

The Healthcare Costs in the Aging Based on Data from the Urban Health Equity Assessment and Response Tool Project in Tehran, Iran (UHEART-2)

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Abstract

Introduction: The urban life and the problems of megalopolises have caused families to fail paying attention to the aging. According to the viewpoint from the experts in healthcare fields; the rising population of the aging in the country will expose the related social organizations and institutions with complex difficulties in an imminent outlook. The present study has dealt with this topic by means of the data derived from the project "Urban Health Equity Assessment and Response Tool (Urban HEART-2)" which has been implemented in the Municipality of Tehran in 2011. This study is an applied type and its data has been gathered by a cross-sectional technique. In order to collect information in 22 districts and 368 neighborhoods in Tehran, data were collected by using a multi-stage sampling technique. The total sample size included 1'117'845 people and statistical analyses were done on 15'030 old participants. Similarly, the needed data in this study in non- old group were examined in 102'355 people. Likewise, the related data to healthcare costs and the needed data for the calculation of catastrophic costs were extracted from both of old and non- old groups (<60 years). In this study, the mean healthcare costs of diseases was explored in both groups of the aging and the ones under the age of 60. The catastrophic healthcare costs were calculated for the two studied groups by means of the method confirmed by the World Health Organization (WHO).

Results: The findings from this research show that the old age rate in Tehran is higher in compared to this rate throughout the country. In a statistical survey conducted on healthcare cost index, a significant difference with a confidence interval (99%) was observed in two age groups under 60 years of age (non- old people) and over 60 years of age (aging). A review on hospitalization costs, diagnostic services cost, medical examination and transportation costs for medical services in both groups of the aging and those under the age of 60 indicated that a significant difference was seen at a confidence level of 99% while 12.9% of the families with old members might incur catastrophic healthcare costs. At the same time by exploring in catastrophic healthcare costs in both groups of the aging and those under the age of 60 a significant statistical difference was seen among both studied groups.

Conclusion: The Iranian healthcare system is exposed to challenge the high- rising of such costs like other medical systems. The results of this study indicates that the healthcare costs and catastrophic healthcare expenses are at high level in the families with old members in Tehran. The rising catastrophic costs in the aging may be due to many reasons such as high percentages of personal payment and inadequate coverage by insurance. It seems that the supporting policies and the exemptions from the payment of healthcare costs should be employed to reduce the percentage of exposing the families to catastrophic healthcare costs for the aging as a specific population group.

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Introduction

Today about 700 million people of the world population are the elderly who have ages higher than 60. It has been estimated that by 2020 this figure will reach more than one billion. 60% of this aging live in developing countries. By 2000, the people older than the age of 60 were about 5% of the total population in countries at the eastern Mediterranean Zone. According to the public census of the people and housing (1996) in our country, those who were over 60 constituted 6.6% of the total population, while based on 2006 census, this rate has increased to 7.3%. According to a report from the Statistical Center of Iran in public census and

housing (2011), the population of people older than 60 was 6'159'676 in the country that is about 8.2% of the total population in the country. The noticeable rising population of the aging throughout the world including Iran is considered as one of the most crucial challenges in the current century (1). Urban life and problems in megalopolises have caused the families to fail paying attention to the old members. Therefore a new and comprehensive outlook should be taken towards the problem of the old age in various cultural, social, economic dimensions of mental and physical healthcare with considering the conditions of today's world (2). Alternately, the healthcare and Medicare to which the



aging need differ from this need in other age groups (3). The chronicity and long period of diseases is one of the features of diseases during old ages that creates a lot of problems and costs for the given person and his/ her family. Due to the susceptibility of the elderly to various types of diseases at old ages, the way of presenting medical services may play a key role in their therapy and health (4).

