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Session 53: *Comparative perspectives on the fertility Transition*

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***Comparative Study of Fertility Transition and
Population Ageing In Four Selected Countries
In The MENA Region***

By:

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Abstract

Fertility transition is now underway in many countries in the Middle East and North Africa (MENA). Iran, Turkey, Tunisia, and the United Arab Emirates are pioneering in fertility transition in the region. Considering differences in socio-economic and ethnic - cultural characteristics of these countries, the comparative study of fertility transition and inevitable consequences of experiencing low fertility regime are important. The main objective of this study is to clarify the consequences of low fertility in the context of fertility transition. Data used is mostly taken from the United Nations Population Division (2009). Results show differences in fertility experience of these countries during last 60 years. Findings also show that countries are different according to the timing of fertility transition, the pace of fertility decline during the transition, and experiencing replacement or below-replacement level fertility is not coinciding to the timing of fertility transition. According to the results, although the timing of transition from adolescence to adult age is different, but population ageing will be dominant phenomenon in the mid 21 century. Considering the prolonged process of policy making for aging population and changing needs of elderly, adoption of a comprehensive population policy in order to encounter consequences of low fertility and population ageing in the four selected countries is necessary.

Key Words:

Low Fertility, Fertility Transition, Population Aging, Natural Fertility, Controlled Fertility, Middle East and North Africa

Introduction

Reproduction behavior in many developing countries has been changed rapidly during the last four decades. Tremendous fertility changes have occurred in the Middle East and North Africa region too. Fertility reduction is a pervasive phenomenon in the majority of countries at the region (Hosseini, 2010). Today, demographic transition is a dominant characteristic in all countries at the region. However, each country is in different stage of demographic transition. Population ageing, changes at the age structure of population, and feminization of the elderly population is the inescapable outcome of this demographic dynamic. The only common characteristic of countries in the Middle East and North Africa is that the majority of their populations are Muslims. Although, there is a tendency to define the Muslim world as a unique nation with similar cultural and socio-economic characteristics, but the reality is that Muslim communities are not homogenous in terms of cultural, linguistic, (Roudi 1989) and social-economic collection (Jones 2006, Abbasi-Shavazi and Jones 2001). Besides socio-economic characteristics and the complex cultural structure of countries at the region, the study of transition to low fertility and population ageing is necessary. Demographically, there are obvious differences between countries in the MENA region in terms of experiencing fertility transition and its timing, rate of fertility

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reduction during the transition, experiencing replacement or below-replacement fertility level, and convergence with world fertility levels and trends.

The main objective of this paper is to conduct a comparative study of changes in fertility levels and trends in four selected countries in the Middle East and North Africa region including Iran, Turkey, Tunisia, and United Arab Emirates with different cultural and demographic characteristics. Since the selected countries located in three major regions of West Asia, North Africa, and South central Asia, the study of fertility levels and trends in these regions and comparing with world fertility levels and trends can open new scopes for demographers in studies of fertility differentials. The study focuses on the timing of fertility transition, the pace of fertility decline during the transition, and future fertility trends until year 2050 with emphasis on inevitable consequences of low fertility such as population ageing, changes in age structure, and feminization of the elderly population in selected countries.

Data and Analysis Indexes

This study analyzes secondary data from four selected countries in the MENA Region. Based on the recent estimates of the United Nations Population Division (2009), in this study we analyze the past and future fertility levels and trends and changes at the age structure and population ageing. The concept of fertility transition in this study refers to the situation in which total fertility rate (TFR) varies between 3 and 5.9. So, situations in which TFR is 6 and over or lower than 3 are called natural and controlled fertility situation, respectively. The index of aging obtained by the dividing population age 65 and over to the population age under 15 multiplied by 100. Values for this index show the number of older population per 100 populations under 15. Values lower than 15 shows a young population, between 15 and 30 indicates a Middle-aged population, and higher than 30 is an aged population.

