

The Prevalence of Hypertension and Other CVD Risk Factors Among Kazak Individuals of Diverse Occupational Backgrounds in Xinjiang, China

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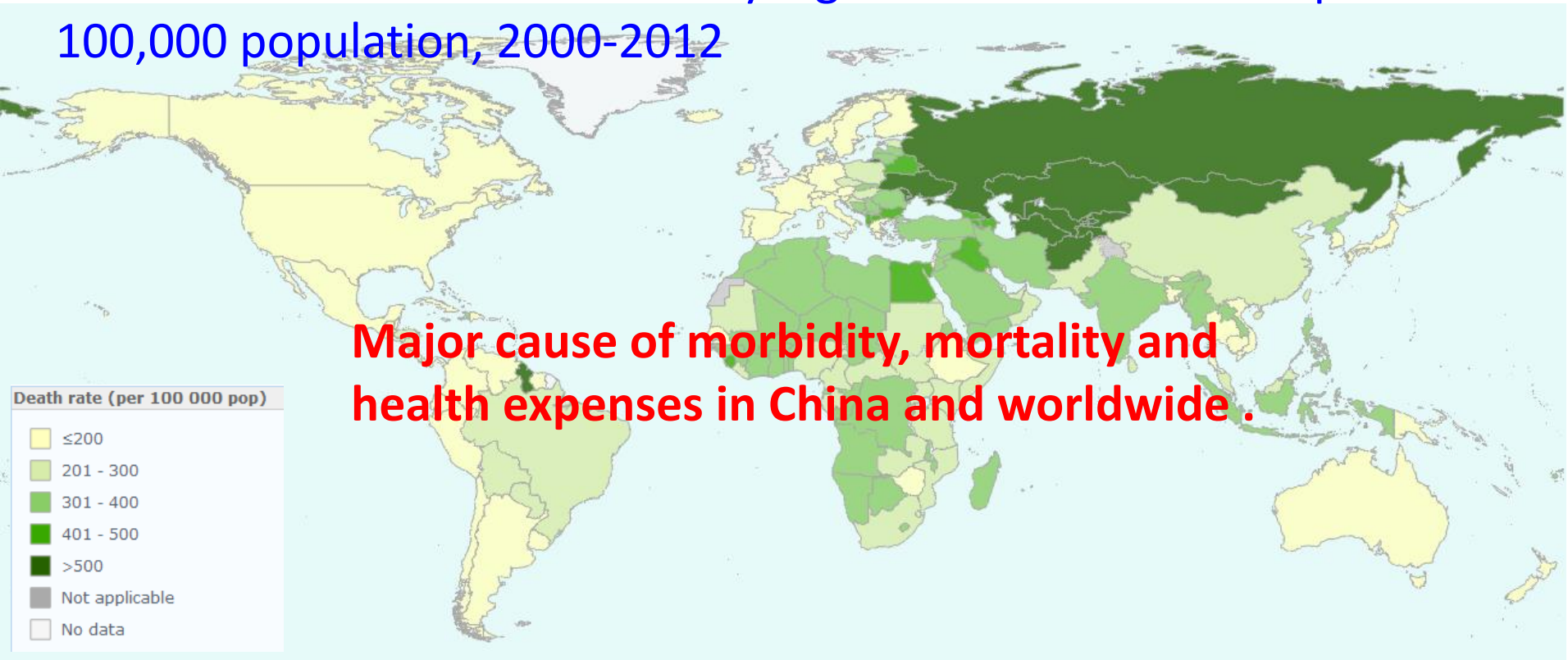
The main topics included:



- Background
- Methods
- Results
- Discussion
- Conclusion

A Global View of CVD

Cardiovascular diseases mortality: age-standard death rate per 100,000 population, 2000-2012



Major cause of morbidity, mortality and health expenses in China and worldwide .

