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MEDICAL RISK MANAGEMENT IN LIFE INSURANCE

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ABSTRACT

Nowadays, a number of different fields of study associated with insurance, particularly personal insurance, have been developed. Insurers provide people with life insurance, so that in case one of the family members dies, especially the head of the household, the other family members would be financially supported. Moreover, life insurances are also sold by the insurers in the form of life savings in addition to insurance coverage. The risk associated with life insurance is the death of the insured person. Therefore, the insurers should be able to manage it so that they would achieve a competitive advantage. In the present study, there are different stages including presenting a definition of risk, risk management and its importance in life insurance and the medical risks that lead to a person's death and also, a number of risk control strategies would be presented.

Keywords: *Risk, Risk Management, Medical Risk, Life Insurance.*

INTRODUCTION

The increase in the importance of risk management has been influenced by the recently developed interest in risk analysis and evaluation as well as people's understanding and perception of it and the technical skills in this field. It is not very difficult to avoid risk and uncertainty; but the difficult thing to do is perceiving and controlling risk and reducing this uncertainty to a degree that would be acceptable in a certain situation.

Insurance is one of the main tools of risk management which plays a crucial role in the economic, social and political life of the countries. Economic growth all around the world has also enhanced the importance of the role of insurance.

The statistics associated with the leading causes of death in the world help the insurers control the controllable risks related to the death of the insured. This article attempts to identify the medical risks in life insurances and to present recommendations and strategies for controlling them with the help of the insured's trustee doctor. What is hoped here is to help insurers develop this field in the future by properly selecting and controlling the risk.

Article Description:

What is meant by risk is usually the dangers that people might be faced with at any given time. Also, risk can be defined as a different in the result that could have been obtained in a certain period of time. If only the occurrence of one incident is possible, this different and therefore the risk associated with this incident would be zero; whereas the risk would not be zero if various incidents can potentially happen. Risk has also been defined as the chance of occurrence of damages or a combination of dangerous incidents (Otroille, 2001)(2)

The source of computation of all of the life insurance and insurance contracts, the risk associated with them and risk estimation – based on its intensity and frequency – also has some effects on

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the fate of the contract. Therefore, it is crucially important to examine the degree of the risk in the contract and determining the premium based on it.

Risk is the primary cause of creation of insurance and without risk, insurance would lose its meaning and sense. In societies without risk, there would be no insurance either.

In 2008, Garoy defined risk as an incident that if happens, the ability of the project to fulfill its objectives would be influenced.

In another definition, risk is regarded as a deviation in occurrences that can potentially happen throughout a certain period and in a certain situation (Williams and Hines, 2001).

The risk associated with insurance means the probability of the occurrence of incidents. According to this concept, risk is accidental and probable which is the origin and source of different damages. Thus, the features of risk can be briefly listed as follows:

- Accidental
- Real
- Unavoidable
- Harmful
- Prospective

Risks associated with life insurances:

Life insurance is a private contract between the insurer and the insured which has been designed to financially protect the insured as long as they are alive and to financially support the beneficiaries in case they die. To compute the insurance premium, the insurer will have to obtain some information such as age, gender, health status and lifestyle of the individual along with some information about the his/her family's health background. After this, the insured people would be divided into certain groups composed of other people with similar risks. As a result, because of the nature of the life insurance, the process of development of the insurance would distinguish individuals from others based on their personal and their family characteristics. Thus, the insurer has to be quite careful with risk selection so that he/she would make the best choice.

However, risk evaluation varies from one life insurance to another and also, there are various ways for achieving it. In life insurances, the premium is calculated based on the death table for normal risks. Since the life insurance contract is long-term and this selection is only done once at the beginning of designing the contract, the insurer must be as careful as possible when it comes to risk selection. Because the health status of the insured can change and be lowered throughout the course of time, risk selection is highly significant in life insurances. An insured person who is worried about his/her future might attempt to insure himself/herself; while this is not the case in contracts where the insurance is subject to the person's being alive. Thus, the insurer should be careful with issuing insurance for those who want to take advantage of the insurance.

In addition to the insurer, the insurance mediators (representatives and brokers) must also be trained well when it comes to how to sell life insurance and how to select the risks in it. These agents should help the insurer in presenting sufficient information for risk evaluation.

The ability to foresee death or chronic diseases plays an important role in improving life insurances and actuary and risk analysis. In the past few decades, the market has become very competitive as far as selling life insurance is concerned. Hence, to succeed in this competitive

market, it is essential for the insurance company to be better in providing the proper insurance deal and in managing risk.

Risk management:

It can be claimed that insurance institutes that have institutionalized the maximum usage of this science in their organizational strategies will be the dominant forces in the future insurance market. The operational and nonoperational activities of this kind of institutes are focused on engineering and managing static and dynamic risks in an organized, intelligent and systematic manner; whether in the form of project risks, financial risks or the risks associated with human resources and investments. Nonetheless, in a relatively near future, without having this system of thought, institutes would not be able to be active and obtained competitive advantages. Thus, undoubtedly, the future of leadership and management of the insurance market and creation of added value of the insurance companies belongs to those who manage risks.

Risk management is the process of recognizing, evaluating and controlling the potential accidental risks whose possible consequences are damages or a rather drastic change in the current status (Williams and Hines, 2001).

