2, enough to buy TV/fridge, but not car/apartment = 3, can purchase expensive goods (car/apartment) = 4; (7) *occupation*, coded as agricultural/unskilled worker = 1, skilled worker = 2, office clerk without higher education = 3, manager/professional = 4, top manager = 5; (8) *Russian*, coded as non-Russian = 0, ethnic Russian = 1; and (9) *Muslim*, coded as non-Muslim = 0, Muslim = 1.

Seven health lifestyle dependent variables were arranged into a dichotomous format. *Frequent drinker*, which measures frequency of alcohol consumption among drinkers only, is coded as drink one or less times a week = 0, drink 2–6 times a week or daily = 1; *Heavy vodka drinker*, which measures how much vodka (the drink of preference) a drinker consumes, is coded as less than 100 g at one sitting = 0, over 100 grams (between 100 and 300 g, half a liter, or more than half a liter) at one sitting = 1. *Smoking* measures use of cigarettes and is coded nonsmoker = 0, current smoker (defined as smoking at least one cigarette per day [the mean is 10–20 daily]) = 1. *Physical activity at work* is a measure of how much physical activity is required by a respondent's job and is coded none, minimal or some = 0, significant or extreme = 1. *Daily consumption of vegetables, fruits, and meat* are coded separately for each food item as seldom, occasionally (once per week), and 2–3 times a week = 0, daily = 1. A measure of self-reported health, *health status*, is included. Health status is a subjective self-ranking of one's own health and is coded bad and rather bad = 0, quite good and good = 1.

Table 1 shows the percentage distribution of the demographic variables by sex for Kazakhstan and Kyrgyzstan separately. The distribution of demographic variables is similar for both countries, with the exception of Russian ethnicity and religious affiliation. The sample in Kazakhstan shows a higher percentage of ethnic Russian males (39.5 percent compared to 12.8 percent) and females (43.2 percent compared to 22.2 percent); in Kyrgyzstan, there are a much higher percentage of Muslim males (84.6 percent versus 44.3 percent) and females (74.0 percent versus 38.4 percent). This pattern is consistent with the national population profile of the two countries. Also, among secondary school graduates, a higher percentage of Kazakhs have a vocational education compared to Kyrgyzs. Additionally, Kazakhs have higher overall disposable incomes. These results are not surprising, however, since Kazakhstan has undergone more extensive industrialization and the economy has improved more.

Table 2 shows the prevalence distribution of the health lifestyles variables. Table 2 indicates that there are more heavy vodka drinkers than frequent drinkers for both sexes and countries, but this is because the heavy vodka drinkers do not necessarily drink frequently. Among vodka drinkers only, the percentage of heavy drinkers among males is the same (55 percent) in both countries. But among females, some 76.2 percent of Kyrgyz women vodka drinkers drink heavily compared to 47.7 percent of their Kazakh counterparts. As for smoking, prevalence percentages for men and women are not out of line with Western levels, with the somewhat higher exception of Kazakh women (32.2 percent). As for diet, a greater proportion of Kazakhs consume meat daily and about the same proportion in both countries consume vegetables daily. However, a significantly larger percentage of Kyrgyzs consume fruit daily. Finally, with respect to self-rated health, male respondents in both countries rate their health better than females, with Kazakh females showing the largest percentage (35.6 percent) of persons reporting bad or rather bad health.