Image downloaded at: http://gamapserver.who.int/gho/interactive_charts/ncd/mortality/cvd/atlas.html on 2016.10.15

According to the large international INTERHEART study (1990-2010)

so-called conventional risk factors

- hypertension
- high serum cholesterol
- diabetes mellitus
- smoking
- obesity

→ accounted for nearly 80% of CVD

CVD risk factors in China

Existing researches on CVD risk factors have largely involved Han Chinese (the largest ethnic group among 56)

Limited comprehensive data in other minority groups

Knowing pattern of CVD risk factors among minority groups is important for

- predicting the future course of the epidemic and planning relevant policies for prevention and disease control
- providing new etiological insights through their juxtaposition to known variations in disease patterns.



Chinese Kazakhs

- Chinese Kazakhs is a typical transnational ethnic group with a Eurasian lineage.



- Represents a sizable ethnic minority in China

  1.25 million Kazakh people in China

  mainly (96%) live in Northern Xinjiang

  which is a province as a part of the ancient Silk Road and borders eight countries.

Chinese Kazakhs

For thousands of years
Chinese Kazakhs mainly active in raising livestock on prairie grasslands



With the development of urbanization
modern Kazakh people naturally forms three different subgroups



- Nomads - following the traditional mode of year-round grazing
- Farmers - engaged in the cultivation of crops
- Urban people - transferred to the city and have a higher educational level and economic status.



When CVD risk factors are more prevalent in urban China, little is known about the prevalence among them

Study Objective

to investigate the prevalence of hypertension and other CVD conventional risk factors among Kazakh individuals by different occupational backgrounds

We hypothesized that any variation in the level and distribution of CVD risk factors is held constant based on the genetic homogeneity of the study population

Study design

Xinjiang Altay Kazakh Heart Study is an ongoing prospective study initiated in 2012, with a community-based design

Study base: Hong Dun town

urban-rural fringe of Altay Prefecture



Advantages of this choice:

- a high concentration of Kazakh people
- representative of economic development in the Altay region's (ranked middle in this region in economy)
- includes three natural occupational groups of the Kazakh people
  - complete nomadic village
  - farming village
  - downtown population

Sampling method

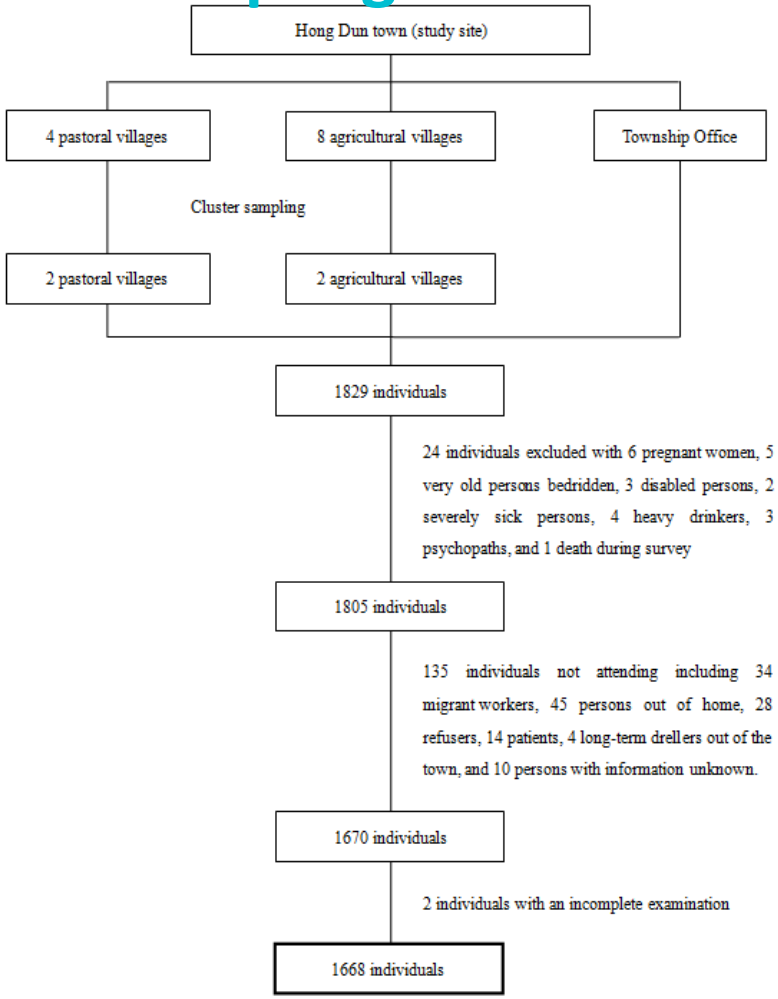
Using population census of the area as sampling frame

stratified random cluster sampling

(based on occupational backgrounds)