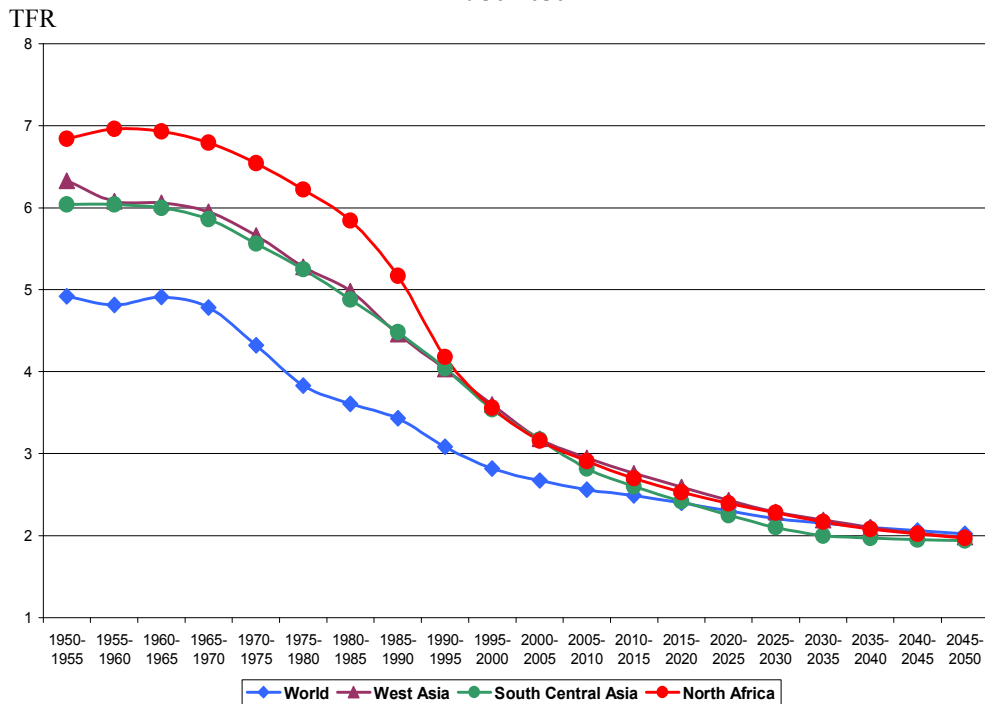
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Findings

Regional analysis of fertility levels and trends: 1950-2050

Although the fertility transition was well underway in the first half of 1950's globally, but regions of the West Asia, North Africa, and South Central Asia were in natural fertility situation. While, North African countries were in natural fertility situation until 1980, West and South Central Asian countries have been entered to the period of fertility transition since second half of 1960s (Fig 1). Considering the timing of fertility transition, countries located at the West and South Central Asia are about 15 years farther ahead of countries in North Africa. In fact, comparing to the World, the selected regions shifted to the controlled situation 15 years later.

Figure (1). Fertility Trends at the World, West Asia, North Africa, and South Central Asia, 1950-2050



Source: UN (2009) Estimates.

Then, it can be said that the under study region during the last 60 years have experienced different levels but similar fertility trends with world fertility levels and trends. Although, at the beginning of the transition countries located in South Central and West Asia have

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experienced more convergence compare with North African countries, but from the first half of 1990s, the differences in fertility levels between the regions have declined remarkably.

Trends clearly indicate that fertility convergence at the region is a new phenomenon which specifically have been appeared from 1990s. Estimates also show that during the years after 2010 the difference between fertility levels of the regions will be decreased to minimum values followed by convergence of under study regions with world fertility levels and trends which will be a predominant phenomenon at the years leading to 2050.

Fertility Transition

Fertility transition is a phenomenon which was already experienced by the developed countries. Many another regions of the world are now experiencing fertility transition. Comparing the countries shows significant differences according to their experiences in fertility during the last 60 years. All selected countries during 1950-1955 were in natural fertility situation. This high level of fertility continued in all countries since mid 1960s, although in Turkey fertility have been declining from the early 1960s (Table1).

Generally speaking, fertility levels of these countries don't show more fluctuations before the transition. The timing of the fertility transition is different across the countries. Continuing the declining fertility trend in Turkey which have been started at the 1960s, caused this country to enter to the transitional fertility situation during 1965-1970. Tunisia and the United Arab Emirates entered to the transitional fertility situation during 1975-1980, in fact 10 years after Turkey.

The experience of fertility transition in Iran goes back to the late 1980s. Because of the continuing declining fertility trends, Tunisia and Iran respectively reach to below and replacement level fertility during 2000-2005. United Arab Emirates and Turkey experienced this level of fertility during 2005-2010. The total fertility rate dropped to below replacement level fertility (1.9 children per woman) and replacement level (2.1 children per woman) in United Arab Emirates and Turkey, respectively.