Since we are interested in lifestyle differences both within and between Kazakhstan and Kyrgyzstan, we conducted three logistic regression analyses. Table 3 shows the results for Kazakhstan and Table 4 for Kyrgyzstan, respectively. In Table 5, we have pooled the

Table 1
Percentage distribution of demographic variables among study sample ($n = 4000$)

Demographic variables	Kazakhstan ($N = 2000$)				Kyrgyzstan ($N = 2000$)			
	% Male[a]	(*n*)	% Female[a]	(*n*)	% Male[a]	(*n*)	% Female[a]	(*n*)
Marital status								
Single, divorced, widowed	29.9	(263)	40.3	(446)	25.0	(223)	33.7	(367)
Married	70.1	(618)	59.7	(661)	75.0	(670)	66.3	(721)
Age								
18–34	42.2	(374)	36.1	(402)	41.7	(375)	42.4	(466)
35–59	43.9	(389)	43.0	(479)	45.0	(405)	41.2	(453)
60 and above	14.0	(124)	20.8	(232)	13.3	(120)	16.5	(181)
Education								
Primary school or none	3.6	(32)	6.4	(71)	3.9	(34)	4.6	(50)
Unfinished secondary education	7.0	(62)	5.7	(63)	4.0	(36)	3.3	(36)
Secondary education	26.2	(232)	22.8	(253)	41.3	(371)	39.8	(437)
Secondary vocational education	36.1	(320)	37.2	(412)	24.6	(221)	24.8	(272)
Unfinished higher education	7.9	(70)	5.9	(65)	7.1	(64)	8.7	(95)
Higher education	19.2	(170)	22.1	(245)	19.2	(173)	18.9	(207)
Disposable income								
Not enough for nutrition	8.5	(74)	14.6	(160)	15.6	(139)	22.4	(242)
Just enough for food/clothes	63.6	(551)	65.3	(716)	68.4	(608)	62.1	(672)
Enough to buy TV/fridge, but not car/flat	22.6	(196)	17.5	(192)	12.7	(113)	11.9	(129)
Can purchase expensive goods (car/flat)	5.3	(46)	2.6	(28)	3.3	(29)	3.6	(39)
Occupation								
Agricultural/unskilled worker	24.2	(164)	19.4	(173)	17.0	(88)	15.9	(99)
Skilled worker	45.9	(311)	22.1	(197)	43.1	(223)	28.8	(179)
Office clerk without higher education	8.0	(54)	31.2	(278)	3.3	(17)	17.1	(106)
Manager/professional	18.6	(126)	25.1	(224)	33.2	(172)	37.2	(231)
Top manager	3.2	(22)	2.1	(19)	3.5	(18)	1.0	(6)
Ethnicity								
Non-Russian	60.5	(530)	56.8	(627)	87.2	(784)	77.8	(854)
Ethnic Russian	39.5	(346)	43.2	(476)	12.8	(115)	22.2	(244)
Religious affiliation								
Non-Muslim	55.7	(486)	61.6	(674)	15.4	(137)	26.0	(285)
Muslim	44.3	(387)	38.4	(421)	84.6	(753)	74.0	(812)

[a] Percentages may not sum to 100% due to rounding error.

data and utilized Kazakhstan as a dummy variable in order to observe differences between the two countries, as well as determine the overall pattern of the combined data set to establish a baseline for regional comparisons. Table 6 shows the results for self-reported health status for the two countries both separately and combined.

Multivariate analysis, adjusting for demographic covariates, was performed, as noted, using logistic regression. This procedure is employed when the dependent variable is dichotomous and nominal. The independent variables may be continuous, discrete, categorical, or a mix. The advantage of logistic regression is that it provides the probability of a discrete outcome for each dependent variable, rather than predicting the effects of several continuous independent variables on a single dependent variable, as is done in multiple regression. The discrete outcome provided for our analysis is the probability of participation in a particular health lifestyle practice for each case analyzed. Logistic regression does not produce negative predicted probabilities. Rather, it predicts the probabilities of participating in a specific health lifestyle practice, even though the practice itself may either positive/healthy (e.g., fruit consumption) or negative/unhealthy (e.g., smoking). The statistics presented are the odd ratios, which express

Table 2
Prevalence distribution of lifestyle variables among study sample ($n = 4000$)