- 3 animal husbandry villages out of 4 pastoral villages
- 3 farmer villages out of 8 agricultural villages
- entire Kazakh staff affiliated with the township office was recruited

final baseline population consists of 6 villages and town city professional people covering 58.4% of the total qualified Kazakh population of the study base



Study participants

Time: October 2012 to February 2013

the time when all monads return to their ‘Winter’s Home’, because of important national holiday - Chur State Festival

Inclusion criteria:

- 30 years of age or older
- at least three generations living in the same region
- had no history of intermarriage

Exclusion criteria:

- pregnant women
- disabled persons
- persons with mental disorders or other severe disease





1668 out of 1805 people completed the survey and all examinations, response rate 92.4%.

Data collection

face-to-face questionnaire survey

- demographic factors (sex, age)
- socioeconomic status (educational level, family annual income)
- cigarette smoking
- alcohol consumption
- personal or family history of selected conditions
- diet habit



physical examinations

- anthropometric measurement
- electrocardiography measurement
- blood pressure measurement
- laboratory tests
  - plasma glucose (fasting
  - total cholesterol (TC)
  - triglycerides (TG)
  - Cr







Statistical analysis

- Distribution of each CVD risk factor examined among three groups by sex
- prevalence with 95% confidence intervals calculated for binary variables
- means with standard deviations for continuous variables
- medians (inter-quartile range) presented for triglycerides and fasting blood glucose
- All values adjusted for age using linear or logistic regression models
- trends assessed in educational attainment and economic measures by fitting regression models and by Wald test on model parameters.

This study was approved by Ethical Committees of Chinese Academy of Medical Sciences (CAMS) & Peking Union Medical College (PUMC)

Table1. Characteristics of the participants

	Nomad (n=637)	Farmer (n=838)	Citizen (n=193)	All (N=1668)
Male,%	46.9	48.9	36.3	53.3
Age group (years),%				
30~	51.7	48.7	69.4	52.2
45~	22.5	21.6	23.8	22.2
55~	16.8	18.7	3.6	16.2
65~	9.1	11.0	3.1	9.4
Education attainment, %				
Primary school or below	41.3	28.7	1.0	30.3
Middle school	48.7	51.2	8.3	45.3
High school and above	9.9	20.1	90.7	24.4
Family annual income (RMB), %				
<10 000	56.3	59.0	18.1	53.2
10 000-39999	39.5	37.9	60.6	41.2
≥40 000	4.3	3.2	21.2	5.7
BMI group(kg/m^2), %				
BMI<24	37.4	36.8	23.8	35.5
24⩽BMI<28	32.9	31.2	32.6	32.0
BMI⩾28	29.7	32.0	43.5	32.5
Smoking, %				
Yes	38.0	35.7	30.0	35.9
No	62.0	64.3	70.0	64.1
Drinking, %				
Yes	12.3	13.4	16.6	13.4
No	87.7	86.6	83.4	86.6
Family history of hypertension, %				
Yes	54.6	54.1	62.7	55.3
No	40.4	41.8	35.8	40.6
Unknown	5.0	4.1	1.5	4.2
Personal history of cardiac disease, %				
Yes	15.1	11.3	11.9	12.8
No	84.9	88.7	88.1	87.2