In another definition, risk management is a process that includes defining and recognizing the risk, evaluating it and stages of risk reduction with the purpose of reaching an acceptable risk (Standborder et al., 2002).

Insurance is a main transmission tool in risk management. Public and private insurances play a crucial role in risk management and in the social, economic and political life of people.

Perhaps, risk management knowledge can be regarded as the edge of new management science which have always been obsolete in the insurance industry since the tariff system and public administration have been the dominant forces in the industry. Unfortunately, optimum application of this knowledge has not yet happened in our country and this knowledge has not been the basis of scientific insurance operations. However, this method has been used empirically and to a limited extent.

Risk management experts in property insurances receive the information of the insured person and the dangers of insurance in association with the most complex risks and report the necessary terms and conditions in regards with accepting the risk to the insurer and to the insured. Also, these experts estimate the probable occurrence of damage and determine rules and instructions for controlling risk and for exemption of some risks. In this regard, they recommend special conditions to the insurers. Then, the insurers study and review their reports and apply the insurance conditions and rate based on the specific actuary calculations.

Risk management process:

Step 1: damage (or risk) recognition

The process of risk recognition can be regarded as one of the most significant responsibilities of risk managing agents. Inability to identify one or multiple probable occurrences might lead to financial bankruptcy. The important thing here is to predict the probable problems before they arise. However, there is no scientific method or a systematic approach for the recognition process. Ultimately, a number of risks might remain unknown. In terms of the process of recognition, numerous approaches have been suggested, most of which put emphasis on the evaluation of operational traits of the firm. Risk management assemblies, management consulting institutes and insurance companies have developed a list for examining potential risks

which have been mainly provided based on a questionnaire approach. In the questionnaire approach, inspection is usually an essential supplement.

Step 2: risk measurement

When risks are identified, the risk manager is responsible for evaluating them. The process of data creation is also known as risk measurement. What is meant by this is measuring the potential degree of damages and to determine the probability of their occurrences. The required data are associated with two different dimension of risk:

1. Frequency of occurrences
2. Intensity of the damages that would occur.

Information is collected with the purpose of describing a phenomenon, evaluation and prevention. It is often desirable to summarize the data by providing distributions of frequency. Presenting this data might display very important and useful information about the causes or the consequences of a phenomenon.

There is a problem with the process of evaluation which is the point that incidence might lead to the rise of direct or indirect costs. Direct damages include direct financial costs associated with 1) properties exposed to risk; 2) a responsibility exposed to risk; and 3) people exposed to risk; and indirect damages are the outcome of direct damages.

Step 3: risk evaluation

The data associated with frequency and intensity of the risk more beyond identification of important damages. This data is quite useful when it comes to determining the method for encountering a situation. One of the goals of risk evaluation is determine how serious they are and if it is people who are exposed to the risk or an entire society? One aspect of risk measurement relates a basic assumption, i.e. the ability to predict realization of risk depends, to a large extent, on the quantity and reliability of the information about the phenomenon under study. Nonetheless, in some cases, the conditions are very unique which make risk measurement and therefore risk evaluation rather difficult.

Step 4: risk control

Whether a firm has decided to accept a risk or not, it has to take two probabilities into account: 1- decrease in the frequency of an occurrence and 2- decrease in the intensity of damages that will occur. The potential benefits of risk control must be weighed in contrast with the costs. If the expected benefits and advantages are not equal to or more than the costs, it is better for the firm not to participate in a given activity. If the reduction of direct and indirect costs can be estimated, expected long-term benefits (such as reduction of unreliability, improvement of public perception and consumers' perception and increased employee efficiency and working spirit) would not essentially measurable.

The important thing to do here is to take the final cost of risk reduction into consideration, because the final cost increased as risk decreases. The commonly used criterion for making a decision depends on the level of the "acceptable" risk and it should be "as low as the best applicable technology" or "as low as the best available technology". The "zero change limit" indicates that risk is going to be reduced independent from the cost.

Damage and risk control measures can be classified into various methods and depending on the following items: 1- whether these actions are being taken for preventing risks or reducing them; 2- cause or location of the occurrence of the risk; and 3- timing of the incident.

Risk prevention plans are carried out for reducing or even removing the probability of risk, i.e. risk frequency. It is never possible to completely eliminate the possibility of risks. However, an important approach to reducing the consequences of risk has been proposed. Risk prevention activities, safety plans, fire department, army or police forces are some examples of activities for preventing risks.

Risk reduction plans are carried out for lowering the intensity of risks. According to the timing of the incident, the risk prevention stage takes place before the incident; whereas, reducing the risk throughout the period of occurrence or after it can also be done. Emergency plans are often carried out to develop methods that point out the measures that should be taken after the damage which would probably reduce future harms, death or damaged properties.

Risk control plans are basically designed for facing the following issues:

1. Protecting properties: protecting all of the physical properties of the company
2. People's health and safety: preventing damages and protecting the health of every employee
3. Production safety: designing, producing and distributing healthy products for public consumption
4. Protecting the environment: removing or reducing water pollution and waste

Medical risk management in life insurances:

Medical risk management is one of the important tools for applying a risk selection strategy. Both doctors and decision makers who are not physicians play significant roles in medical risk management. Insurance companies have to identify and analyze risk reduction and risk management strategies (Batista et al., 1989).