In the USA (1997), the highest cost per capita was allocated to healthcare for people older than the age of 65 (5). At the same time, other developed countries have also spent high amounts of money to provide the costs per capita for the people older than 65 (6). Today it is planned to give active services to the old age period in developed countries. In the USA, the Medicare Plan has been essentially designed for the aging and with respect to the remarkable developments in the field of medicine, the rate of life- expectancy has increased among the elderly population in the world and particularly in the developed nations and the medical services costs have been inevitably raised especially with modern technologies. This issue has become a worrying issue, even in some of the developed countries like Sweden as well (7). In general, we are exposed to some major and certain demographic events, which warn us about the necessity for the predication and planning of healthcare and welfare to the elderly. It is natural that the continuance of the current trend and the existing conditions will expose the related social organizations and institutions to complex crises and difficulties in an imminent outlook. For this reason, it necessitates the universities and the practitioners of social welfare to allocate some of their studies to the problems of the aging (1). This study has extracted the information about aging out of data at the second career of (Urban- HEART-2) project in Tehran and analyzed the healthcare costs for them (8).

Methods

The method of this study is presented in two parts. The method of the data collection are presented in the first part in order to achieve a proper perception from the studied data and in the second part, the method of conducting the current study is explained.

This study is of the applied type and its data gathering has been done by means of a cross-sectional technique. To collect information in 22 districts and 368 neighborhoods at Tehran, data were collected by multi-stage sampling techniques (classification, systematic clustering, and systematic). The Sample size was then calculated based on Cochran formula as 1535 households in each district based on variables with at least 10% prevalence with a margin of error (d) of 0.015 and a confidence interval (CI) of 95%. Then to facilitate the allocation of sample to the mentioned eight-box table that had to be completed for the individual questionnaires and also to reach higher precision, the sample was expanded to 1600 households, regardless the population size in each district. Therefore, we assigned 200 blocks to each district equally (9).

The Tehran Comprehensive Map (2011) was assumed as the sampling framework in this project. In this map the districts and localities were separately identified and the map of any locality was placed on the Descartes Coordinates for sampling throughout the localities. After grading in centimeter the typical blocks were selected by means of 2-D systematic

sampling. Afterwards, the houses in any block were marked and the typical houses in any block were chosen by a linear systematic technique. Therefore, totally 34'700 families from 22 districts in Tehran were covered by this population-based survey on October 2011. There were three types of questionnaires. These questionnaires included 21 parts where the 14 first parts were completed throughout the family for all the 8 selected families in any block and the second 6 parts (mental health, quality of life, social capital, physical pain, oral health and physical activity) were completed by one selected family (based on age and gender table) for any block and then the last type of questionnaire, which specified nutrition, was filled out for a selected family in any block (10).

Two techniques were utilized for the evaluation of the confidence level for the given estimations by Small Area Estimation (SAE). The first technique was the simulation method that has been suggested by Edward et al. This technique was used both in real data at several districts by taking small sample sizes from them and on a dummy population. Then, in order to compare the estimations derived from the real estimations, Average Second Error (ASE), Average Absolute Bias (AAB), and Improvement Percentage (IP) techniques were employed so they are defined respectively as follows:

$$ASE = \frac{1}{m} \sum_{i=1}^m (p_i - \hat{p}_i)^2$$

$$AAB = \frac{1}{m} \sum_{i=1}^m |\hat{p}_i - p_i|$$

$$IP = 100 * \frac{ASEDE - ASE}{ASEDE}$$

In these equations, m denotes the number of districts, pi is the parameter of real estimation, \hat{p}_i is the estimation of the given parameter by small area techniques, and ASEDE is the average second error of the direct estimator. The smaller values in the two first criteria and the greater values in the third criterion indicate the higher efficiency of this method (11).

To examine the rate of confidence for SAE estimations in another technique, the direct and valid estimations at one higher order were used in 14, 16, and 17 districts. For this purpose, after deriving Bayesian's estimations for various indices in localities, the sum of them were used for estimating the rate of the prevalence in 22 districts in Tehran. Then, the acquired cumulative estimations and direct estimations of the prevalence of various parameters were compared in the districts, which had been extracted according to an adequate sample size. The close values among these two estimators and the higher rate of Pearson's correlation coefficient indicates the satisfactory of small regional estimations derived from these districts (8).