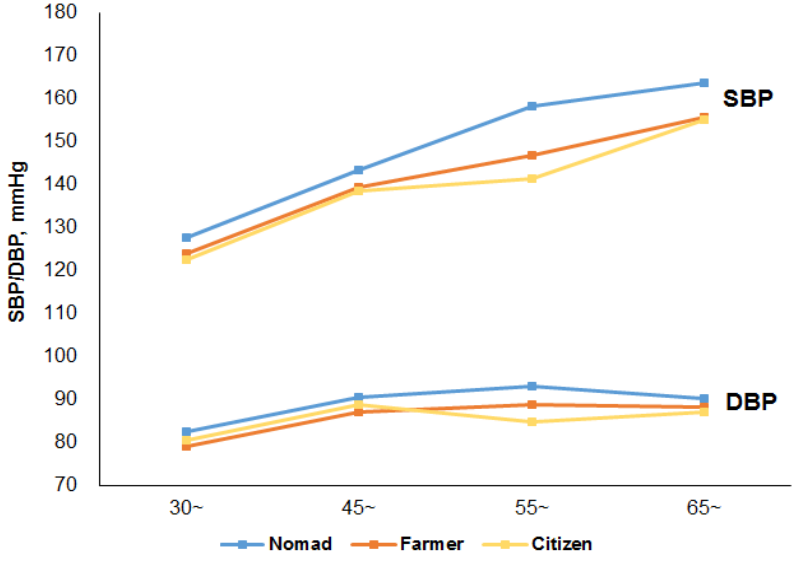
Main Results

Significant younger age higher education and higher family annual income in citizens

Similar in the three occupations in other factors

Main Results

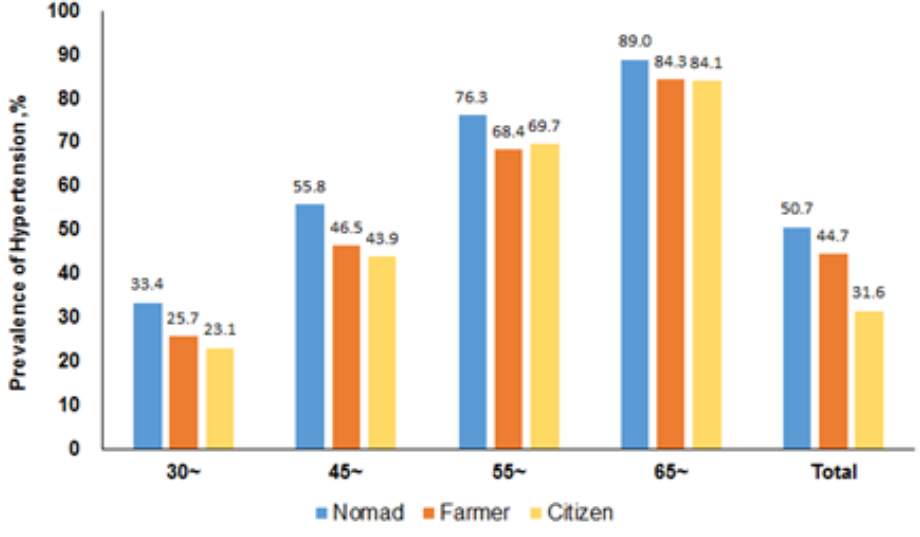
Figure 1. Blood pressure by age and occupation group