In regards with life insurance, the probability of the risk of death of the person covered by this insurance is included in the preliminary questions associated with the acceptance of the risk by the insurer. The insurers distributed and collect a health survey, ask their trustee doctors to do some check-ups, receive the results of these medical experiments and other diagnostic measures. By doing so, they try to be sure of the health level of the insured to a large degree and make sure that the death of the applicant due to the diagnosable issues (throughout the period of insurance) is not definite. It can be argued that there is a major difference between this kind of insurance and other types of insurance. In this kind of insurance, occurrence of risk associated with insurance is definite and not just probable, but the time of it is not clear and no one has ever been able to determine the exact time of one's death or the duration of their life. Thus, the duration of the insurance coverage of such applicants has a considerable effect on accepting its risk.

The legal obligation of one who applies for life insurance in relation with exposing information has important consequences for the insurance coverage of personal insurances. The insurer can find out a great load of information about the applicant and make decisions about the conditions for accepting its risk. Health information are collected because they show how specific characteristics affect the probability of occurrence of damages associated with insurance in the future.

The insurer collects some information about the health of the applicants based on their answers on the recommendation form. These questions are asked by the insurer and there are different kinds of questions based on the type of the insurance. However, there are usually questions about

health, physical conditions, lifestyle, results of medical experiments and health history of each person.

The health-related information might be needed in the two following situations:

1) When the coverage that the applicant has asked for exceeds the normal insurance coverage offered by the insurer. Insurance companies usually have a particular limit when it comes to coverage. These limits are determined by taking different variables into consideration, such as insurance premium, duration of insurance, age and more information (the results of check-ups by a general practitioner or a specialist).
2) The applicants might expose their current or past medical conditions which need to be reviewed more through a questionnaire, medical reports or medical experiments.

Groups that act as the basis of classification of risks might undergo some changes over time and these changes might be due to social evolutions. Therefore, for many years, age was the only nonmedical factor which was taken into account when it came to insurance. The relation between age and risk is completely obvious. With an increase in age, death rate also increases and as a result life expectancy decreases. Over the years, gender of a person and smoking habits have also been recognized as important factors as far as the aforementioned classification is concerned. The existing information have shown a certain relation between these indexes and the damages that follow. To classify risks, we must divide them into integrated groups. In these groups, there are differences between expected disease and/or death. In addition to the preliminary classification criterion which were previously mentioned, medical condition is the most important factor that are taken into consideration for risk classification. Medical factors are quite significant, especially when it comes to assessing health of elderly applicants who might not be in a good condition health-wise. Insurers must integrate all of the medical conditions that might be different in the intensity, symptoms and treatment of diseases and compute them as an increased rate. As a result, each applicant would be at an overall risk level which is normally based on a numerical rating system. Many of these factors play a role at the time of determining the death risk. Individuals who are classified as standard based on their age provide a criterion for measuring the nonstandard class. It gives the expected 100% death rate to the standard group. Then, factors associated with certain risks which are different from the standards will be assigned a special numerical value considering the standard group. There are also other factors such as health status and medical history of the applicant. Moreover, class of the job risk also impacts the terms and conditions of insurance. Thus, insurers are after information about the health status and medical history of the applicant before accepting the risk of life insurances or health insurances. Exposure of important information is the principal foundation of maximum goodwill which is the basis of life insurance. Selection is a factor that plays a role in accepting or not accepting a request. It is quite significant for the companies to select the best hypotheses about death and other sales-related goals and factors. The Life and Welfare Administration takes certain standards into consideration at the time of issuing an insurance and it only accepts people who are qualified based on these standards. These standards might be reviewed through medical experiments or a series of questions in a written form to determine the health status of the respondents. Both of these methods might be used in certain cases. As a result, the people who are selected are not at the risk of death as other society members who are at the same age as them. The considerable share of applicants is accepted based on the answers they give to the questions listed in the written form. If the level of coverage that is requested by the applicant

exceeded the standard coverage presented by the insurer, the applicant would have to go through some experiments and doing experiments becomes more necessary when applicants are of older ages. If the monetary value requested by the applicant was high, some other experiments, such as an exercise test and a chest radiography, might be added to the above-mentioned experiments. If the obtained information was not strange, the applicant would be accepted based on the standard conditions and would be classified in the proper risk group. In other cases, the following items must be taken into account:

Is deviation from standard risk groups low enough that it would not affect the standard conditions?

Are the risks associated with additional premium accepted or some exceptions must be made if they were to be accepted? or should risk acceptance be deferred?

Does the request have to be rejected?

Insurance companies might be interested in using the genetic information of a person applying for a life insurance. This might be because of the fact that special types of genetic information about a person or his/her family might expose certain information about the current or future health status of the applicant which impacts the likelihood of claiming damages by the person covered by this insurance. Insurers might ask applicants to provide them with some information about their genetics through a genetic test or family medical history. This a strategy that allows insurance companies to prepare an annual list of verified genetic tests. The certificates are issued by genetic test laboratories and a doctor, who is authorized to make the decisions about the insurance or to supervise it (insurer's trustee doctor), makes the decisions related to issuance of the insurance. Family history along does not lead to improper acceptance conditions for life risks. For instance, if the applicant has a history of heart disease, this history, along with other factors such as body structure and smoking habits, influence the decisions that have to be made in association with life insurances. Family history plays a significant role in relation with special diseases (Ratssin, 2004).