Estimates clearly show entering the countries to controlled fertility situation. Prediction of future fertility trends in the current situation is not so easy. At the short term, it is

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expected that because of increases in inflation and economic problems desire to have a child diminish and delay in marriage lead to reduction in total fertility rate. Increasing coverage of family planning services and easily available contraception in such circumstances may play an important role in the continuing low fertility. In the long run, considering the cultural and social contexts and religious believe of residents of the countries under study, it seems that fertility will fluctuate around the replacement level. Of course, other factors such as changes in population policies and consequently changing the patterns and trends in marriage can be influential.

Table (1)- Total Fertility Rate at the World, West, South Central Asia, North Africa and four Selected countries at the Region, 1950-2050

Period	Total Fertility Rate							
	World	West Asia			South Central Asia		North Africa	
		Total	Turkey	United Arab Emirates	Total	Iran	Total	Tunisia
1950-1955	4.92	6.33	6.93	6.97	6.04	7.00	6.84	6.93
1955-1960	4.81	6.08	6.57	6.97	6.04	7.00	6.96	7.04
1960-1965	4.91	6.06	6.05	6.87	6.00	7.00	6.93	7.25
1965-1970	4.78	5.95	5.67	6.77	5.86	6.80	6.79	6.89
1970-1975	4.32	5.66	5.46	6.36	5.56	6.40	6.54	6.21
1975-1980	3.38	5.28	4.72	5.66	5.25	6.50	6.22	5.69
1980-1985	3.61	4.98	3.99	5.23	4.88	6.63	5.84	4.92
1985-1990	3.43	4.46	3.28	4.83	4.48	5.62	5.17	4.14
1990-1995	3.08	4.03	2.90	3.88	4.04	3.95	4.18	3.13
1995-2000	2.82	3.60	2.57	2.97	3.54	2.50	3.56	2.32
2000-2005	2.67	3.18	2.23	2.49	3.17	2.12	3.16	1.97
2005-2010	2.56	2.95	2.13	1.95	2.82	1.83	2.91	1.86
2010-2015	2.49	2.76	2.04	1.88	2.60	1.74	2.70	1.82
2015-2020	2.40	2.59	1.97	1.85	2.42	1.79	2.53	1.80
2020-2025	2.30	2.43	1.90	1.85	2.25	1.83	2.39	1.84
2025-2030	2.21	2.29	1.85	1.85	2.10	1.85	2.28	1.85
2030-2035	2.15	2.19	1.85	1.85	2.00	1.85	2.17	1.85
2035-2040	2.10	2.10	1.85	1.85	1.97	1.85	2.08	1.85
2040-2045	2.06	2.03	1.85	1.85	1.95	1.85	2.02	1.85
2045-2050	2.02	1.98	1.85	1.85	1.94	1.85	1.97	1.85

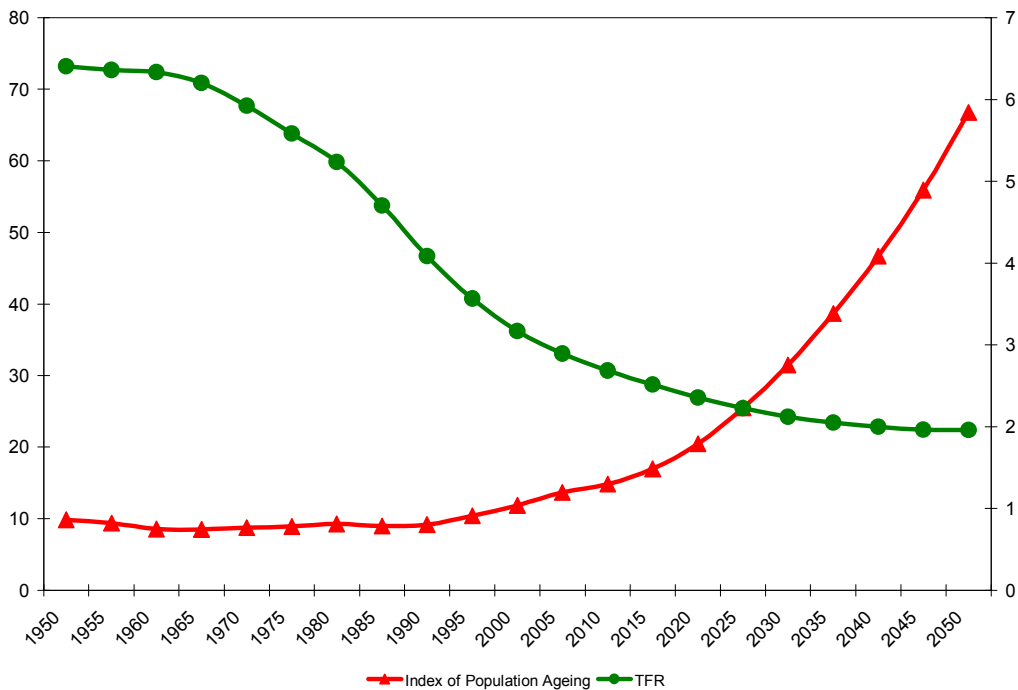
Source: United Nations Population Division 2009.