The method of the implementation of the current research is as follows. The data of the study are some parts of the data from the Urban Health Equity Assessment Response Tool (Urban HEART-2) project that was executed in the Tehran Municipality by aiming at determining inequity in physical, mental, social, and ecologic health components in 2011. The number of the aging and families with old members was

extracted initially from the original data in this investigation. In this survey, aging refers to those who are at least 60 (people who were born since 24/08/1951) at the starting point of the implementation of this survey. The number of the total sample size was 1'117'845 people. Among this sample size the number of the old people (people older than 60) was estimated 15'368 individuals out of which 608 people did not filled out the needed data in the questionnaires or the given data were incomplete so they were excluded from this study. As a result the statistical analyses were done on 15'030 old participants. Similarly, the needed data in this study in a non- old group were examined among 102'355 people. Likewise, the related data to healthcare costs and the needed data for the calculation of catastrophic costs were extracted from both the old and non- old groups (<60 years). The variables included demographic traits such as gender, age, education degree, family dimension, marital status, and type of insurance. In this survey, family's healthcare costs was comprised of drug and diagnosis costs (radiology, sonography, laboratory etc), medical examination, transportation cost for medical services, hospitalization costs in the hospital, and other healthcare costs (para-medicine, detoxification, counseling, rehabilitation, ambulance services etc). The non- food costs of the family comprises of the clothing and footwear costs, education, housing (rental, repair, utility charge, installments etc), consuming energy, smoking, inter- city transportation, cultural and recreational services, average costs of goods and miscellaneous costs for family, social services (kindergarten and old people's dormitory etc), pin money, investment and loan. The related data to variables and information of the healthcare and non- food costs of families were separately codified in two groups (old people and people younger than 60). Finally the data in this study were analyzed by means of the SPSS software and were used for exploring the hypotheses from the T-test (independent means comparison). Similarly, catastrophic healthcare costs were calculated for the two studied groups by means of the method confirmed by the World Health Organization (WHO).

Results

By application of data extracted from the second round of the Urban- HEART-20 project in Tehran, it was character-

ized that among the total of 15'030 aging that were investigated in this study, 54.7% of them were males and 44.8% were females (0.5% of them did not respond to this question). The old age rate was estimated 12.27% for the participants in the study of Urban- HEART-20 project. The maximum old age rate in Tehran belonged to districts 6 and 3 (20.74%) and the lowest old age rate was related to district 18 (8.12%). So there was a statically significant difference among the two abovementioned districts.

In terms of family dimensions, 6.5% of the aging live individually and 28.8% of them included 2-member families, and 3.4% of the aging were living in populated families (more than 7 members). In family dimensions, 2- member families (28.8%), 3- member families (24.5%), and 4- member families (20%) had the most frequency, respectively. In terms of the education degree in the studied sample, 25.7% were illiterates and 21.2% of them had a total or partially primary school degrees, 7.1% had bachelor's degree and 3.1% had MA and higher degrees. The highest frequency in education belonged to illiterate ones (25.7%) ,literacy for reading and writing (21.2%), and the people with high school diploma and pre-university degrees (14.2%) were positioned as the third rank. In terms of marital status, 77.5% of the aging had spouses, 18.5% of them had lost his/ her spouse due to death, 0.9% of them had divorced their spouse, and 1.4% of them had never got married. In terms of medical insurance, 82.8% of the elderly were covered by one type of medical insurances. 46.6% of the aging were covered by medical insurance from the social security organization, 22% of them were under coverage of the medical insurance services (Iranian health insurance), and 12.2 were covered by other insurances including Armed Forces, banks, IRIB, Municipality, and Imam's Relief Committee. Therefore, 18.2% of the aging were not covered by any type of medical insurances. From a retirement aspect, 43.3% of the aging were retired. Among them the maximum rate (24.6%) belonged to social security organization retired people. In terms of the coverage with supplementary insurance, 14.3% of the elderly were covered by supplementary insurances or without coverage of dentistry services, 73.7% of the old people had no supplementary insurance coverage, and 12% of them gave no response to this question.

Table 1: Frequency of variables of educational status, marital status, and insurance coverage separately based on gender in the studied old people

Variables	Classification variables	Male	percentage	Female	percentage	Total	percentage
Educational status	Illiterates	1524	18.7	2463	36.1	3987	26.5
	Diploma and under diploma	5092	62	3075	45	8167	54.4
	Academic	1574	19.3	1291	18.9	2865	19.1
Marital status	With spouse	7555	93.3	4037	60.8	11592	78.6
	Death of spouse	407	5	2389	36	2796	19
	Divorced	43	.5	99	1.5	142	1
	Never married	91	1.2	111	1.7	202	1.4
Insurance coverage	Medical services insurance	1798	22	1510	22.6	3308	22.3
	Social security insurance	4094	50.1	3210	48.5	7304	49.2
	Miscellaneous	1008	12.3	820	12.3	1828	12.3
	With supplementary insurance	1215	14.9	912	13.7	2127	14.3
	Without supplementary insurance	6024	73.8	5015	75.1	11039	74.4
	Retirement insurance	4342	53.2	2145	32.1	6487	43.7