Normally, some questions are asked about the family medical history, for example: is any of the applicant's immediate family members like his/her mother, father, siblings (whether leaving or dead) suffering from or has suffered from heart disease, stroke, high blood pressure, cancer or other similar illnesses. Family medical history can be used as a tool for evaluating life span and the likelihood or the applicant's experiencing similar experiences or inheriting some diseases.

Types of medical risks affecting life insurances:

Tobacco use: more than 1.3 billion people all around the world smoke cigarettes or use other tobacco products. 80% of a one-million smoking population live in the developing countries. Using tobacco is the cause of 50% of cardiovascular diseases all over the world. If those who smoke cigarettes continue doing so, by the year 2020, tobacco use would cause 9 million deaths per year and 7 million of it would be in the developing countries. It has been estimated that tobacco causes 4.9 million deaths per year (8.8% of total deaths counted in the entire world), which is an indication of more than 1 million death caused by tobacco used relative to the year 1990 and this increase is more exponential in the developing countries. In these countries, on average, 48% of adult men smoke cigarettes and annually, the rate of smoking cigarettes undergoes a 3.4% increase.

Blood lipid disorders: along with the increasingly growing process of development and industrialization of the countries, the average plasma cholesterol of the populations also

increases. High cholesterol is the cause of about one third of the cardiovascular diseases in the world and causes 4.4 million deaths per year. In the developing countries, there is a difference between different population in terms of average cholesterol. In Asia, the amount of cholesterol had a constant increase in the final decades of the 20th century. The rate of this increase in urban areas was higher and currently, the amount of cholesterol in such areas has been increased from 115 mg/dl to 190 mg/dl.

High blood pressure: high blood pressure is one of the most important early death all around the world and it has a role in half of the cardiovascular diseases. In many countries, more than 30% of adults suffers from high blood pressure and 50-60% of people can live a healthier life by lowering their blood pressure by increasing their body exercises, maintaining a good weight and eating fruits and vegetables. As population ages, due to the enhancement of urbanization, obesity is becoming more and more prevalent all over the world. On the other hand, untreated hypertension is reducing in the developed countries; whereas, a high percentage of these kinds of illnesses are not even detected or not treated well.

Diabetes: more than 170 millions of people all around the world are diagnosed with diabetes and this increasing number intervenes in the healthcare system of non-transmissible disease risk factors 5. By the year 2025, prevalence of diabetes will be increased to 42% and 170% in the developed countries and developing countries, respectively. Currently, diabetes is most prevalent in the developed countries. However, because of the changes in the lifestyles and development process of societies, diabetes will be epic in the developing countries in the future; while a half of people suffering from diabetes are not aware of their condition.

Obesity: obesity is becoming more prevalent in the world. There are some reports on the increasing growth of obesity in America as well as Europe. World Health Organization has also confirmed that obesity is globally epidemic. In America, more than 60% of people suffer from obesity or are overweight. 70 million obese people live in China. One of the highest rate of obesity in the world is seen among people who live in the southern area of the Pacific Ocean.

Insufficient physical activity: more than 60% of people all around the world lack sufficient physical activity. Lack of physical activity is the cause of 1.9 million deaths, 20% of cardiovascular diseases and 22% of coronary heart diseases in the entire world. Due to the industrialization of societies, the physical activity of people has been reduced. In America, 25% of people lack any kind of physical activity and only 23% of people do physical exercises on a regular basis, at least five 30-minute sessions per week.

Unhealthy diet: it has been estimated that insufficient consumption of fruits and vegetables has caused 3 million deaths over the past year and it has intervened in 31% of the cardiovascular diseases and 11% of strokes happening all around the world. The average daily intake of fruits and vegetables per day is lower than five units. Moreover, due to the industrialization of societies, some changes have been made in people's eating habits and diets and nowadays, people tend to have full fat diets.

As it was previously mentioned, the greatest risk of issuing a life risk is the risk of the applicant's death. Therefore, the factors that affect people's death must be taken into consideration.

Age:

As we get older, death becomes more likely. The reports show that in the year 2009, the oldest age of death was 85+ years. Up until 55 years, the situation remains the same.

Statistics show that the death rate of children under 1 year of age is higher than 54-year-old adults and this hypothesis violates the increase of likelihood of death as people get older. Another probability is that since children's immune system is weaker and many children might suffer from congenital diseases, the death rate at this age is rather high.

In another place, the rate of death of 1 to 4-year-old children is higher than people of the ages 5 to 14. In the following tables, the statistics associated with death rate is indicative of this point in American men and women.

DISEASES THAT LEAD TO DEATH:

The most important diseases that lead to death in Iran and the world are as follows:

Cardiovascular diseases:

According to a research report in the faculty of health of Tehran University which has reviewed the causes of death in Iran, about 35 to 40% of deaths in Iran are caused by cardiovascular diseases.

Heart disease is the most prevalent cause of death in Iran and in the world. Since this issue normally begins 10 to 15 years sooner in men than women, men who die from heart disease are younger than women.