Estimates show that from 2010 onwards fertility level differences of these countries will decrease to a minimum. Continuation of this trend from the years leading to the third decade of the 21st century will result in complete convergence in the fertility levels and trends of these countries. Since 2025, fertility is established to be in the low level of 1.85 children per woman until mid 21 century.

Consequences of low fertility

Population aging is an inevitable consequence of low fertility. Figure 2 show that the continuation of the decline in fertility has a significant effect on increasing aging index. Parallel to reduction in fertility the index of aging increases gradually. Trends indicate that the population age structure of the region will be young until 2010. Then, the population will go beyond the middle age period until 2030 and increase the aging index to a value above 30 from 2030, where these countries will reach to the population aging period.

Figure (2). TFR and Population Aging at the Region, 1950-2050

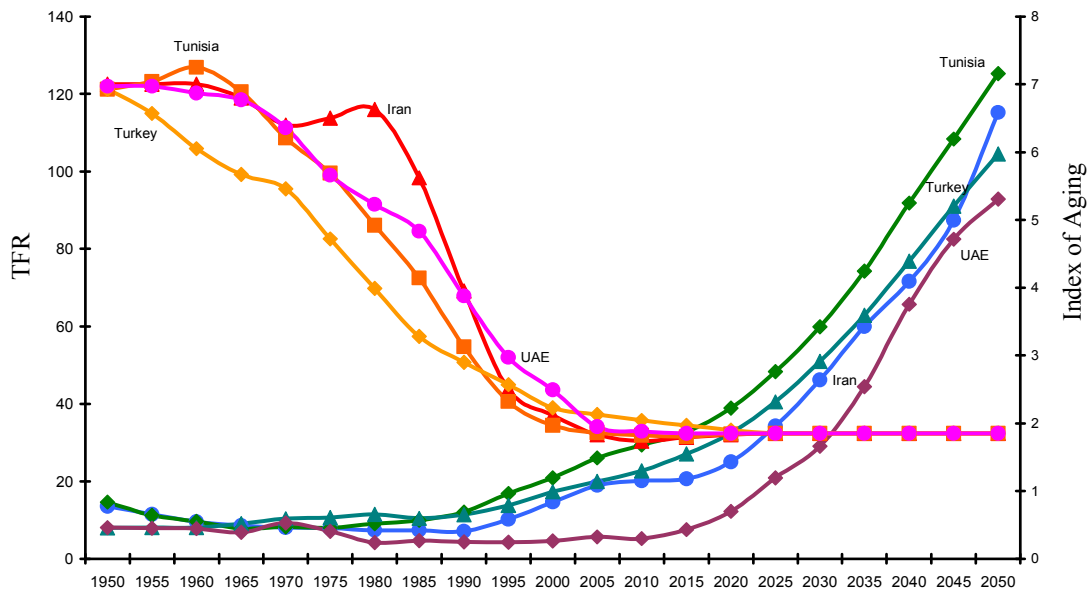


Over time with continuing trend of fertility decline to below replacement levels, curve's of aging index increases such that at the mid 21 century the index will be about 67 percent. Figure 3 shows the population aging process according to changes in total fertility rate in these countries during 1950-2050. As it is shown, curve of fertility and population aging in all countries do not cut each other simultaneously at one point of time. Although, all countries in the period 2005-2010 experiencing fertility at or below replacement level, but the amount of aging index in 2010 fluctuates between 5.24 in the United Arab Emirates to 29.4 in Tunisia. Trends indicate that until 2025, Tunisia Turkey and Iran will be entering to

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the period of population aging. United Arab Emirates will be entering the aging period after 2030. The difference in timing of population aging by the countries shows that the beginning of fertility transition is not the only determinant of population aging. The speed of fertility reduction during the transition period is another factor that is determining. Basically, countries with quick fertility decline during the transition period enter the period of population aging earlier than those countries with prolonged fertility transition. The pace of fertility decline during the transition has an important role in transition from young to old age structure.