Lifestyle variables	Kazakhstan ($N = 2000$)				Kyrgyzstan ($N = 2000$)			
	Males		Females		Males		Females	
	(%)[a,b]	(*n*)	(%)[a,b]	(*n*)	(%)[a,b]	(*n*)	(%)[a,b]	(*n*)
Frequent drinker	22.2	(119)	20.1	(30)	14.7	(60)	6.3	(9)
Heavy vodka drinker	55.6	(298)	47.7	(71)	55.5	(226)	76.2	(109)
Smoking	22.2	(119)	32.2	(48)	29.7	(121)	17.5	(25)
Physical activity at work	28.3	(288)	13.4	(141)	12.1	(116)	6.3	(80)
Daily meat consumption	27.8	(282)	25.8	(271)	16.2	(156)	16.5	(210)
Daily vegetable consumption	30.1	(306)	41.4	(434)	38.3	(368)	41.9	(534)
Daily fruit consumption	13.8	(140)	19.4	(203)	33.4	(321)	35.3	(449)
Health status								
Good/rather good	80.5	(707)	64.4	(708)	85.4	(762)	73.9	(803)
Bad/rather bad	19.5	(171)	35.6	(392)	14.6	(130)	26.1	(283)

[a] Prevalence, based on sample size by country.
[b] Percentages may not sum to 100% due to rounding error.

the direction and magnitude of the relationship between an independent and dependent variable. The 95 percent confidence intervals associated with the odds ratios are also reported.

Results

Kazakhstan

Table 3 shows the logistic regression results for Kazakhstan. The initial health lifestyle variable depicted in Table 3 is frequency of drinking. The results show that males, younger adults, non-Russians, and non-Muslims drink most often. Males demonstrate the most robust drinking frequency of any of the independent variables, as they are over six times (OR = 6.329) more likely to drink than females. Non-Russians and non-Muslims were about 50 percent less likely to drink frequently than Russians and Muslims. For heavy vodka drinking, the second health lifestyle variable shown in Table 3, only male ($p < 0.001$) is statistically significant. Kazakh males are nearly 18 times (OR = 17.695) more likely to be heavy vodka drinkers than females in their country. At this point we should note that there is no clear consensus concerning the best measure of heavy drinking (Malyutina et al., 2002). However, our review of past studies in Russia and vodka's high alcoholic content (80 proof), suggests a demarcation point of *more* than 100 g (approximately 3.5 oz) of vodka consumed per sitting as constituting heavy vodka drinking. Malyutina et al. (2002), for example, used 160 g consumed at one occasion to measure binge drinking, so more than 100 g appears to be a reasonable standard for heavy drinking and beyond. Vodka was selected as the unit of consumption because our data show that it is favored somewhat over wine and beer as the most popular alcoholic drink in the two countries.

Table 3 additionally shows that males are over 18 times (OR = 18.589) more likely to smoke than females, along with males being nearly three times (OR = 2.888) more likely to have heavy physical activity at work and 1.3 times (OR = 1.318) more likely to eat meat daily. Significant physical activity at work is not necessarily a positive health lifestyle because of the stress associated with work demands and time schedules. The greatest health benefits are linked to relatively vigorous leisure-time exercise (Dunn et al., 1999). Unfortunately, a measure of leisure-time exercise was not included in these data, but physical activity at work is reported here as a less healthy form of exercise. Overall, gender shows itself to have the strongest predictive power of any of the Kazakh demographic variables on health lifestyle practices, with males demonstrating overwhelming negative health lifestyle practices with respect to drinking and smoking, as well as physical activity at work.

Table 3 shows that age is significant for drinking frequency, heavy vodka drinker, physical activity at work, and daily meat and fruit consumption, with older respondents less likely to participate in these practices. However, with the exception of fruit consumption, we know from the discussion above that males are most responsible for these findings. The mean age of the males in the Kazakh sample is 39.95 yr and the median is 37 yr. The age distribution therefore suggests the results be largely due to the behavior of younger middle-age males. The females in the Kazakh sample are older on average, with a mean of 42.38 yr and a median of 41 yr.

