

The Impact of Lifestyle and Physical Activities on Eight Different Chronic Diseases

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ABSTRACT

Chronic diseases are not contagious diseases; rather, they progress slowly and take some time. Unhealthy lifestyles, the environment, and genetics influence the development of chronic diseases. In general, chronic diseases are said to cause mortalities in all ages. The factors that affect chronic diseases and their development may include tobacco and alcohol consumption, unhealthy dietary regimes, such as fast foods, inadequate physical activities, and risk factors such as blood pressure. The impacts of risk factors may differ in both genders and involve different results. Another disease that has affected 64 million people across the world is the obstructive pulmonary disease, caused by air pollution and the presence of hazardous suspended particles in the air, tobacco consumption, etc. Cancer, a chronic disease, is projected to become the deadliest disease worldwide in the next few decades. Diabetes, a metabolic disorder, affects 20% of the global population, which is expected to double by 2030.

In sum, the higher level of physical activities could significantly reduce the development of diseases both in men and women. Concerning cardiovascular diseases in both men and women, cardiac problems increase with physical activities. Unlike prior studies, an increase in the physical activities of diabetic men did not yield tangible results; as for women, a 17-year survey of Cardio Respiratory Fitness on 6249 women aged 20-79 suggested that the risk of developing T2DM (Type 2 Mellitus Diabetes) in women with above-normal body weights was not significantly lower than their counterparts with natural body weights. In general, an increased in physical activities is associated with improved blood pressure and serum cholesterol, which together with a healthy life style, are considered for prevention and as a treatment for hypertension development. Our main goal was to investigate the above cases, and to accurately provide details.

Keywords: Chronic disease; Life style; Physical activity

Introduction

Chronic diseases represent a growing global health concern, characterized by slow progression and lasting for an extended period. These conditions demand prolonged treatment and management, leading to an increased burden on healthcare

systems. Over the years, mortality rates attributed to chronic diseases have witnessed a concerning rise, with significant implications for public health [1].

The incidence of chronic diseases is influenced by various factors, including unhealthy lifestyle choices and genetic predisposition. Rapid economic changes and urbanization have also played a

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fundamental role in shaping individuals' lifestyles and health outcomes [2]. Notably, countries with average and low incomes face a disproportionate burden of mortality due to chronic illnesses [1]. Although chronic diseases predominantly affect older adults and middle-aged individuals, an alarming rise in unhealthy lifestyle behaviors among the young population, particularly in urban areas, has been observed [2]. The prevalence of obesity among children and adolescents is on the ascent, underscoring the need for early prevention and intervention strategies [1].

Risk factors contributing to chronic diseases encompass a range of modifiable lifestyle choices, such as tobacco and alcohol consumption, unhealthy diets, physical inactivity, and prolonged exposure to a stressful work environment. High blood pressure, tobacco use, diabetes, and obesity have emerged as significant causes of mortality in the context of chronic diseases [2]. Beyond modifiable factors, non-modifiable determinants such as age, ethnicity, and genetics also play pivotal roles in chronic disease susceptibility [1]. Moreover, gender exhibits distinct patterns in the influence of risk factors, resulting in different outcomes between males and females [3]. Promoting positive lifestyle changes can help mitigate the impact of chronic diseases. Factors like regular physical activity, a healthy diet, social interactions, spiritual engagement, stress management, and educational attainment, along with socioeconomic status and employment, all contribute to fostering healthier living practices [1]. Interestingly, the impact of marital status and gender on individuals' management of chronic diseases unveils unique behaviors and coping mechanisms. Married or single individuals, as well as men and women, exhibit varying approaches concerning health-related social control [3].

Cardiovascular and respiratory diseases emerge as significant contributors to the burden of chronic diseases globally. Cardiovascular diseases, accounting for 80-85% of global deaths, and hypertension, responsible for 7.5 million deaths, necessitate targeted preventive measures. Furthermore, obstructive lung diseases, influenced by factors like air pollution, hazardous particles, and tobacco use, continue to be a global health challenge. The emergence of cancer as a formidable chronic disease underscores the need for enhanced efforts in prevention and management. With increasing incidence and mortality rates, cancer is projected to become the deadliest ailment in the coming decades. Similarly, diabetes, a metabolic disorder affecting 20% of the global population, poses a substantial threat, with a projected twofold increase by 2030 [2].