According to the previous reviews, high blood pressure, cholesterol, obesity, inactivity, insufficient consumption of fruits and vegetables and tobacco use have played the most significant role in diagnosis with heart diseases, respectively. Therefore, the risk of heart diseases can be reduced to a great extent by choosing the best way of living and using the best treatments when needed.

Mean systolic arterial blood pressure (SBP) and mean diastolic arterial blood pressure (DBP), after being moderated by age and gender, were 117.96 and 76.86 mmHg, respectively •. Mean systolic blood pressure was estimated to be 121.53 mmHg in men and 114.31 mmHg in women •. Mean diastolic blood pressure was 77.30 mmHg in men and 76.41 mmHg in women. 16.09% of Iranians between 25 to 64 years old suffer from high blood pressure (systolic blood pressure ≤ 140 mmHg or diastolic blood pressure ≤ 90 mmHg or are being treated for their hypertension) •. Percentage of men and women suffering from hypertension was 16.12 and 16.07, respectively; and a significant difference was seen between the two gender groups and the age groups in terms of prevalence of hypertension •. Also, based on the definition 6.12% of Iranian people from 25 to 64 years old suffered from high blood pressure based on the definition presented of this disorder (systolic blood pressure of equal to or higher than 170 mmHg, or diastolic blood pressure of equal to or higher than 100 mmHg or those who receive treatments). This rate of 5.12 and 7.15% in men and women.

One of the leading causes of the prevalence of heart diseases are fatty and enriched food intakes, which are not standard in Iran due to containing high amounts of fat. Lack of sufficient consumption of fruits and vegetable, obesity, lack of physical activity, tobacco use, diabetes, high blood pressure and cholesterol have been announced as seven risk factors associated with cardiovascular diseases.

Cancer:

The third leading cause of death in Iran is cancer. According to the statistics of Ministry of Health and Treatment, the most common and prevalent types of cancer in Iranian men are skin cancer,

gastric cancer, bladder cancer, prostate cancer, colorectal cancer, esophageal cancer, leukemia and lung cancer; while in America and Europe, the most prevalent types of cancer among men are lung, prostate and colorectal cancer.

Skin cancer can emerge when skin is not protected against sunlight or it can be the consequence of other types of cancer. Improper food diet can be an effective factor when it comes to gastrointestinal and genitourinary cancers. Similarly, in 90% of the cases, smoking cigarettes is the cause of respiratory cancer which leads to death.

Stroke:

Stroke is the fourth leading cause of death in the world. In America, in the year 2002, 62.622 people died because of strokes. This phenomenon occurs equally among men and women; however, unlike the other causes of death, its prognosis is better among men. If we move past factors such as family history, age and gender, other underlying factors like high blood pressure, which is created because of high levels of stress, smoking or diabetes, are preventable.

Chronic obstructive pulmonary disease:

The fifth leading cause of death among American men is chronic obstructive pulmonary disease. This complication usually appears as emphysema (a condition where the lungs lose their elasticity) or chronic bronchitis which is resulted from chronic inflammation of the respiratory tract. Smoking is the main cause of this disease. In fact, smoking cigarettes leads to 70% of deaths caused by this issue. This disease is also related to diagnosis with lung cancer.

Hyperglycemia:

• Mean fasting blood glucose of all of the people under study (25-64 years of age) was determined to be 89.24 •. Mean fasting blood glucose was 91.5 and 91.8 in men and women, respectively •. Overall frequency of high blood glucose moderated by gender and age groups was 9.73% (9.43% in men and 10.05% in women) which was always increased with an increase in age of the testees •. Prevalence of diabetes and high blood glucose was also enhanced with an increase in age of the testees and in all age groups, this prevalence was high in women than men. In the age group of 55-64 years, prevalence of diabetes wa 20.97% in the entire population, 22.94% in women and 18.94% in men.

Pulmonary infections:

Tuberculosis, pneumonia and influenza have been ranked as seventh leading cause of death among men all around the world. These pulmonary infections particularly threaten individuals who are suffering from chronic obstructive pulmonary diseases such as bronchitis or asthma and those who has a habit of smoking. The rate of death caused by this phenomenon becomes increasingly likely when a person's immune system is weak (for instance when they suffer from aids or take corticosteroid), he/she is suffering from diabetes or has a heart disease. Although being vaccinated against tuberculosis prevents tuberculosis meningitis and military tuberculosis, it does not have any effect on the rate of prevalence and emergence of other types of pulmonary and extrapulmonary (like genital tuberculosis). Since influenza is not very prevalent in Iran and the vaccine only protects the body for one year, people in Iran are not usually vaccinated against this disease.

Kidney diseases:

Kidney failure is ranked as the ninth leading cause of death among American men and in the year 2002, 19695 people died due to this complication. This issue is often a side effect of diabetes or high blood pressure. Therefore, by controlling diabetes and high blood pressure, kidney

failure can be avoided or its advancement can be slowed down. Another reason behind kidney failure is the overconsumption of drugs such as aspirin, ibuprofen, advil, or other common sedatives that are toxic for the kidney.