Table 3
Odds ratios (OR) and 95% confidence intervals (CI) for health lifestyle variables—Kazakhstan ($n = 2000$)

	Frequent drinker		Heavy vodka drinker		Smoking	
	OR	95% CI	OR	95% CI	OR	95% CI
Male	6.839	4.213–11.102***	17.695	4.050–77.318***	18.589	11.688–29.565***
Age	0.976	0.961–0.990***	0.938	0.891–0.986*	0.994	0.979–1.009
Married	0.780	0.500–1.219	0.575	0.140–2.372	1.942	1.141–3.304*
Education	1.030	0.888–1.195	1.259	0.751–2.109	1.138	0.943–1.374
Disp. income	1.007	0.986–1.029	0.952	0.705–1.286	0.991	0.972–1.010
Occupation	1.103	0.907–1.342	0.764	0.390–1.499	0.988	0.792–1.232
Russian	0.508	0.303–0.850**	0.733	0.141–3.801	0.676	0.352–1.298
Muslim	0.480	0.286–0.804**	0.681	0.125–3.693	0.444	0.229–0.860*
−2 log likelihood	730		83		567	
Pseudo-R^2	0.152		0.266		0.353	
Df	8		8		8	

	Physical activity at work		Daily meat consumption		Daily vegetable consumption	
	OR	95% CI	OR	95% CI	OR	95% CI
Male	2.888	2.221–3.755***	1.318	1.030–1.686*	0.798	0.640–0.996*
Age	0.964	0.954–0.973***	0.976	0.967–0.985***	0.999	0.992–1.007
Married	1.208	0.896–1.628	2.113	1.579–2.828***	1.327	1.046–1.684*
Education	1.105	0.980–1.246	1.002	0.973–1.031	0.998	0.972–1.025
Disp. income	1.005	0.992–1.018	0.997	0.987–1.007	1.008	0.996–1.020
Occupation	0.603	0.523–0.696***	1.363	1.222–1.521***	1.203	1.092–1.325***
Russian	1.140	0.794–1.635	0.783	0.552–1.111	1.721	1.259–2.353***
Muslim	0.704	0.485–1.022	1.319	0.938–1.855	1.263	0.917–1.740
−2 log likelihood	1454		1622		1965	
Pseudo-R^2	0.208		0.115		0.036	
Df	8		8		8	

	Daily fruit consumption	
	OR	95% CI
Male	0.876	0.656–1.170
Age	0.982	0.972–0.991***
Married	1.066	0.785–1.450
Education	0.993	0.966–1.021
Disp. income	1.003	0.989–1.017
Occupation	1.311	1.157–1.486***
Russian	1.226	0.807–1.861
Muslim	1.354	0.892–2.054
−2 log likelihood	1316	
Pseudo-R^2	0.043	
Df	8	

*$p<0.05$; **$p<0.01$; ***$p<0.001$.

Being married in Kazakhstan is significant only for greater smoking (OR = 1.942) and daily meat consumption (OR = 2.113). The socioeconomic variables of education and disposable income are not significant on any measure, but occupational status is significant for work activity and diet. Persons in lower-status occupations report much greater physical activity at work, while those in higher-status occupations report the best overall diets with respect to daily meat, vegetable, and fruit consumption. As for ethnicity, the results show few differences except that non-Russians drink more frequently and ethnic Russians consume more vegetables

Table 4
Odds ratios (OR) and 95% confidence intervals (CI) for health lifestyle variables—Kyrgyzstan ($n = 2000$)