Understanding the multifaceted aspects of chronic diseases and their influencing factors is vital for developing effective preventive strategies and promoting better health outcomes across all age groups. In this article, we explore the impacts and risk factors associated with chronic diseases, shedding light on the urgent need for a comprehensive public health approach.

Material and Method:

Our general goal of this research was The impact of lifestyle and physical activity on 8 different chronic diseases .

To achieve this goal, we designed a questionnaire whose questions are classified into two main categories.

The first category includes questions that collected personal information such as gender, age, education, income level, weight, height, Marital status , living place and job status. This information was considered as parameters and variables of the article.

The second category of questions included Chronic diseases and lifestyle we considered . These included Time spending watching television, Physical activity , Heart problems, High blood pressure, Breathing problems, Allergies, Diabetes, Cancer, Obesity .

This questionnaire was prepared in 550 pieces. Randomly and only considering the age requirement of 15 to 70 years for the respondent, from May 15 to May 29 , 2023, it was broadcasted by the members of the group throughout the city of Tehran.

After collecting the questionnaires, the information was entered into SPSS 26 software and analyzed. It should be mentioned that since we set our alpha value at 0.05 if the p-value is less than 0.05, we can say that there is a statistically significant difference between the means of our two trials. And if the p-value is more than 0.05 , it shows a significant relation between the two issues.

Result:

This study investigated 550 people (250 men (45%) and 300 women (55%)) (Table 1). Most subjects held high school education. In both men and women groups, allergy accounted for the highest frequency among other diseases (80 women and 90 men). Sixty-two percent of the subjects were living in cities, while 38% were living in villages (Table 2). As well, marital cases were also examined (61% were married and 39% were single). Forty-two percent of the population held a medium income level.

The prevalence of chronic diseases in the past 12 months was 7.73% and 4.72% in women and men, respectively. The development of allergy and diabetes accounted for the highest and lowest frequency at 9.30% and 2.3%, respectively. Eighty percent of the subjects spent less than 3 hours watching TV on a daily basis. 5.54% of the subjects did physical activities for 2-4 times a week, while 2.29% of them did physical activities over 5 times a week. Table 3 shows that people who generally exercise physical activities 5 times a week are less likely to develop such diseases as allergy and hypertension compared to people who exercise 2-4 days a week. In both groups of men, 3 subjects developed diabetes and respiratory problems. In sum, a higher number of physical activities significantly reduced the development of diseases in men and women, except for cancer among women (3 people have physical activities for 2-4 times a week, while 15 people have physical activities for over 5 times a week). The incidence of cardiac and diabetic diseases in women with higher and less than 5 times a week was the same.

Table No.1
Prevalence of chronic diseases in men and women

Men	n= 250
Heart problems	14
High blood pressure	15
Breathing problems	7
Allergies	90
Diabetes	8
Cancer	35
Obesity	12
Women	n= 300
Heart problems	14
High blood pressure	30
Breathing problems	35
Allergies	80
Diabetes	10
Cancer	50
Obesity	15

Breathing problems	3	3
Allergies	60	20
Diabetes	3	3
Cancer	24	8
Obesity	9	1
Women		
Heart problems	6	6
High blood pressure	18	9
Breathing problems	20	10
Allergies	50	25
Diabetes	4	3
Cancer	3	15
Obesity	12	2

Table No.2
Number of 7 different parameters associated with lifestyle in each gender

	Total n=550	Men n=250	Women n=300
Education			
Primary	10	8	13
Lower secondary	18	17	19
Upper secondary	35	36	34
Post - secondary	14	15	13
Tertiary education	23	24	22
Marital status			
Live with partner	61	64	58
Live without partner	39	36	42
Living place			
Urban area	62	61	63
Rural area	38	39	37
Household income			
Low (1 st to 3 rd decile)	20	14	26
Middle (4 th to 7 th decile)	42	44	40
High (8 th to 10 th decile)	38	42	34
Chronic diseases (last 12 month)			
Heart problems	5.09	5.6	4.6
High blood pressure	8.18	6	10
Breathing problems	7.6	2.8	11.6
Allergies	30.9	36	22.6
Diabetes	3.2	3.2	3.3
Cancer	15.4	14	16.6
Obesity	4.9	4.8	5
Chronic diseases			
Time spending watching television			
No time at all	4	5	3
Less than 3 h/day	80	82	78
More than 3 h/day	16	13	19
Physical activity			
Less than 1 time/week	16.3	16	16.7
2-4 times/week	54.5	60	50
More than 5 times/week	29.2	24	32.3

Table No.3
Relation between chronic diseases and physical activity

Men	2-4 times/week	More than 5 times/week
Heart problems	12	1
High blood pressure	9	4

Discussion:

In the Result Section, the present study investigated seven different chronic diseases using some statistical data. This section concerns a statistical and interpretive review of the effects of physical activities and lifestyle on each of these diseases and compares them with previous findings.