Total number of aging	8164	55	6680	45	14844	100
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The health cost index is one of the most important parameters in the economic field that is computed by the ratio of annual average health costs of families to the mean sum of annual non- food costs. This index is 10.42% in Tehran while this ratio is 16.49% in families with old member and 6.07% in families without old member. The average drug cost index that is calculated from the ratio of family's annual average drug cost divided by the sum of annual healthcare costs for families is 13.88% in families with old members and 28.60% in families without old members. The average ratio of hospitalization is estimated 70.12% in families with old member and 51.87% in families without old member. The index of the mean medical examination costs that is computed from the mean ratio of family's annual medical examination costs divided by the mean sum of annual healthcare costs of families is 4.07% in families with old member and 5.52% in families without old members. The parameter of the mean disease diagnosis cost, which is calculated by the mean ratio of annual disease diagnosis costs of the family divided by the average sum of the family's annual healthcare costs, is estimated 5.23% in families

with old members and 6.04% in families without old members. The parameter of the mean transportation costs for medical services that is derived from the mean ratio of transportation costs for family's annual medical services divided by the average sum of the family's annual healthcare costs is 2.35% in families with old members and 2.56% in families without old members. The index of the mean miscellaneous health costs (para-medicine, detoxification, counseling, rehabilitation, and ambulance services etc) that is extracted from the ratio of the average rate of family's annual miscellaneous healthcare costs divided by the mean sum of annual healthcare costs for the family was estimated 4.34% in families with old members and 5.41% in families without old members. Catastrophic healthcare costs denotes the conditions in which the ratio of healthcare costs to non- food costs are greater than 40%. The review of this index showed that 4.7% of the families without old members and 12.9% of the families with old members incur the catastrophic healthcare costs. It should be noted that the total percent of families, which incur the catastrophic costs in Tehran, are 9.74%.

Diagram 1: Relative comparison between healthcare costs in old people and those under the age of 60 in Tehran

