Investigating mortality inequality and its related factors among provinces of Iran

Shafieh Ghodrati[1]
Hossein Ghodrati[2]

Abstract

Iran is experiencing the last phase of mortality transition. The purpose of this study is to investigate factors affecting mortality inequalities between provinces. To explain the phenomenon, various hypotheses have been posed. Development levels, economic welfare, and risk factors are some variables which determine mortality inequalities. The relationship of this variables with mortality inequalities were examined in this study. Mortality data has been collected through Ministry of Health and Medical Education titled "Registration and Classification of Cause of Death" in 2008. Findings verify the notion of Link and Flan about the important role of socio-economic factors in comparison with risk factors. Thus although declining risk factors have important role in health promotion and mortality decline, but enacting programs that cause declining socio-economic inequality, is crucial.

Key words: mortality inequality, risk factors, socio-economic factors, Iran

Introduction

Mortality transition in Iran began in the early of 1970 and at the present, mortality decline discontinue yet. Studies at the level of provinces, show that trend of mortality decline is going on across all over provinces (Mirzaie, Kousheshi and Naseri: 1996, Zanjani and Nourollahi: 2000, Khosravi et al 2007, Agha: 2008). Alongside the decline of mortality which has been articulated in terms of mortality transition, the decline of mortality inequality is an issue that should be considered. Since mortality and its inequalities is an important index of the health system efficiency and also mortality has a prominent role in development process, the purpose of this study is to investigate factors affecting mortality inequalities between provinces. To explain the phenomenon, various hypothesis have been posed. Development levels, economic welfare, and risk factors are some variables which determine mortality inequalities. The relationship of this variables with mortality among provinces of Iran were examined in this study.

Method

For this study we used estimates of life expectancy at birth of provinces in 2008. The data has been collected through Ministry of Health and Medical Education titled "Registration and Classification of Cause of Death". According to theoretical considerations regarding determinants of mortality (Rogers et al 2005, Link and Phelan 1995, Scambler 2002)

[1] - Assistant professor of Demography, Research Center for Geography and Social Studies, Hakim Sabzevari University.

[2] - Assistant professor of Sociology, Research Center for Geography and Social Studies, Hakim Sabzevari University.

development indices and risk factors which are available and measurable are studied as independent variables.

Findings

As figure 1, shows the highest level of life expectancy belongs to Tehran province and the lowest one to Sistan and Baloochestan province. While the first one is the capital of country the second is the least developed area of Iran.