Cancer

Breast cancer is the most prevalent cancer in the world and has the highest mortality rate [4]. For this, relevant articles were compared to our findings: concerning cancer, three subjects of development, treatment side effects and the recurrence of treated cancer prior to metastasis are raised, with the lowest physical activities and a healthy dietary regime contributing to reducing all the above cases. On the other hand, the lack of physical activities or a shortage of it could increase oxidative stress and inflammation inside the body, which appear to facilitate the onset of breast cancer among with women by affecting the menopausal cycle. Compared to our findings, these cases hold true of men but not of women [5]. In a survey of 26 types of cancer on 144 million people in the U.S., it was found that physical activities were reversely related to the likelihood of developing 13 various types of malignant cancers; these findings were consistent with our results about men but inconsistent with our results about women [6].

Cardiovascular Diseases

In pulmonary surveys, 14 statistical studies conducted on cardiovascular diseases (10 cases), heart attack (1 case), myocardial infarction (1 case) and cardiac failure (2 cases) suggested that regular physical activities and healthy behaviors contribute to reducing development risk factors and cardiovascular diseases. The above data were consistent with our findings, and it is thus concluded that cardiac problems decrease with increasing physical activities both in men and in women [7].

Diabetes and Obesity

Obesity is mainly caused by environmental risk factors such as unhealthy dietary regimes, the lack of physical activities and inertia; it should be borne in mind, however, that people who experience a similar lifestyle and environment expose different

feedback to rising weights and relevant consequences, which indicates the role of genetics in this connection [8].

Considering metabolic diseases that fall under the etiology of Type 2 Diabetes Mellitus, obesity and risk factors causing obesity are the contributors to T2DM [9]. Dysfunctional glucose metabolism, increasing abdominal adipose tissues and Insulin T resistance are responsible for the obesity risk and T2DM [10-13]. The relationship between overweight and type 2 diabetes is quite evident, with a survey of 1079 people with an average BMI of above 33.9 aged 25-84 showing that every kilogram of weight loss reduces the likelihood of T2DM development by 16% [13]. These findings are fully consistent with our results about the impacts of physical activities on obesity both in women and men. Unlike prior studies, an increase in the physical activities of diabetic men did not yield tangible results; as for women, a 17-year survey of Cardio respiratory fitness on 6249 women aged 20-79 suggested that the risk of developing T2DM (Type 2 Mellitus Diabetes) in women with above-normal body weights was not significantly lower than their counterparts with natural body weights. This finding was similar to our findings, with women who performed physical activities more than 5 times a week and had regular exercises demonstrating no significant differences with those with fewer physical activities [14].

Hypertension

A systematic review involving 17 meta-analyses of hypertension patients and normal people suggested that aerobic and dynamic physical activities, or combination of which, indicate 1: a reverse relationship between physical activities and the risk of developing hypertension among normal people; 2: a reduced risk of developing cardiovascular diseases among people with hypertension, and 3: reduced blood pressure with increasing physical activities in people with pre-hypertension and normal people [15].

In sum, the increased physical activities are associated with blood pressure and serum cholesterol, which together with a healthy lifestyle, could prevent and treat hypertension [16]. Thus, a healthy lifestyle serves as a fundamental method to prevent hypertension in the low-risk group. In high-risk people, a change in the lifestyle and intervention procedures, along with pharmacotherapy, is suggested. Finally, as for the mild-to-moderate risk groups, changing lifestyles is the first line of treatment [17, 18]. Thus, the more physical activities, the more the risk of developing blood pressure decreases [19]. According to our findings, the increased physical activities and lifestyles have a considerable impact on improving blood pressure, which is consistent with other findings.

Conclusion:

The data collected from seven chronic diseases (cardiac, pulmonary, hypertension, allergy, Type II diabetes, cancers and obesity) in both genders of various lifestyles (education, place of living, income, inactivity and watching TV, especially physical activities) were compared. Results indicated that firstly, physical activities and healthy lifestyles help improve the treatment

process or recovery or they are the treatment process themselves (in some cases, they are the first line of treatment); second, they are the best options to the seven chronic diseases.

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