Journal of General Practice
ISSN: 2329-9126

Turabian, J Gen Pract (Los Angel) 2017, 5:5
DOI: 10.4172/2329-9126.1000329

Research Article Open Access

Secular Trend throughout 30 Years of Chronic Diseases in a Family Medicine Office in Toledo, Spain: 1985-1995-2016

Jose Luis Turabian*

Health Center Santa Maria de Benquerencia Toledo, Spain

***Corresponding author:** Jose Luis Turabian, Health Center Santa Maria de Benquerencia Toledo, Spain, Tel: 34925154508; E-mail: jturabianf@hotmail.com

Received date: September 27, 2017; **Accepted date:** September 29, 2017; **Published date:** October 04, 2017

Abstract

Objective: To compare the frequencies of chronic diseases in three cross-sectional investigations corresponding to 1985, 1995, and 2016, in order to detect the secular variations of chronic health problems.

Methodology: We compare the results of three cross-sectional studies previously published, conducted in the same Family Medicine office in Toledo, Spain, by the same principal investigator: in 1985 and 1995, on the total number of patients enrolled in the consultation, and a cross-sectional study, from a secondary analysis of an existing dataset, based on a random sample of patients from the same consultation, in 2016, with a similar methodology and identical or compatible classifications.

Results: We included 1356 patients in 1985 with 56% of female patients, 1677 patients in 1995, with 55% females in 1995, and 300 patients, with 57% in 2016 (χ^2=0.575, p=0.750148, not significant at p<0.05). But in 2016 more patients older than 65 years were included: 11%>65 years in 1985, 12% in 1995, and 28% in 2016 (χ^2=73.71, p<0.00001). Secular variation of the diseases in this series of 30 years shows an uneven behavior of the different groups: 1) A group with increase (Circulatory system, Endocrine, Mental, and Musculo-skeletal), but not of the expected magnitude if the trend until 1995 had continued; 2) A group with only small increase (Respiratory system and Neoplasms); 3) A group with stagnation of the prevalence (Genitourinary, Infectious and Nervous and senses); And 4) A group with decrease of the prevalence (Diseases of the skin, and Digestive system). There is also an increase in the number of chronic diseases per patient, from 0.9 in 1985, to 2.0 in 1995, and to 2.4 in 2016, but their variation is not uniform either, and in several age groups and sex there is a slight decrease in the last 20 years.

Conclusions: The comparison of consistent, comparable and stable series between 1985, 1995 and 2016 in our context shows that although not all disease groups behave the same, there is a general trend of secular variation of chronic diseases of increasing prevalence of chronic diseases from 1985 to 1995, and a reduction or slowdown in prevalence growth from that date to 2016: there is only a clear increase in Circulatory system, Endocrine, Mental, and Musculo-skeletal, but not of the expected magnitude, and in all other groups the increase is weak, or there is no or there is a decrease in prevalence. This knowledge can help to plan the needs of community health resources in our environment in the near future.

Keywords: Family medicine; General practice; Epidemiology; Prevalence; Chronic disease; Morbidity; Practice-based research; Primary health care; Time series studies; Medical registration; Health indicators; Public health

Introduction

In a large number of morbid processes a temporal pattern has been found, for long periods of time, of its presentation, which may be due to social or cultural changes, or to changes in the biological, physical or chemical environment in which one lives. The examination of these secular tendencies is only feasible when one abstracts from small variations occurring in small periods of time [1,2]. For health policy purposes, population health is monitored on a regular basis. An important measure for population health is the morbidity in the population: what are the most important diseases and how are disease patterns changing over time?

Registries in family medicine are key sources for morbidity estimates, especially if all people are registered in a general practice and the family doctor is the gatekeeper of health care. In this case, the population registered in general practices is representative of the whole population outside of long term health care facilities. Furthermore, if the family doctor acts as a gatekeeper of health care, diagnoses from medical specialists and other health care providers will also be known by this physician; in the Spanish system, both conditions are met [3,4].

In developed countries around two-thirds of any population consults in a Family Medicine service at least once a year, and more than 80% contact once every 5 years [3,5,6]. For example, in any single year around 85% of Australians see a family doctor at least once, that providing the bulk of primary care and acting as gate-keepers to government-subsidised health care from other health professionals [7]. The collection of data in family medicine is cumulative and continuous. "The path of all patients" begins and ends with the family doctor [3,7]. Large population health surveys that rely on respondent self-report are commonly used to measure the prevalence of chronic conditions. This is despite concerns about the accuracy of self-reported health information [8].