Cirrhosis and chronic liver diseases

In the year 2002, chronic liver diseases and cirrhosis were ranked as the tenth leading cause of death among American men and in the same year, 17401 men died because of these diseases. The main cause of this disease is alcoholism which greatly harms men. in America, more than 70% of deaths that are somehow related to alcoholism are associated with men. Other dangerous and chronic liver diseases are hepatitis C and B which are transmitted through blood (sexual intercourse or being injected with an infected syringe). Hemochromatosis is also a hereditary liver disease where there is an overload of iron in patients' liver which disturbs the function of their liver. Non-alcoholic fatty liver diseases, which is related to obesity, can lead to emergence of cirrhosis.

Other factors causing death:

Medical errors:

Safety of patients is one of the basic components when it comes to the quality of healthcare services. What is meant by this is that those who providing these services must avoid harming the patients in any way while taking care of them. One of the factors that plays an effective role in promoting the safety of patients in a healthcare center is presence of a safety culture in these centers which has been regarded as one of the particular components of the clinical sovereignty plan as well. In this article, in addition to describing the concepts of medical errors, risk management and different types of medical errors, the role of risk management in reducing medical risks will also be reviewed. this article is an overview which has been written using valid online and library sources in the field of medical errors. Statistics show that each year, about 1 million people in the world die because of medical errors. The risk management system in the field of health contributes to the identification, evaluation and reduction of risks associated with patients, personnel, etc. Risk management is a scientific approach used for preventing potential and probable risks. This approach aims to prevent medical errors and problems such as unwanted treatment results, mistakes in drug prescription, inaccurate application of tools and facilities, etc. Since risk management can play a key role in reducing medical errors and improvement through recognizing the processes of providing services, identifying risks, analyzing the type of error and presenting controlling techniques, it is effectively used to control medical errors which are regarded as important challenges that the health systems all around the world are faced with.

Incidents and accidents

According to the information presented by the World Health Organization, in the year 1990, deaths caused by traffic accidents underwent a 10% growth and were increased from 999 thousand deaths to 1.2 million deaths in 2002. Annually, about 1.2 million people are killed in road accidents all around the world. In line with the industrialization of societies, the number of deaths caused by road accidents is increasing in Iran. Annually, traffic accidents are responsible for 32 out of 1000 deaths in Iran, which makes this the second leading cause of death and the first leading cause of loss of some years in life. On the other hand, driving accidents inside and outside of the cities have risen as one of the major health problems.

Suicide

Suicide is the eighth leading cause of death among men. Since suicide is rooted in the mind of individuals, here we review some of the diseases that lead to it.

Since men typically choose more violate ways to take their own lives, the rate of suicide attempts among men is 4 times more than women. The rate of prevalence of depression, which is a significant factor that plays a role in committing suicide, is 7% among men.

Symptoms of depression in men are nonspecific, including fatigue sleeping disorders, not being interested in working or having fun and being active. Symptoms such as sadness, having a sense of invaluableness and guilt are not as apparent among men as the above-mentioned symptoms. Therefore, men do not seek medical treatments as much as women do.

On the other hand, substance abuse is more common among men and this can make diagnosis of depression more difficult. People who are at the verge of committing suicide might have been recently faced with a crisis and show the previously stated symptoms along with seeking isolation, aggressive behaviors, mood or personality changes, having a sense of invaluableness, substance or alcohol abuse.

These individuals might frequently think or talk about death and ending their lives. To prevent suicide attempts, we must be fully aware of the aforementioned symptoms. Friends and family members are normally the first ones who discover these behaviors which were not previously expressed by a certain individual.

Risk factors of diseases that lead to death:

Risk factors are factors that directly or indirectly affect the probability of occurrence of risks. Here, there are factors that increase the probability of diseases that lead to death and therefore increase the risk of death.

Cigarette

48% of the men in the developing countries smoke. It is a known fact that 90% of lung cancers, 75% of pulmonary diseases, 50% of heart diseases and 40% of all cancers are caused by smoking cigarettes. According to the statistics, annually, 50 thousand of deaths in Iran are because of diseases that related to smoking cigarettes. Tobacco use leads one person to his/her deathbed each 6 seconds and the cost of treatment of the diseases depending on tobacco use is 2 to 3 times more than the costs of using tobacco products.

ISNA: Secretariat of the National Tobacco Prevention and Control headquarters of the Work and Environment Health Center have also announced that: about ¼ of all adults in the whole world smoke cigarettes and other tobacco products.

Genetics:

Current conditions indicate that nowadays, a very small number of genetic disorders have been known as quantitatively important. If there are no other risk factors, these factors must be encountered in a certain way at the time acceptance. There are general exceptions that have been well expressed, but they are rare. Because of this, the results of the known monogenic disorders are relatively rare. Therefore, the results of each genetic experiment, independent from others, show some results that cannot be obtained only by reviewing the family history of a person.

Considerable research activities have been carried out for preparing the reinsurance issuance instructions. These instructions are considered as specific information and a source of competitive advantage for the insurance companies that are active in the field of this study. Based on the aforementioned points, it can be claimed that many of the recommended rankings do not

have any standard foundation or a precise standard that are observed by university studies. Nevertheless, reinsurers cherish the findings of these geographical studies as the only data available. In cases where no valid study has been conducted, the recommended rates are carried out based on the judgment about the medical elements by reinsurers and in most cases, with the recommendation of experts.