	Frequent drinker		Heavy vodka drinker		Smoking	
	OR	95% CI	OR	95% CI	OR	95% CI
Male	5.444	2.420–12.246***	2.195	1.038–4.639*	20.461	10.460–40.024***
Age	0.990	0.966–1.013	0.979	0.949–1.010	0.997	0.979–1.015
Married	0.869	0.393–1.924	0.589	0.225–1.542	0.734	0.390–1.380
Education	1.012	0.888–1.153	1.169	0..842–1.624	1.003	0.854–1.179
Disp. income	0.989	0.967–1.011	0.947	0.723–1.242	1.000	0.978–1.023
Occupation	0.991	0.731–1.343	0.689	0.473–1.003	1.035	0.804–1.334
Russian	2.021	0.412–9.915	1.435	0.186–11.098	0.952	0.322–2.809
Muslim	0.883	0.188–4.157	1.251	0.183–8.555	0.163	0.055–0.483***
−2 log likelihood	307		193		397	
Pseudo-R^2	0.085		0.091		0.300	
Df	8		8		8	

	Physical activity at work		Daily meat consumption		Daily vegetable consumption	
	OR	95% CI	OR	95% CI	OR	95% CI
Male	1.850	1.274–2.688***	0.906	0.657–1.250	0.756	0.592–0.966*
Age	0.977	0.963–0.990***	0.987	0.975–0.999*	0.991	0.983–0.999*
Married	1.051	0.672–1.643	0.917	0.626–1.342	1.249	0.934–1.672
Education	0.985	0.959–1.012	1.215	1.042–1.416*	0.999	0.973–1.026
Disp. income	1.178	0.895–1.551	1.022	0.985–1.062	1.017	0.999–1.034
Occupation	0.876	0.744–1.031	0.979	0.822–1.166	1.079	0.971–1.199
Russian	1.109	0.457–2.690	0.797	0.345–1.843	1.329	0.747–2.363
Muslim	0.761	0.326–1.778	1.383	0.632–3.028	0.620	0.357–1.074
−2 log likelihood	798		999		1507	
Pseudo-R^2	0.054		0.047		0.045	
Df	8		8		8	

	Daily fruit consumption	
	OR	95%CI
Male	0.783	0.611–1.002
Age	0.999	0.991–1.007
Married	1.083	0.809–1.450
Education	0.993	0.967–1.020
Disp. income	1.024	0.998–1.049
Occupation	1.066	0.958–1.185
Russian	0.909	0.511–1.617
Muslim	0.763	0.439–1.326
−2 log likelihood	1492	
Pseudo-R^2	0.017	
Df	8	

*$p<0.05$; **$p<0.01$; ***$p<0.001$.

daily. With respect to religion, non-Muslims are significantly more likely to be frequent drinkers and smokers. Overall, the results in Table 3 suggest that younger middle-age, non-Muslim males have the least healthy lifestyles in Kazakhstan.

Kyrgyzstan

Table 4 shows the results for health lifestyle practices in Kyrgyzstan. Gender is once again the strongest overall predictor with males significantly more

Table 5
Odds ratios (OR) and 95% confidence intervals (CI) for health lifestyle variables—Central Asia ($n = 4000$)

	Frequent drinker		Heavy vodka drinker		Smoking	
	OR	95% CI	OR	95% CI	OR	95% CI
Kazakhstan	2.191	1.459–3.289***	2.785	1.344–5.771**	1.610	1.596–2.567**
Male	6.329	4.182–9.579***	3.519	1.519–6.808***	18.088	12.399–26.387***
Age	0.980	0.967–0.992***	0.970	0.945–0.995*	0.997	0.986–1.009
Married	0.778	0.530–1.142	0.649	0.297–1.417	1.251	0.840–1.865
Education	1.024	0.917–1.144	1.206	0.916–1.588	1.107	0.958–1.279
Disp. income	1.002	0.986–1.017	0.952	0.793–1.144	0.996	0.981–1.010
Occupation	1.066	0.906–1.256	0.684	0.496–0.944*	0.976	0.822–1.159
Russian	0.604	0.374–0.977*	1.118	0.327–3.826	0.770	0.446–1.328
Muslim	0.477	0.295−0.773**	0.905	0.275–2.981	0.302	0.172–0.530***
−2 log likelihood	1045		285		988	
Pseudo-R^2	0.143		0.184		0.314	
Df	9		9		9	