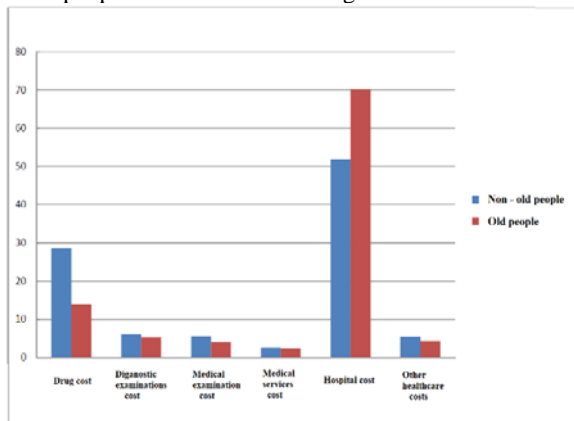


Diagram 2: Distribution of healthcare costs in people under the age of 60

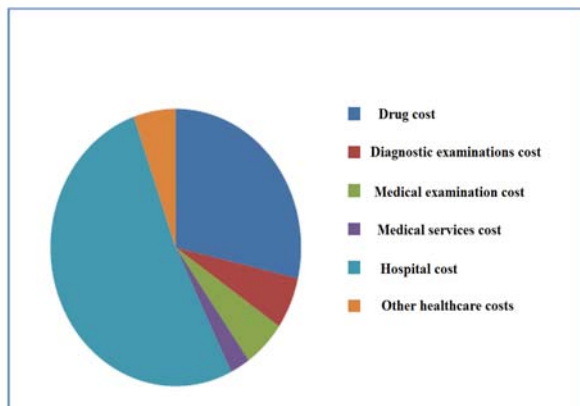


Diagram 3: Distribution of healthcare costs in people older than the age of 60

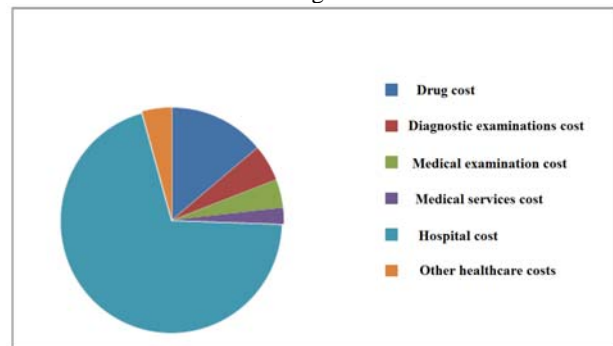
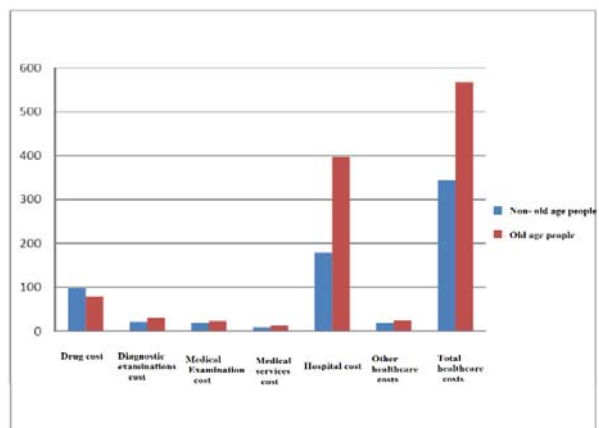


Diagram 4: Comparison of healthcare costs in families with/ without old members (in dollars official rate in 2011)



Discussion

Old age is assumed as one of the indices denoting the vulnerability of families (12). The findings of this study showed that the old age in Tehran (12.27%) is higher than the national rate of the old age (8.2%). This indicates that the population in Tehran has an older age than the age of the people throughout the country of Iran. No research and study was found about the reason of the higher rate of this variable in Tehran. However, some experts have mentioned its reasons in some factors such as migration for education of the children, treatment, and focusing the facilities in Tehran as well as the superiority of the financial status of the older people than the youth. Spillman argues that probably, the rising of age is deemed as one of the reasons for increasing the costs for the old people, but its main reason is due to the rising number of old people (13) and it is implied that the rising number of old people will be potentially led to increase their healthcare costs (14).

During the statistical exploration in the healthcare cost index in this study, a significant difference was seen at the confidence interval 99% within the two age groups under 60 (non- old) and higher than 60 (old people). Several studies emphasize this reality that the medical costs will have a progressive trend as entering into the old age period in various units and forms (15). However, so far no study has been conducted to predict the costs of the healthcare sector with respect to the old age population growth in Iran (12). During the conducted studies in 1999 on the aging under coverage of insurance by the Social Security Organization in the metropolis of Tehran, it was known that more than 37% of the total given healthcare service costs were allocated to the group of the aging while at that time about 4% of the total group that was insured by the Social Security Organization in Tehran was aging (16). In a study that was carried out by the order of the USA Congress in 1999, it was shown that the medical costs spent for the age group under 65 were 5 times greater than the total medical costs for the age group under age the age of 65 years (15). The healthcare cost per capita for people who are older than 65 in USA and other developed countries, is three to five times higher than the people younger than 65 (17). The annual growth of Medicare cost per capita that was computed in USA from the year 1963 to 2000 indicated that this growth rate was 5.8% for the people older than 65 and this rate was 1.7% more than the other age groups. The USA Medicare studies have shown that however in 2004 the aging constituted only 9% of the members of the community, this group was responsible for 26% of the total costs (18). Therefore, the higher rate of healthcare cost for the aging in Tehran in the conducted studies in Iran complies with the related researches in other countries.