As it was mentioned before, some diseases have a genetic root. Professor Afshin Fayyazi, head of the pathology department of the hospital of the city Pforzheim, Germany, has answered to this question: is cancer a hereditary disease? He says that there is no precise answer to this question yet. We still do not know what percentage of cancers are genetically rooted. However, in families with two consecutive generation of breast cancer, gastrointestinal cancer, uterine cancer and prostate cancer with members younger than 50 years of age, other family members are more at risk of being diagnosed with cancer. Obviously, these two generations who have been diagnosed with cancer have to be genetically related, i.e. mother and son/daughter or father and son/daughter.

This public health expert also mentions two groups of uncontrollable factors that play a role in the increase of level of cholesterol and says, one of these factors is heritage and high cholesterol is hereditary in some cases. The other factors are age and gender.

Gender

Most of the early deaths and diagnoses with certain diseases in the world are because of problems that are related to people's way of living. Statistics show that most problems that threaten one's health are preventable and by leading a healthy life, the probability of death caused by them can be reduced.

By reviewing the statistics, it becomes clear that in most societies, the average life span of men is shorter than that of women. For instance, in America, the average man lives 5.5 years less than the average woman.

Additionally, the rate of diagnosis with certain diseases and the death caused by them is higher in men than women. It seems that heritage plays a more visible roe when it is linked with male hormones and some social causes.

Increased fat in the abdomen area is directly related to the increased risk of diagnosis with heart diseases, cancer, diabetes and strokes among men. Accumulation of fat in the abdomen area is more common among men; while, fat accumulation in the thighs is more common among women. This is not an indication of good health status, but it does not play a role in the emergence of these diseases in women either. On the other hand, there are some certain social rules and norms that allows men to express behaviors that puts them at risk of early death. It is more likely for men to smoke, drink alcohol, abuse substances or be involved in illegitimate sexual relationships.

Similarly, emotional behaviors, and even in some cases aggressive and violent behaviors, expose men to the risk of bad accidents, suicide and even being killed. These cases, which usually happen at younger ages, can increase the risk of diagnosis with certain diseases and increase the rate of men's death.

Blood lipid

Cholesterol does not dissolve in the blood and it enters to cells and exits them through lipoproteins. (lipoprotein is a combination of protein and lipid and carries the fat to the blood. Cholesterol is a necessary component in the liver, the spinal cord and the brain. Cholesterol plays

a crucial role in the production and maintenance of cells, some hormones, production of vitamin D and absorption of fat soluble vitamins. Mean cholesterol level in the age group of 25-64 years is reportedly 200 mg/dl. This value increased for the both genders as the testees got older •. Mean cholesterol level of men in all age groups was higher than that of women.

Lack of physical activity

Nowadays, physical exercises are regarded as an attempt to prevent the occurrence of heart attacks. Therefore, doing proper exercises and physical activities reinforce the heart muscle. Nowadays, physical exercises are regarded as an attempt to prevent the occurrence of heart attacks. When one exercises, their blood vessels expand and blood circulation is accelerated. Then, the level of hemoglobin in the blood increases which results in the transmission of oxygen to various body parts. Exercising on a regular basis is a proper way for preventing hypertension. Exercising can balance the level of blood fat. Hence, it is better to exercise than to take drugs.

Being overweight

Based on the classification of BMI[1], people are divided into three groups:

Underweight: BMI<25

Normal weight: BMI≥25

Overweight: 25≤BMI≤30

Obesity: BMI≥30

Normally, doctors use a formula based on the height and weight of the patient to determine their proper weight which is called body mass index (BMI) and it is obtained by dividing weight by the square of body height.

If the body mass index of a person was between 25 and 29, he/she would be considered overweight. A person is considered obese when his or her body mass index is higher than 29.

Blood pressure increases as weight increases and it is possible for bad cholesterol and triglyceride (a type of lipid) to increase as well.

Individuals with additional fat in their body, especially in their abdominal area, are more likely to suffer from cardiovascular diseases, even if they are not exposed to any other risk factor.

Applicable suggestions for controlling the medical risk in life insurances:

After identifying the risks leading to death, given the literature of the research and by consulting specialists in the field of life insurances, in this section, some suggestions for controlling the risks will be presented.

Life insurance applicants are classified into three groups based on the table of risk factors, namely: low-risk, medium-risk and high-risk.

1) Low-risk applicants: these are people with one or less than one risk factor.
2) Medium-risk applicants: these are people with two or more risk factors.
3) High-risk applicants: these people have the following conditions:

a. A cardiovascular disease (peripheral vessels or cerebrospinal vessels), pulmonary diseases (bronchitis, emphysema and asthma), metabolic diseases (diabetes, kidney diseases, liver diseases and thyroid).
b. One symptom of pain or heavy breathing, shortness of breath, syncope, ankle inflammation, heart palpitation or heart murmur (heart sounds).