- blood pressure value rises when people get older
- highest in nomads

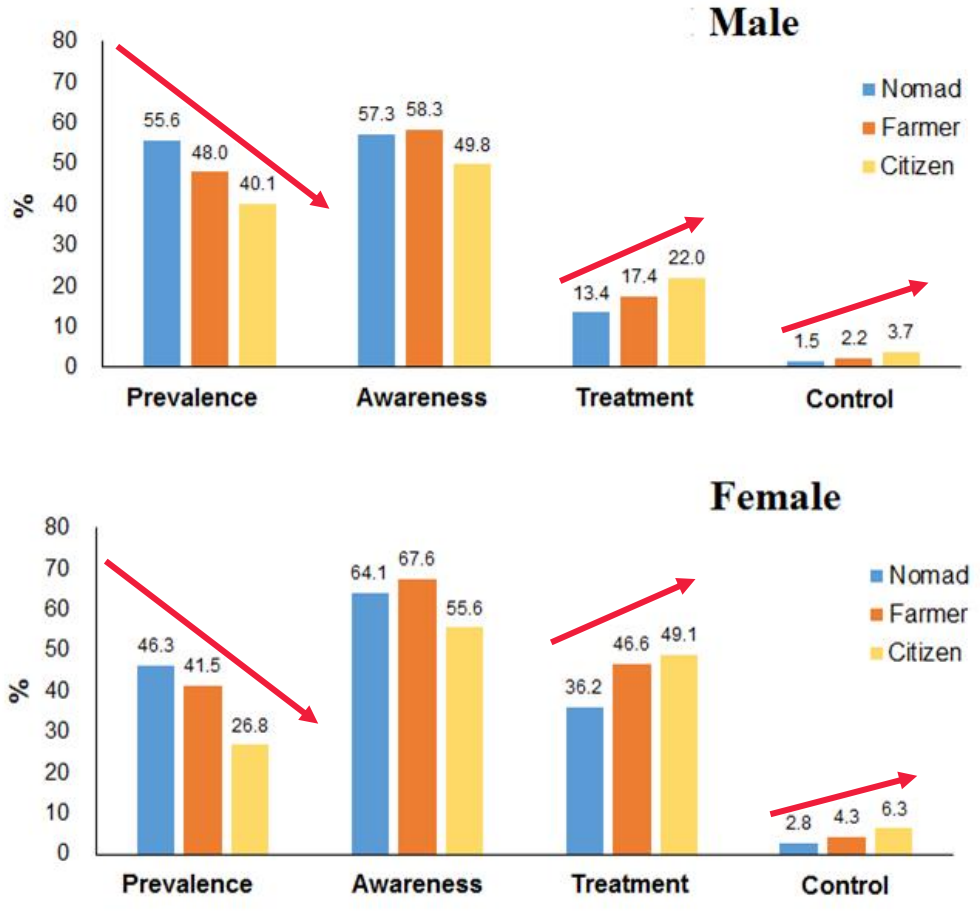
similar trends in prevalence of hypertension

Figure 2. Prevalence of hypertension by age and occupation group



Main Results

Figure 3. Prevalence, awareness, treatment and control of hypertension in different occupations



Nomads and farmers:

- high prevalence
- high awareness rate
- low treatment rate
- low control rate

Citizens:

- low prevalence
- low awareness rate
- high treatment rate
- high control rate

Prevalence: SBP ≥ 140 mm Hg and/or DBP ≥ 90 mmHg and/or taking antihypertensive medication in the recent two weeks among participants
Awareness: whether the hypertensive participants confirmed their morbid status when asked whether they had a medical diagnosis of hypertension
Treatment: whether the self-reported patients took medication or not in the recent two weeks
Control: SBP<140 mm Hg and DBP<90 mmHg among patients with hypertension