The statistical analysis on the mean of the hospitalization costs in the hospital in both groups of the aging and the people under the age of 60 indicated that a significant difference might be seen among both groups at a 99% level of confidence. An investigation in the Cleveland Medical Center in 1993, hospital- related costs and the duration of the residence for the aging were 70% higher than other age group (65-70) (19). The other survey in the USA showed that more than two- third of Medicare costs for the people older than

the age of 65 that have been devoted to the five to ten percent of the people older than 65. The aging constitute 12% of the total population in this country and they spend more than 36% of healthcare costs. About one third (33%) of the receptions for hospitals and 44% of the total days of hospitalization of the patients in hospitals belong to the aging in USA (5). In another study in the University of Alberta in Canada, the model of consuming hospitalization services indicated that the rate of consuming these services in the aging has been greater than the other groups so that the rising rate of the occupation of the hospital beds by the aging has created some problems for other patients (14). According to a study conducted in medical- healthcare systems at USA, Spillman assumes that the reason for the rising costs of old age are not in acute Medicare but are in long- run Medicare and nursing in the home. He maintains that the rising of age may be probably one of the reasons for the increase in costs for old people, but the rising number of the aging is its main reason (13). A study done in Australia also suggests that the growth in the entire population and also in the elderly has increased hospital- related costs from 1.6% in 1997 to more than 1.8% annually until 2012 and this trend will be continued until 2018. The comprehensive point is that if the effect of population growth is omitted of this computation, the hospital- related costs will be increased from 0.5% in 1997 to 1.3% annual growth by 2015 to 2018. This point emphasizes this fact that the senility of the population will be the main factor for the rising of costs. In this study, it has been concluded that the effect of senility in the Australian community will cause independently rising hospitalization real costs up to 4 billion dollars by 2015. All these costs returns to giving services to people older than 65 (20). The findings in this study about the increase in hospitalization costs in families with old members living in the city were consistent with the aforesaid investigations.

In this study, the mean rate of medical examination costs was explored in two groups of the aging and the people under the age of 60 and it showed that significant difference might be seen statistically among both the studied groups. No exclusive study was found about medical examination costs among the elderly's country. Yet, various reports signify the rising referrals for medical examinations at the old age period (20). In a report presented about the status of American aging in 2007, the chronic diseases and disability of the aging have been mentioned as the reasons for the increase in the costs of senility. Actually 80% of the aging suffer from at least one disease and 50% of them of suffer from two chronic diseases in USA. This issue has caused increasing Medicare costs about nine times greater from 39 billion dollars in 1980 to 336 billion dollars in 2005 (21). According to this survey, the ratio of the medical examination in healthcare costs of the elderly is 4.07% in families with old members and 5.52% in families without old members. This reduction is due to rising healthcare costs for the old people in other healthcare units; especially the hospitalization costs in hospitals and its relative increase complies with other aforesaid studies.

In this study, the mean cost for diagnosis of diseases was explored in both groups of the aging and those under the age of 60 and it indicated that statistical significant difference

might be observed between both the studied groups. No exclusive study was found regarding disease diagnosis costs during old ages in the conducted search in Iran. Yet, there are many studies, which show that it is highly required taking diagnostic measures at the old age period and whereas modern diagnostic technologies are expensive thus they may include an important part of healthcare costs (2). On the other hand, it is expected that rapid growth in the population of the aging lead to continuous developments in medical technologies to exert double pressure in terms of the related expenses for health and providing long-term Medicare costs. Nonetheless, it necessitates noting this point that disease patterns in developed countries is not the same as the diseases patterns in our country. In some cases a healthy and successful old age pattern can be implemented with consuming the minimum cost and through better planning and organization (14). A difference with a significance level of 1% (99% confidence level) was also seen among the aging and those under the age of 60 in this investigation and this confirms the rising effect of diagnostic measures on healthcare costs during the old age period.

The mean rate of catastrophic healthcare costs was examined in this study in both groups of the aging and those under the age of 60. It also indicated that a statistical significant difference was seen statistically among the two studied groups. The presence of the people older than 65 years in the family may increase the probability of exposure to catastrophic healthcare costs (22). It has been also emphasized on this issue in other studies that the families with members older than 65 years may be further exposed to catastrophic healthcare costs. So the families with old members are further exposed to this catastrophic cost compared to families without such a member. In studies conducted in advanced countries, this factor (senility) has been assumed effective in creating the catastrophic cost (23, 24). The studies of Somkorta and Lagrda (2009) also suggested this point that the families with greater numbers of old members will be exposed to further risk of such costs (25). Alternately, in the survey of Dormont (2006) regarding the reasons for the rising costs of healthcare for the elderly it has been shown that the age structure of the population has increased the healthcare cost to only 3.4% and the change in the practices had the highest effect (12.9%) in rising healthcare costs (26). One reason for this issue in old age period compared to other ages is longer period of use of the healthcare services (e.g. increase in period of residence and hospitalization and healthcare residences) (2). The findings of this study about the rising rate of catastrophic costs in families with old members in Tehran complied with other given studies in this regard.