On the other hand, these health surveys have been made with differences in measurement techniques, sometime not compatible ones with other, or with samples that distorted view of the size of the problem which each disease creates for the community as a whole, etc. [9]. Further, although the cost of cross-sectional studies is relatively lower than that of other epidemiological designs, such as cohort studies, this cost is not negligible, as they require some fieldwork, use questionnaires that are applied by interviewers, or need to take biological samples, or anthropometric measurements, and medical examinations, with specific technical equipment [10].

Chronic diseases have replaced infectious diseases as the main category of health problems in primary care, where they require continuous and integrated care; This level of care, with its own epidemiological approaches, is a major and voluminous source of information on the prevalence of common health problems and their secular evolution, which is of great importance in the evaluation of population health, policy determination, measurement of workloads of health professionals, identification of public health interventions, decisions to allocate resources, and curricular contents of doctors and nurses in the pre and postgraduate [3,11-14].

However, there is a lack of data on the variation and long-term trends of the vast majority of common diseases attended and especially the chronic ones [9], that compare series collected with invariable methods in a sufficiently long time. In this context, we present a study based on the comparison of disease frequencies in three cross-sectional investigations corresponding to annual periods in 1985 and 1995, and a cross-sectional study, from a secondary analysis of an existing dataset, based on a random sample of patients, in 2016, all carried out in the same family medicine consultation, in order to detect the secular variations of chronic health problems.

Material and Methods

We compare the results of three cross-sectional studies conducted in the same family medicine office, by the same principal investigator, in 1985 and 1995, on all patients registered in the consultation (n=1356, and n=1677, respectively), studies that were published at the time [15,16], and a cross-sectional study from a secondary analysis of an existing dataset, based on a random sample of patients from the same consultation, in 2016, also published [17]. In the first two studies (1985 and 1995) the diseases were classified by the International Classification of Health Problems in Primary Care, in its "Defined" [18-20]. In the cross-sectional study in 2016, diseases were classified according WHO-ICD-10 groups [21]. The three studies were carried out in a Family Medicine office in Toledo, Spain.

In each study, for each patient, was collected the variables age, gender and chronic illness. In the cross-sectional study in 2016, patients were included only one time. Thus, were excluded the repeated consultations of same patient, including only the first visit. Chronic disease defined as "any alteration or deviation from normal that has one or more of the following characteristics: is permanent, leaves residual impairment, is caused by a non-reversible pathological alteration, requires special training of the patient for rehabilitation, and/or can be expected to require a long period of control, observation or treatment" [22-24]. Only diagnostic groups with data from the three cross-sectional studies were included.

The diagnoses were clinical and/or analytical and/or by means of complementary tests pertinent from the consultation of family medicine or after consultation with the corresponding specialist, or based on a previous hospital report. The age was broken down, to give rates specific for age and sex according to epidemiology norms, in decade classes 5-14, 15-24, and so on [25]. The original 1985 and 1995 databases were not available, but only the tabulated results that were published at the time, so that only statistical tests are applied with respect to the Chi-Square for contingency tables 3 x 2.

Results

We included 1356 patients in 1985 with 56% of female patients, 1677 patients in 1995, with 55% females in 1995, and 300 patients, with 57% in 2016 (χ^2=0.575, p=0.750148, not significant at p<0.05).

But in 2016 more patients older than 65 years were included: 11%>65 years in 1985, 12% in 1995, and 28% in 2016 (χ^2=73.71, p<0.00001). Secular variation of the diseases in this series of 30 years shows an uneven behavior of the different groups (Table 1).