[1] Body mass index

A summary of risk factors and relevant criteria:

Positive risk factors

Age: men ≥ 45 and women ≥ 55

Family history: coronary artery obstruction or infraction or a sudden death of the father of the family or other immediate male family members before the age of 55 or of the mother of the family or another female immediate family member before the age of 65

Cigarette: people who smoke cigarettes or have broken the habit of smoking over the past six month or people who are in an environment where others smoke

Physical activity: not participating in an average physical exercises of at least 40 minutes 3 days per week for at least 3 months

Obesity: BIM≥30 or waistline≥102 cm for men and 88 centimeters for women

Blood pressure: systolic blood pressure≥140 and/or diastolic≥90 which is measured in at least two separate situations and/or antihypertensive drugs that are taken

Lipid: the proper amount of cholesterol is less than 200 mg/dl.

HDL* or lipoprotein with high density is known as "good cholesterol". HDL has a great amount of protein and a little bit of cholesterol. This type of lipoprotein takes the cholesterol in the blood and transfers it to the liver.

HDL protects the heart and a small amount of it (less than 40 mg/dl) in the blood can be one of the factors for the emergence of heart diseases. A suitable amount of HDL equals to or is more than 60 mg/dl.

LDL* or lipoprotein with low density is known as "bad cholesterol". LDL has a great amount of cholesterol and a little bit of protein. LDL is responsible for carrying the cholesterol and other lipids in the blood.

Increase of LDL in the blood can cause heart and brain feeding vessels to become more narrow and hard, which might be followed by the development of cardiovascular disease. A suitable amount of LDL equals to or is more than 100 mg/dl.

Or using fat lightening drugs.

Diabetes: based on the latest criteria proposed by the American Diabetes Association, in case of presence of one of the following conditions, diagnosis of diabetes will be certain:

1. Record of at least the accidental blood glucose level of 200 mg/dl along with classic symptoms of diabetes (excessive thirst, frequent urination and excessive hunger)
2. Fasting plasma glucose of higher than or equal to 126 mg/dl (fasting means going eight hours without taking any kind of calories before the experiment)
3. A1C hemoglobin of higher than 6.5%
4. Result of a 2-hour 75 grams of edible glucose tolerance test higher than 200 mg/dl

RESULTS

Given the classified risks and their impact on death rate and therefore occurrence of damages in life insurances and also considering the necessity of increasing the life insurance sales rate and development of this field in our country, it is essential to propose methods for controlling the aforementioned risks. By reviewing the research literature and consulting with the insurer's

trustee doctor (using the opinions of experts in this research), the following results have been obtained.

Explaining the type of risk

There is no risk and the requested insurance is issued.

Depending on the type of the risk, the requested insurance is issued with additional medical costs.

Depending on the type of the risk, the requested insurance is issued by doing the necessary experiments or with additional medical costs.

It is confirmed by considering the results of the experiments and the exercise test.

It is rejected by considering the results of the experiments.

Risks associated with heart diseases, after receiving the opinion of the trustee doctor after the exercise test or eco or angiography and ECG.

Risks associated with pulmonary diseases, after receiving the opinion of the trustee doctor after doing the exercise test or spirometry.

Risks associated with metabolic diseases*, after receiving the opinion of the trustee doctor after doing the complementary tests (duration and type of diabetes, urine test, kidney sonography, liver complementary experiments, experiments related to thyroid).

In risks that are less dangerous, two modes are considered: one is when there is no risk factor and the applicant is standard in terms of health, the insurer can issue the insurance without applying any additional medical cost.

In the second one, there is one risk factor and given the type of risk (high weight or family history, etc.), the insurer can issue the insurance with a small additional medical cost.

In cases where the risk of the life insurance applicant is assessed as medium or average, the insurers will again be faced with two different conditions:

1) If we had two risk factors or less than two risk factors that affect one another (weight and smoking), a blood test would be needed. After this test, given the obtained result and receiving the opinion of the trustee doctor, the decision about issuance of insurance and application of additional costs will be made.
2) When there are three risk factors (high weight, smoking habit, history of heart disease in the family), it is absolutely essential to do the complete test and the exercise test. Then, based on the results of these tests, the insurers can decide on the application of additional medical cost or acceptance of the risk.
3) When the applicant is considered as a high-risk applicant, it means that there have been more than three risk factors. For instance, when the applicant suffers from a heart disease and given their age and the duration of the requested insurance, they would do the eco or exercise test. Following the announcement of results, the insurer's trustee doctor decides on the acceptance or rejection of the risk or application of additional medical cost.

In the second case, the risk factors are associated with pulmonary diseases and just like heart diseases, applicants suffering from this type of disease must do the exercise test or spirometry and then the decisions about acceptance or rejection of the risk will be made.

In the third case, the applicant suffering from metabolic diseases needs to do the tests before the issuance of the insurance or before being rejected by the insurer.

In cases where risk factors are high or average, the insurer can ask the applicants to do some physical exercises (even through the creation of sports clubs by the insurer), doing annual

medical tests, getting medical consultation. In some special cases, the insurer can exempt some risks leading to death by stating it in the specific conditions of the issued insurance.
It is noteworthy to say that the applied additional rates can be different based on the death rate statistics, risk factors affecting death and the maximum death capital accepted by the insurer. Of course, the additional rates that are applied to applicants are higher when there are risk factors associated with a higher likelihood of death based on the statistics.
In the present study, it has been attempted to focus more on reviewing the medical risks, particularly in association with diseases that lead to death. What we recommend here is doing some research on other factors that lead to death and reviewing them given the statistics of issuing life insurances and damages of the insurance companies in the future.

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