The statistical exploration in mean rate of drug costs and other costs (para-medicine, detoxification, counseling, rehabilitation, and ambulance services etc) in both groups of the aging and those under the age of 60 in this study indicated that no significant difference was seen among both groups at 95% level of confidence. Given that the drug costs during the hospitalization period and Medicare services such as detoxification, rehabilitation, and ambulance services could not be separated in data in this study thus comparing this survey with similar studies was not possible. It seems that

ignoring drug costs during the hospitalization period and different effects of the embedded elements in other services (para-medicine, detoxification, rehabilitation, and ambulance services etc) on healthcare costs has led to balancing the costs in both groups (aging and those under the age of 60).

Conclusion

Based on the conducted studies, healthcare costs are deemed very important in the old age period and it is noticed by healthcare policymakers. While the general index of costs has been increased 30 times greater during the past twenty years in the country, this growth rate is 71 times further in costs at healthcare sectors (27). The patients' share in the payment of the healthcare and medical costs is extremely high. Actually, 3.5 million patients are going under the poverty line every year only because of healthcare and medical costs (28). So the insurance organizations have held back from playing their main role which is protecting the patients against the payment of unpredicted costs while the major part of medical costs for the elderly is incurred by the governments in the developed countries (29). Based on a medical insurance act in Japan, the elderly older than 73 years only pay 10% of the medical costs and the government provides the rest from the insurance fund (30).

Although, no study has been yet conducted in Iran for the prediction of costs in healthcare sectors with respect to the population growth in the elderly, according to the available estimations, in order to meet the needed costs of healthcare, it necessitates to increase the share of any person per capita from financial sources of the healthcare sectors to improve more than 2.5 times. This rate is under the conditions if some factors such as inflation, upgrading technology in giving services, type of diseases, and level of users' expectation from the services, and other cost-consuming factors are ignored. At the same time the figure of 131 dollars healthcare share per capita should be increased up to 325 dollars in Iran by 2050 only under the influence of the rising population of the aging (12). The results of this study indicate that the healthcare costs and catastrophic healthcare expenses are at high levels in the families with old members in Tehran. The rising catastrophic costs in the aging may be due to many reasons such as high percentages of personal payment and inadequate coverage by insurance (24). It seems that the supporting policies and the exemptions from the payment of healthcare costs should be employed to reduce the percentage of exposing the families to catastrophic healthcare costs for the aging as a specific population group. The supplementary insurance and increase in insurance coverage may contribute to adjusting this condition. The government may prevent the families with old members to expose catastrophic costs with political interventions and thereby reduce the effects of such expenses. The definition and determination of appropriate servicing packages, identifying suitable premium, and the allocation of subsidy to families with old members as well as developing depth and coverage of insurance prepayment mechanisms may also contribute to reducing the occurrence of catastrophic costs (31). Furthermore, policies for improving the status of families with old members should be focused on (32). Certainly,

organizing and planning based on the expectations in the community are considered as requirements of policymaking in the healthcare fields. For this reason, several modern approaches have been proposed in providing financial sources for health. Also, totally new topics are implemented in theoretical fields, which is mainly intended to identify mechanisms for improving and producing sustainable and appropriate financial sources to meet cost requirements (33). Necessarily and with respect to the restriction of resources and requisite for the participation by the public sector, it seems necessary for the presentation of social services especially to the elderly. For this purpose, the national authorities of

healthcare services should search for serious planning to provide the needed medical services for the aging under their coverage and should prepare new and stable sources to give optimal services (34).