Figure (3). Fertility Decline and Population Aging in Four Selected Countries, 1950-2050



Findings confirm the results obtained by Gubhaju (2008: 67) in Asia and the Pacific region. Based on this study, countries that their fertility has decreased more rapidly have experienced further increase in the number of older population. The results also indicate between 2010 and 2050, there will be a significant increase in the ratio of elderly to under 15 years population, so that the index of aging reached from values less than 30 percent in 2010 to at least 92 percent by 2050. Therefore, it could be argued that the population aging will be the dominant demographic phenomenon in the countries under study in the middle

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of the 21st century. The share of population age 65 and over from the total population at that time will range between 13 percent in United Arab Emirates and 20.8 percent in Tunisia.

Changes in age and sex structure

One of the consequences of low fertility is dramatic changes in population age structure of a country. On one hand, the ratio of population under 15 years decreases continuously, and on the other hand, the ratio of population 65 years and over increases. The timing of the intersection depends on the timing and speed of the demographic transition. If the demographic transition occurs earlier and faster, the transition speed of young and elderly populations will have more. Three areas under study also will experience tremendous transition in the ratio of young and elderly populations during the next 40 years from 2010 to 2050. During this period, it is expected that the ratio of population 65 years and over to increase 2.9 times, while the ratio of young population will decline by 35.9 percent. However, because of earlier and faster fertility transition, old age population in Tunisia will surpass the younger population earlier than the other countries between the years 2040-2045. In Iran and Turkey it is expected that the ratio of elderly population surpass the young population in the period 2045-2050 (Table 2).

Table (2). Population Distribution (%) by Broad Age Groups in Four Selected Countries, 2010-2050

Year	Iran			U.A Emirates			Turkey			Tunisia		
	0-14	15-64	65+	0-14	15-64	65+	0-14	15-64	65+	0-14	15-64	65+
2010	23.8	71.4	4.8	19.1	79.9	1.0	26.4	67.6	6.0	22.8	70.4	6.7
2015	24.2	70.8	5.0	18.5	80.1	1.4	24.4	69	6.6	22.0	70.8	7.2
2020	23.6	70.5	5.9	17.1	80.8	2.1	23.1	69.4	7.5	21.6	69.9	8.4
2025	21.6	71.0	7.4	15.8	80.8	3.3	21.7	69.5	8.8	20.9	69.0	10.1
2030	19.5	71.5	9.0	14.8	80.9	4.3	20.4	69.2	10.4	19.7	68.6	11.8
2035	18.0	71.2	10.8	14.4	79.2	6.4	19.4	68.4	12.2	18.3	68.1	13.6
2040	17.6	69.8	12.6	14.3	76.3	9.4	18.6	67.1	14.3	17.1	67.2	15.7
2045	17.5	67.2	15.3	14.3	74.0	11.8	18.0	65.5	16.4	16.7	65.2	18.1
2050	17.1	63.2	19.7	14.0	73.0	13.0	17.6	64.0	18.4	16.6	62.6	20.8

Source: United Nations (2009).

However, in Iran due to sharp decline in fertility during the transition period, the share of elderly population of total population will be more than the Turkey by the middle of 21st

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century. At the United Arab Emirates, the share of elderly population by the middle of 21st century still will be less than the young population's proportion.