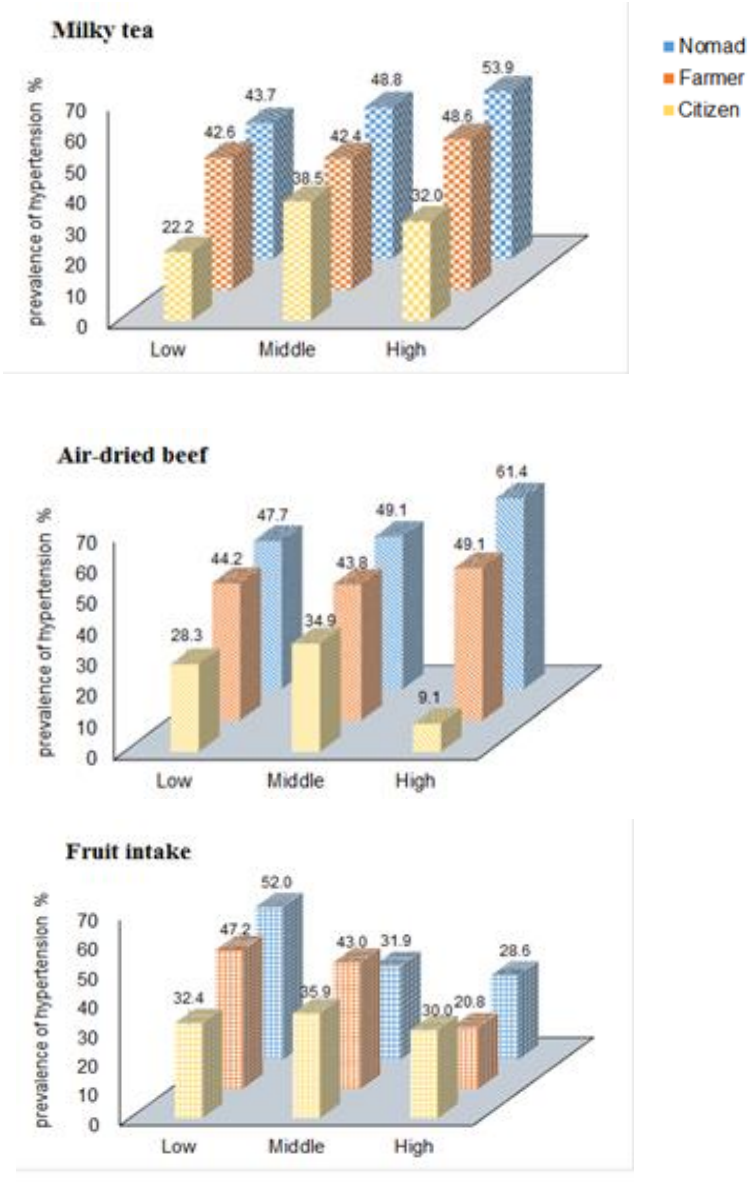


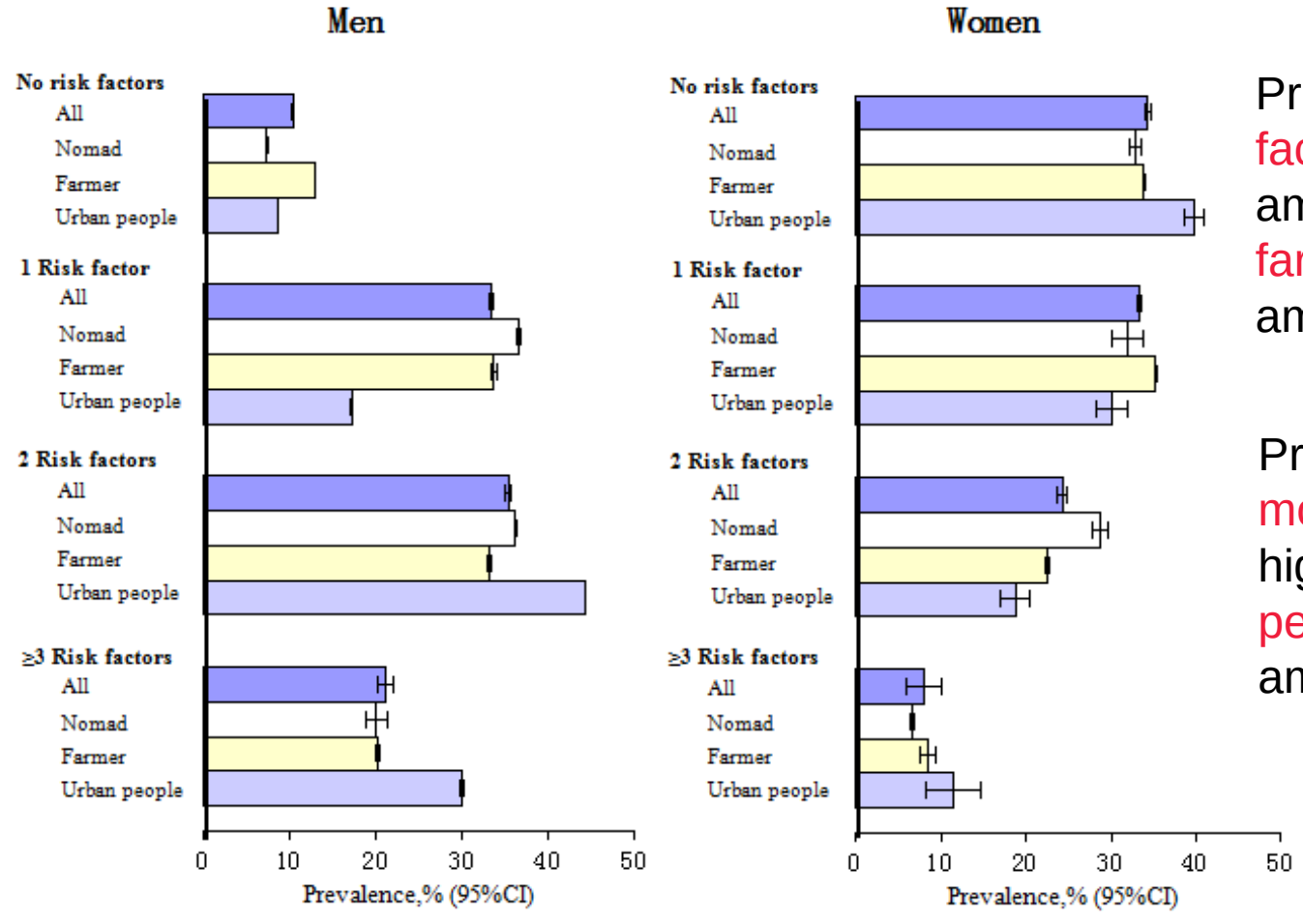
Figure 4. Diet type and hypertension

Main Results

- nomads and farmers consume more “milky tea (salted)” and “air-dried beef (salted)”
- they are positively related with hypertension for all the three occupational groups
- nomads consume the least fruit
- more fruit intake negatively related with hypertension

Main Results

Figure 5. Prevalence of CVD risk factors by Occupational Backgrounds and Sex



Prevalence of 1 risk factor was highest among nomads and farmers and lowest among urban people

Prevalence of 2 or more risk factors was highest among urban people and lowest among nomad people

Importance to assess pattern of risk factors for CVD in the Kazakh population

- despite rapid urbanization in China, most of Chinese populations still live in rural areas. Kazakh's city level is 15.3%, much lower than national average level (36.9%)
- factors primarily afflict the urban affluent, burden of CVD risk factors in rural areas is already high and rising
- people in resource-poor areas have less access to preventive services, less access to medication and procedures and more exposure to risk factors. Understanding the distributions of CVD risk factors is vital for planning public health responses

Importance to assess pattern of risk factors for CVD in the Kazakh population

- China is a multi-ethnic country, ethnic groups such as Tibetan, Mongolian have a similar lifestyle with Kazakh people.
- In addition to possible effects of genetic background differences, environmental stress and lifestyle characteristics may have important effects on human physiology

Importance to assess pattern of risk factors for CVD in the Kazakh population

- Such data may contribute to our understanding of disease etiology by comparing risk profiles of natural occurring groups