	Physical activity at work		Daily meat consumption		Daily vegetable consumption	
	OR	95% CI	OR	95% CI	OR	95% CI
Kazakhstan	2.024	1.596–2.567***	2.132	1.724–2.637***	0.589	0.497–0.699***
Male	2.538	2.050–3.143***	1.145	0.943–1.389	0.770	0.654–0.907**
Age	0.966	0.959–0.974***	0.979	0.972–0.986***	0.996	0.991–1.002
Married	1.211	0.949–1.546	1.575	1.251–1.982**	1.258	1.049–1.510*
Education	1.002	0.976–1.028	1.015	0.981–1.050	0.999	0.981–1.018
Disp. income	1.007	0.995–1.019	1.002	0.993–1.011	1.011	1.001–1.021*
Occupation	0.713	0.647–0.786***	1.240	1.137–1.352***	1.145	1.066–1.229***
Russian	1.120	0.808–1.554	0.805	0.585–1.108	1.671	1.275–2.191***
Muslim	0.720	0.517–1.003	1.323	0.972–1.802	1.035	0.789–1.358
−2 log likelihood	2275		2650		3485	
Pseudo-R^2	0.171		0.086		0.049	
Df	9		9		9	

	Daily fruit consumption	
	OR	95%CI
Kazakhstan	0.288	0.237–0.350***
Male	0.816	0.677–0.984*
Age	0.993	0.986–0.999*
Married	1.052	0.853–1.297
Education	0.993	0.974–1.012
Disp. income	1.012	0.999–1.024
Occupation	1.159	1.069–1.256***
Russian	1.128	0.813–1.479
Muslim	1.069	0.773–1.479
−2 log likelihood	2831	
Pseudo-R^2	0.119	
Df	9	

*$p<0.05$; **$p<0.01$; ***$p<0.001$.

likely than females to be frequent drinkers, heavy vodka drinkers, smokers, and have heavy physical activity at work. Females, conversely, are significantly more likely to consume vegetables daily. Males are over 5 times (OR = 5.444) more likely to be frequent drinkers, over twice (OR = 2.195) as likely to be

Table 6
Odds ratios (OR) and 95% confidence intervals (CI) for health status variable—Kazakhstan ($n = 2000$), Kyrgyzstan ($n = 2000$) and Central Asia ($n = 4000$)

	Kazakhstan health status		Kyrgyzstan health status	
	OR	95%CI	OR	95% CI
Male	2.352	1.824–3.032***	1.929	1.412–2.636***
Age	0.951	0.943–0.959***	0.963	0.953–0.972***
Married	1.336	1.030–1.733*	1.346	0.954–1.898
Education	1.007	0.980–1.035	1.019	0.992–1.047
Disp. income	1.000	0.989–1.012	0.979	0.947–1.013
Occupation	1.140	1.023–1.269*	0.992	0.871–1.130
Russian	0.953	0.681–1.332	1.947	1.013–3.742*
Muslim	1.237	0.873–1.752	3.068	1.642–5.732***
−2 log likelihood	1651		1092	
Pseudo-R^2	0.214		0.178	
Df	8		8	

	Central Asia health status	
	OR	95%CI
Kazakhstan	0.772	0.632–0.943*
Male	2.152	1.770–2.617***
Age	0.955	0.949–0.961***
Married	1.347	1.097–1.654**
Education	1.012	0.993–1.031
Disp. income	0.997	0.987–1.007
Occupation	1.071	0.986–1.162
Russian	1.082	0.807–1.450
Muslim	1.500	1.115–2.018**
−2 log likelihood	2758	
Pseudo-R^2	0.201	
Df	9	

*$p<0.05$; **$p<0.01$; ***$p<0.001$.