Figure 1- Distribution of life expectancy at birth across provinces

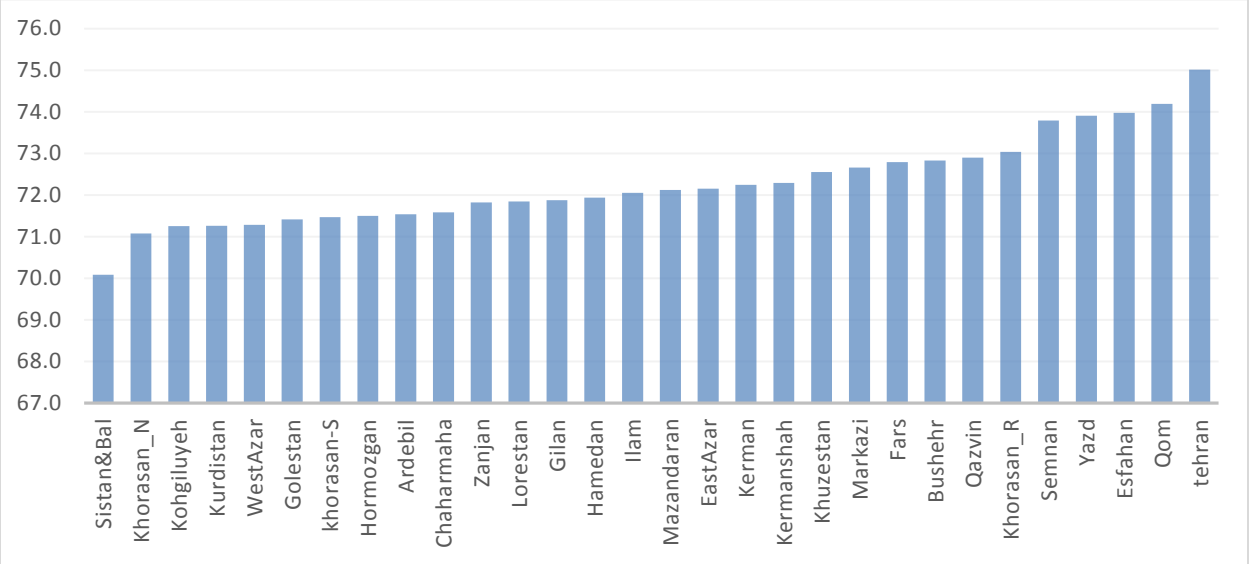

Table 2, indicates description of development indices of the country.

Table 1- Description of development indices for all provinces of the country

variables	Minimum	Maximum	Mean	Standard Error of Mean
Unemployment Percent	7.9	31.5	14.28	6.75
Income of urban family	51159	101373	68943	11399
Income of rural family	24478	73322	45062	10178
Gini coefficient in urban area	0.27	0.43	0.38	0.039
Gini coefficient in urban area	0.25	0.43	0.36	0.042
Hospital bed ratio	0.7	2.4	1.23	0.36

Table 3, shows risk factors for women in 2007. The average age of start smoking varies from 17.3 in Sistan and Baloochestan to 40 in Yazd province. The mean of this index for all provinces is 26.14. The lowest mean number of servings of fruit consumed per day belongs to North Khorasan and the highest is for Ardebil and Tehran provinces-1.9 unit per day. The mean of this indicator for all provinces is 1.3. Women of Charmahal Bakhtiari consume the lowest amount of vegetables (0.6). The highest level of consumption of vegetables occurs in Booshehr.

Table 3- Description of risk factors for women among provinces 2007

variables	Minimum	Maximum	Mean	Standard Error of Mean
Average age started smoking	17.3	40	26.14	6.29
Mean number of servings of fruit consumed per day	0.8	1.9	1.31	0.29
Mean number of servings of vegetables consumed per day	0.6	3.0	1.43	0.48
Percentage with low levels of activity	22.9	65.1	46.5	10.54
Percentage who are obese	11.9	29.9	20.36	4.92

Table 4 indicates the results of correlation test between independent variables and life expectancy at birth. There is a positive relationship between family income whether urban or rural and dependent variable. Among development indices the high and negative amount of correlation coefficient for unemployment percent is considerable. The relationship of Gini coefficient of urban and rural area and dependent variable is weak. The right columns shows coefficients between risk factors and life expectancy at birth. Except the percentage of obese women, other independent variables are positively related with dependent variable. The highest correlation coefficient belongs to the relationship between mean numbers of serving fruit consumed per day-0.495.

Table 4- Correlation test of independent variables and life expectancy at birth

variables	**Correlation coefficient**	**variables**	**Correlation coefficient**
Unemployment Percent	-0.508	Average age started smoking	0.401
Income of urban family	0.246	Mean number of servings of fruit consumed per day	0.495
Income of rural family	0.286	Mean number of servings of vegetables consumed per day	0.104
Gini coefficient in urban area	-0.037	Percentage with low levels of activity	0.136
Gini coefficient in urban area	-0.043	Percentage who are obese	-.104
Hospital bed ratio	0.602		

Discussion

This study showed that some development indices are the most important variables that explain life expectancy inequality among provinces. This is while there are low correlations between risk factors with mortality. This finding verifies the notion of Link and Flan about the important role of socio-economic factors in comparison with risk factors. Thus although declining risk factors have important role in health promotion and mortality decline, but

enacting programs that cause declining socio-economic inequality, is crucial. Another key finding was that welfare level and its distribution across provinces have less impact on mortality than social factors. This is while there are low correlations between risk factors with mortality.

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