References

1. Beladi Mosavi S. Evaluation age & sex report in 1385 population & settlement enumeration. Elective statistic objects. 2006;18(1):51-72.[Persian]
2. Allameh H. home care and visit. Tehran2013; Available from: [Persian] <http://tums.isna.ir/Default.aspx?NSID=5&SSLID=46&NID=7309>.
3. Mesdaginia A, & others. Educational guideline, integrated & comprehensive geriatrics cares for physician. Tehran : Ministry of Health and Medical Education; 2012. p. 7-9. [Persian]
4. Forghani A. home health services for Agricultural Bank personnel and retirees. Tehran: Young Journalist Club; 2013; Available from: <http://www.yjc.ir/fa/news/4141908/%D8%A7>. [Persian]
5. Porreza Aea. Aging and Health Economy. Iran Geriatrics Journal. 2005;2. [Persian]
6. Goulding.MR. public Health an aging: Trend in aging U.S. & world wide. JAMA. 2003;1371-73.
7. Hallengren L. Financing for geriatric health services Sweden. 2013; Available from: http://no.cyclopaedia.net/wiki/Lena_Hallengren.
8. Vaez.Mahdavi M, Asadi Lari M. Urban HEART Tehran Experience Round -2 Results. Tehran; 2013.
9. WHO. Annual report WHO; 2012; 30]. Available from: http://www.who.int/kobe_centre/publications/annual_report2012/en/.
10. Asadi Lari M, Vaez. Mahdavi M, editors. An overview on Urban-HEART Tehran experience,. Tehran: Municipality of Tehran; 2010.
11. Braveman PA. Monitoring equity in health and health care: a conceptual framework. J Health Popul Nutr. 2003; 21:181-7.
12. WHO. World Health Report 2006. Geneva2007.
13. Spillman B.C. &et al. The effect of longevity on spending for acute and long- term care. New England Journal of Medicine. 2000; 342:1409- 15.
14. Zanjani H, editor. Geriatrics Article Complex. Tehran: Bano-van; 2001. [Persian]
15. Jenson j. health care spending and aging of the population2007. Report No.: RS22619.
16. Afzali H &et al, editor. Proceedings of the first congress of Analysis of geriatrics Issues in Iran. Tehran.2001. [Persian]
17. Anderson L. The state of aging and health in America 2007. Aging Health. 2007;3(2):139-41.
18. Medicare KMaMS. In: data KCoMatUiKeboCO, editor. USA: Medicare; 2004.
19. Asefzadeh & et al. evaluation in geriatric Minoodasht Iran Geriatrics Journal. 2010;5(15) [Persian]
20. Department of health and aged care. The ageing Australian population and future health care costs1996- 2051. In: care dohaa, editor : occasional papers; 1999.
21. Irwin &et al. The commission on social determinants of health : tackling the social roots of health inequities. 2006;1.
22. Bodenheimer T, Grumbach K, editors. Understanding Health Policy. Tehran: Mahvar; 2012.
23. Xu K , Carrin G, et al. Protecting Households from Catastrophic Health Spending. Health Affairs;. 2007;26(4):972- 83.
24. Wyszewianski L . Families with catastrophic health care expenditures. Health Serv Res. 1986;5(21):617-34.
25. Somkotra T LL. Which Households Are At Risk Of Catastrophic Health Spending: Experience In Thailand After Universal Coverage. Health Affairs;. 2009;28 (3).
26. Dormont B & et al. Health expenditure growth reassessing the threat of ageing Health Economics. 2006; 15: 947- 60.
27. Central Bank of Islamic Republic of Iran. The main economic indicators. Available from: URL: www.cbi.ir/. 2012. [Persian]
28. Mohseni A. 5 percent of Iranian population go under poverty line each year because of health expenditures. Available from: URL: www.farsnews.com/. 2011.
29. Seshamani M, gray A,editors. Ageing and health -care expenditure: the red herring argument re visited, Health Econ2014.
30. Kahrizak Charity Foundation. Japans Gaverment and Health Expenditure in Geriatrics. 2007. [Persian]
31. Kavosi Z & et al. Inequality in household catastrophic healthcare expenditure in low- income society of Iran. Health policy and Planning. 2012(7):613-23. [Persian]
32. Davari M. Evaluation of equity in pharmaceutical services in selected cities of Kurdistan (Iran) province. School of Pharmacy and Pharmaceutical Sciences. 2011. [Persian]
33. Cookson R. Willingness to pay methods in health care: a sceptical view. HEALTH ECONOMICS. 2003.
34. Venkatachalam L. The contingent valuation method: a review. 2003.