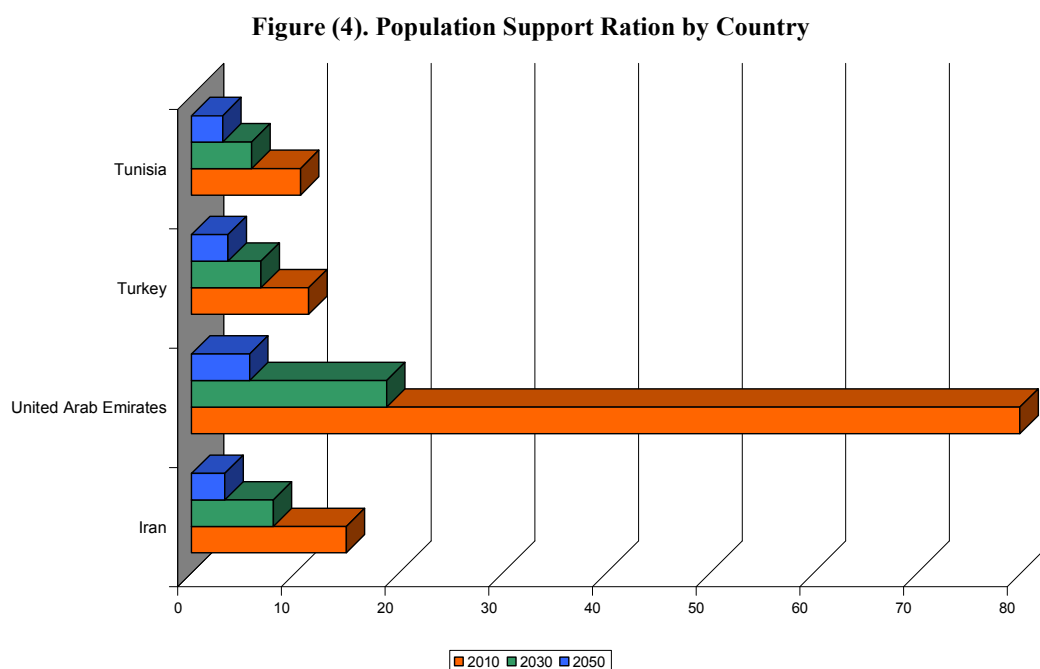
Fertility decline in the long-term also will increase and then decrease the ratio of working age population (15-64 years). At the regional scale, the ratio of population at this age group in south-central Asia during 2010 to 2040 will continue to rise, but from year 2045 onwards it will decline. In Southwest Asia during the next 25 years, the share of population aged 15-64 will increase. It will decline after 2035. Thus, North Africa is the only region in which the ratio of working age population during the next 35 years will continue to increase. The timing of increase and decrease of working age population and the population share of this age group of total population will differ from each other at the middle of the 21st century. The population in this age group in Tunisia will decline from 2015 onwards. In contrast, the trend in Iran until 2035 will remain almost constant at about 71 percent. While, the trend of increase in the share of population in this age group will be until 2025, and in fact, this country will face 10 years earlier from Iran to the phenomenon of reduction the population of working age. In the United Arab Emirates as well as trends for the years 2030 decade will still ascending. The important point in comparison of countries is the high share of population 15-64 year old in the UAE and Iran compare with Tunisia and Turkey. Although, the population's share of this age group in 2050 in Iran, Turkey and Tunisia will fluctuate between 62.6 percent in Tunisia to 64 percent in Turkey, but the corresponding figure in United Arab Emirates is 73 percent and it will be higher than the other countries.

Potential support ratio

This index shows the relationship between the number of population in working age group (15-64 years) and the number of elderly (65 years and over) (Gubhaju 2008: 71). On a global scale there are 8 persons in working age groups per each elderly (PRB 2009). In comparison, this index currently fluctuates from 13.6 in the West Asia and South Central Asia to 13.9 in North Africa. Estimates show that over the next 40 years this index with about 62.5 percent decrease will reduce to about 5. Although, the potential support ratio is relatively high at three areas, but important differences can be found at country level.

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Figure 4 show the potential support ratio for these countries for the period of interest. In the United Arab Emirates there are about 80 people in the working age groups per person in the older age group. Corresponding ratios in other countries has oscillated between 10.5 in Iran to around 15 in Tunisia.



During the next 40 years this ratio in the Emirates will drop severely and with 93 percent decrease will reach to 5.6 in 2050. Because of low ratio in other three countries, their rate of decrease during the next 40 years compared with the UAE would not be very sensible. However, the values of this index in all four countries will fluctuate in the range between at least 3 to maximum 5.6.

Feminization of the Elderly Population

Another consequence of low fertility and improvement in life expectancy at birth is feminization of the elderly population. Table 3 shows that the sex ratio at older ages in Turkey over the next 40 years will remain constant approximately at about 80 males per 100female . Although, in Tunisia trends during the next 20 years will be in direction of feminization of older population, but from 2030 onwards sex ratio at older ages will

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increase from 78.5 to about 80. In Iran, although data indicates excess of men to women aged 65 and over, but over the next 40 years the number of women 65 years and over will be more than men. The trend of changes in the sex composition of the elderly population of the United Arab Emirates during the next 40 years will be different from the other three countries. During the whole period, per each of 100 women aged 65 years and older there will be 65 men. Thus, by the mid 21st century feminization of the elderly will happen in all countries except the United Arab Emirates. The more number of women at older ages is the reflection of high levels of widowhood and the various problems associated with it. This phenomenon could be due to difference in age at marriage of couples and women's higher life expectancy at birth than men.