heavy vodka drinkers, and over 20 times (OR = 20.461) more likely to smoke. The mean (39.93 years) and median (38 years) ages for the Kyrgyz males in this sample as similar to that of the Kazakh males. Kyrgyz females are younger than the Kazakh females with a mean of 40.36 years and a median of 37 years. Once again, as in Kazakhstan, the finding of younger signifies younger middle-age, and this age group is significantly more likely to have heavy physical activity at work and to consume meat and vegetables daily. Education is significant only with respect to more educated persons consuming meat daily, while disposable income, occupational status, and Russian ethnicity is not significant. Muslims are significantly ($p<0.001$) less likely to smoke. In Kyrgyzstan, males have the least healthy lifestyles, but otherwise there are few significant differences in this predominantly Muslim population.

Combined data set

Table 5 shows the outcomes for the pooled data set. The odds ratios show that Kazakhs are over two times (OR = 2.191) more likely to be frequent drinkers than Kyrgyzs, almost three times (OR = 2.785) more likely to be heavy vodka drinkers, over 1.5 times (OR = 1.610) more likely to be smokers, and twice (OR = 2.132) as likely to have heavy physical activity at work. These data show that Kazakhs obviously have less healthy lifestyle practices. The same is true for males in both countries as compared to females. Table 5 shows that males are over six times (OR = 6.329) more likely than females to be frequent drinkers, over three times (OR = 3.529) more likely to be heavy vodka drinkers, over 18 times (OR = 18.088) more likely to be smokers, and 2.5 (OR = 2.538) times more likely to have heavy physical activity at work.

Table 5 also shows that older respondents are less likely to be frequent drinkers, heavy vodka drinkers, and have heavy physical exertion at work. Education and disposable income were not significant with regard to drinking, smoking, and physical demands at work, but persons in lower-status occupations were significantly more likely to be heavy vodka drinkers and have the most physical work. Consequently, there is some evidence in the pooled data set to suggest relatively less healthy lifestyles among working class respondents on the basis of occupational status. Furthermore, Table 5 indicates that ethnic Russians are about 40 percent less likely to drink frequently than non-Russians. Finally, Muslims are over 50 percent less likely to drink frequently than non-Muslims and 70 percent less likely to be smokers. Only six percent of the Muslim respondents in the combined sample are smokers.

Table 5 additionally shows the results for the daily consumption of meat, vegetables, and fruit. Kazakhs are twice as likely (OR = 2.132) to eat meat daily, but consume vegetables over 22 percent and fruit 19 percent less often on a daily basis than Kyrgyzs. Neither gender eats meat more often than the other; however, females are more likely than males to eat vegetables and fruit daily. People in higher status occupations are also more likely than those with low status jobs to consume meat, vegetables, and fruit daily. Thus, persons in higher status jobs have the most balanced daily diets. Those who are younger and married are also more likely to eat meat daily. Daily vegetable consumption, in turn, is more likely among married persons, those with more disposable income, higher-status occupations, and Russians. Overall, the least healthy diets are those of males and working class respondents, along with older people.

The final logistic regression outcome is shown in Table 6 for self-rated health status. Despite their pattern of higher mortality, males rank their health significantly better than females in both Kazakhstan and Kyrgyzstan and in the combined data set. This result is practically a universal finding in studies of self-ranked health status. Males tend to feel physically better than females on average and consequently rate their health better, even though they are more likely to die sooner. Younger adults also rate their health significantly better than older adults in the two countries and the pooled data set. Occupational status is significant at the 0.05 level in both Kazakhstan and Kyrgyzstan, in that persons in higher-status occupations rate their health much higher. This result disappears when the two populations are combined.

Table 6 also shows that, in Kyrgyzstan, but not Kazakhstan, Muslims rate their health significantly higher than non-Muslims. Among the Kyrgyzs, who are predominantly Muslim, Muslims are over three times more likely than non-Muslims to rank their health quite good or good. This result carries over to the pooled data set where Muslims are 1.5 times more likely than non-Muslims to rank their health highly. Table 5 also shows in the combined data set that Kyrgyzs rank their health significantly better than Kazakhs and the previous discussion comparing mortality in the two countries supports this outcome.