- For example, for those, who had just one CVD risk factor were more common in nomads or farmers, while for those who had≥2 risk factors were more common in city people, which exhibited a clear way (from nomad to farmer to city people) to show that Kazakh people are experiencing lifestyle changes compared to the single nomadic lifestyle and dietary habits, this changes are more conspicuous among young people.
- The genetic homogeneity of these groups tends to help isolate the role of environmental and lifestyle factors in the etiology of various chronic diseases

Discussion

Strength

- high-quality study design and practice
- a high response rate
- good internal validity
- reasonable approach to extrapolation of study results

Limitation

- participants in the city group are relatively younger, and have a higher SES compared to other city residents, the prevalence of CVD risk factors may be underestimated
- the study is community-based, the problem of clustering of risk factors within families could lead to some the error in risk estimation, future research will be needed in this aspect

Conclusion

Unlike the previous epidemic of CVD risk factors in developed countries these data highlight the need for careful monitoring and control of CVD risk factors in rural residents

especially the Kazakh nomads who have a greater degree of marginalization and Kazakh young people who are in the early period of urbanization in China

Acknowledgments

This study is supported by National Natural Science Fund (81273181).

The cooperation of the Altay government, Health Bureau, Hong Dun Town government, village doctors, nurses, and Hazak medical students from Xinjiang Medical University who conducted the surveys, and the hundreds of interviewees are greatly acknowledged














Welcome to Xinjiang, China