Table (3) - Changes in Sex Ratio of Population 65 years and Old, Four Selected Countries, 2010-2050

Country	Year		
	2010	2030	2050
Iran	102.1	86.7	84.4
United Arab Emirates	144.4	174.5	113.3
Turkey	80.0	79.9	79.0
Tunisia	87.4	78.5	79.9

Source: Calculated according to UNPD Estimates (2009).

According to the United Nations population division estimates, the difference in life expectancy at birth of male and female in these countries in 2010 is fluctuated from at least 2.2 years in United Arab Emirates to maximum 4.9 in Turkey. It is predicted that over time, the difference of male-female life expectancy at birth to increase in these countries except for Turkey. Since the possibility of female employment in the formal sector is less, their years of work and activities are shorter and their income is less. Women also don't have enough income from pensions or their occupation skills to support themselves at older ages. These realities along with other issues such as gender differences in education and literacy, poverty and functional status poses additional problems for elder women (Gubhaju 2008: 73).

Conclusion and Discussion

The results show significant differences in the experiences of country's fertility during the past 60 years. Although, all countries in the years 1960's were in pre-transitional fertility status, but the timing of fertility transition in these countries are different. Turkey pioneers entering to the period of fertility transition. After Turkey, Tunisia and United Arab Emirates with 10-year recency started the fertility transition. In Iran, the experience of continuum fertility reduction goes back to second half years of 1980's. Fertility transition in these countries has been experienced at different levels of human development. In fact, there isn't any specific threshold of development for starting fertility transition. The results also show that due to differences in fertility levels before the start of fertility transition and also difference in the pace of fertility transition, the experience of fertility at the replacement level or below replacement level is not consistent with the timing of fertility transition in these countries. The findings of this study also indicate that continuing of declining fertility trends from the years leading to the third decade of the 21st century will lead to complete convergence of countries in fertility levels and trends. Since 2025 the fertility level will be fixed at the level 1.85 children per woman. Low fertility will have such inevitable consequences as population aging, changes in age and sex structure, reduction in the potential support of the elderly, and finally feminization of the elderly. The results show that the dominant phenomenon in the 21st century will be the population aging. However, findings show differences in timing of population aging in these countries. It seems that timing of fertility transition and the pace of fertility decline during the period of transition are two important and determinant factors in this field. The results also show changes in population age structure. Feminization of elderly is a phenomenon that will appear in all countries except the United Arab Emirates by the middle of 21st century.

Fertility transition and experiencing low levels of fertility have resulted in changing the nature of issues that countries will face. Countries, at one hand, should be ready for use and benefit from positive outcomes of low fertility and increase investment in their population's quality of life, and at the other hand, confrontation with negative consequences that is inevitable for any country. Elderly population will have a lot of pressure on the health care system and socio-economic support. Increase in the elderly population on the one hand and

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reduction in the numbers of young people on the other hand, will result in the reduction in the number of care givers for the elderly. Although, the elderly may have the financial resources necessary to protect them, but they need daily physical care. Feminization of elderly leads financial, social security and health conditions of elderly women to become major issues in older communities. Considering the deep gender inequalities in literacy and participation in the labor force of countries in the Middle East and North Africa, probability of dependence of women on family members and public programs, particularly in the older ages and in condition of disease and disability will be higher. Continuation of fertility at or below replacement level fertility ultimately not only will result in reduction in the population of working age but also reduction in total population. With all this, one should not neglect the interests of the changes in population age structure. Fertility decline and improving life expectancy at birth, temporarily leads to increase in the relative size of the labor force and opening demographic window on the country. Undoubtedly, adopting proper economic and social policies by these countries will lead to economic growth.

Considering the experience of countries with low fertility, predicting the consequences of this phenomenon is inevitable. Since the problems associated with population aging and policy making for the elderly is a time consuming process that needs some decades programming and on the other hand, the needs of older people is changing, therefore, economic and social characteristics of the elderly should be noted in the designing of policies related to elderly,.

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