Conclusion

The most striking finding in our examination of health lifestyles in Kazakhstan and Kyrgyzstan is the healthier lifestyle practices of the Kyrgyzs. The Kyrgyzs not only rate their health significantly higher, but they also eat a healthier diet, report less strenuous physical activity at work, smoke less, consume less vodka, and are less frequent drinkers. Even though Kyrgyzstan has a poor economy, with nearly 90 percent of its population living below a poverty line of $4.15 income per capita per day, the Kyrgyzs have a much healthier lifestyle than the Kazakhs and this is reflected in their longer life expectancy. As noted earlier, Kyrgyz men lived some 5.1 years longer on average in 2000 than Kazakh men (64.9 yr versus 59.8 yr). As for women, Kyrgyz females lived 1.1 years longer than Kazakh females in 2000 (72.4 yr versus 71.3 yr). Although life expectancy had fallen in both countries in recent years, Kyrgyz longevity has rebounded from the increased mortality observed in the transition out of state socialism. Kazakh longevity has not done likewise.

The extent to which Islamic teachings have influenced health lifestyle practices in Central Asia was not part of the present analysis. However, it can be inferred from these data that the Muslim religion, which prohibits alcohol use and promotes healthy practices generally has played a major role in the more positive health lifestyles of the Kyrgyz. In fact, Muslims in both countries were significantly less likely to drink frequently and smoke. The effects of Russian ethnicity were weak, as being a resident of one or the other Central Asian country had greater explanatory power.

The strongest predictor variable overall was male gender, in that males had significantly more negative health lifestyle practices than females on most measures. Earlier in this paper, it was pointed out that the key variables in the negative health lifestyles of the former socialist countries in Russia and Eastern Europe were gender (male), age (middle-age) and class (working-class). These variables best identified the population group whose high mortality rates for heart disease and alcohol-related causes were most responsible for the sustained increases in premature deaths. Behind this downturn in longevity were highly negative health lifestyle practices, resulting from dispositions toward behavior produced by a habitus specific to this particular group. The question to be asked and

answered was whether or not such a group habitus operated in Central Asia to produce and reproduce harmful health behavior? These data suggest that it does.

Not only is male gender the single most powerful predictor of negative health practices, but age is important as well, as younger middle-age respondents, especially in Kazakhstan, drink and smoke more. In both countries, they perform significantly more heavy labor on the job. Neither education nor disposable incomes were strong predictors of health lifestyle patterns in two countries where the average level of schooling is a secondary education and there is little spending power in the general population. The majority of the sample had just enough money for food and clothes or less. However, occupation was a significant variable in Kazakhstan in that persons in lower-status jobs had the heaviest physical labor and worse diets. These findings were also present in the pooled data set, with the addition of lower-status occupations being significantly related to heavy vodka drinking. SES variables were not especially important in Kyrgyzstan, where the economy is largely agrarian and the people poor. Social stratification apparently makes some difference in health lifestyles in Central Asia generally as the pooled outcomes suggest, but perhaps not as much as it does elsewhere.

Finally, it is interesting to note that the country with the most poverty had the healthiest lifestyles. This is consistent with developments in Russia where the steep decrease in life expectancy in the early 1990s was not due to impoverishment, since the greatest rises in mortality were in the wealthiest regions of the country that experienced the smallest declines in household income (Walberg, McKee, Shkolnikov, Chenet, & Leon, 1998). According to Medvedev (2000), the high mortality rate in Russia cannot be explained by economic factors alone; rather, he finds national peculiarities in diet and lifestyle to be particularly significant. This appears to be the case in Central Asia as well, as one country (Kazakhstan) practices more negative health lifestyles and the other (Kyrgyzstan) more positive.

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