Diseases according to WHO, ICD-10 groups	Prevalences of chronic diseases on the number of patients studied in 1985; N=1356 patients (%)	Prevalences of chronic diseases on the number of patients studied in 1995; N=1677 patients (%)	Prevalences of chronic diseases on the total patients studied in 2016; N=300 patients. (%)	Statistical significance
-I Infectious	8 (1)	25 (1)	3 (1)	χ^2=5.6841 p=0.058305 NS
-II Neoplasms	17 (1)	94 (6)	23 (8)	χ^2=48.1515 P=0.00001
-IV Endocrine	55 (4)	286 (17)	83 (28)	χ^2=80.4127 p<0.00001
-V Mental	105 (8)	364 (22)	94 (31)	χ^2=153.0902. p<0.00001
-VI-VIII Nervous and senses	245 (18)	353 (21)	55 (18)	χ^2=4.5626 p=0.10215 NS
-IX Circulatory system	198 (15)	448 (27)	130 (43)	χ^2=135.79 p<0.00001
-X Respiratory system	138 (10)	317 (19)	59 (20)	χ^2=48.3216 p<0.00001
-XI Digestive system	299 (22)	454 (27)	58 (19)	χ^2=14.745 p=0.000628
-XII Diseases of the skin	46 (3)	176 (10)	18 (6)	χ^2=57.3137 p<0.00001

-XIII Musculo-skeletal	208 (15)	492 (29)	108 (36)	χ^2=104.8178 p<0.00001
-XIV Genitourinary	182 (13)	336 (20)	61 (20)	χ^2=24.8636 p<0.00001

Table 1: Secular variation of chronic diseases 1985-1995-2016.

- Diseases with a clear increase in prevalence: mainly in Circulatory system (15% in 1985, 27% in 1995, and 43% in 2017; p<0.00001), Endocrine (4% in 1985, 17% in 1995, and 28% in 2016; p<0.00001.), Mental (8% in 1985, 22% in 1995, and 31% in 2016; p<0.00001), and Musculo-skeletal (15% in 1985, 29% in 1995, and 36% in 2016; p<0.00001).
- Diseases with a small increase in prevalence: Respiratory system (10% in 1985, 19% in 1995, and 20% in 2016; p<0.00001.), and Neoplasms (1%, 6%, and 8%; p=0.00001).
- Diseases whose prevalence does not vary or tends to stagnate: the prevalence stagnated during the last 20 years in Genitourinary (13%, 20%, and 20% in 1985, 1995 and 2016 respectively; p<0.00001), and in Infectious y Nervous and senses, did not vary throughout the series (1%, 1%, and 1% for Infectious; NS, and 18%, 21%, and 18% for Nervous and senses; NS).
- Diseases whose prevalence tends to decrease: the prevalence tends to decrease during the last 20 years, although it remains higher than at the beginning of the series, in Diseases of the skin (3%, 10%, 6%; p<0.00001), and In the Digestive system, which in 2016 shows its lowest figure after a peak in 1995 (22%, 27%, 19%; p=0.000628) (Table 2).

Groups of diseases according to the secular variation of their prevalence 1985-1995-2016	Diseases according to WHO, ICD-10 groups
Diseases in which the prevalence clearly increases	Circulatory system, Endocrine, Mental, y Musculo-skeletal
Diseases with a small increase in prevalence	Respiratory system and Neoplasms
Diseases whose prevalence does not vary or it tends to stagnate	Genitourinary, Infectious y Nervous and senses
Diseases whose prevalence tends to decrease	Diseases of the skin, and Digestive system

Table 2: Groups of diseases according to the secular variation of their prevalence 1985-1995-2016.

The secular variation of the diseases in this series of 30 years shows an uneven behavior of the different groups, with increase in Circulatory system, Endocrine, Mental, and Musculo-skeletal, but not of the expected magnitude according the trend until 1995.

However, with other groups with small increase (Respiratory system and Neoplasms), as well as others with stagnation of the prevalence (Genitourinary, Infectious and Nervous and senses), and with decrease of the prevalence (Diseases of the skin, and Digestive system (Figure 1).

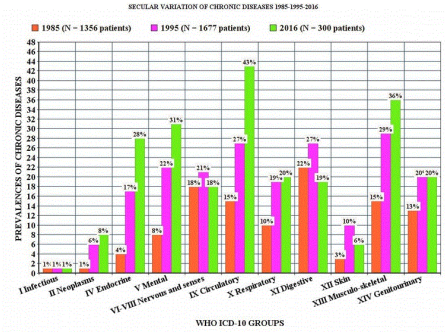

Figure 1: Secular variation of chronic diseases 1985-1995-2016.

There is also an increase in the number of chronic diseases per patient, from 0.9 in 1985, to 2.0 in 1995, and to 2.4 in 2016.

However, their variation is not uniform either, and in several age groups and sex there is a slight decrease in the last 20 years (Figure 2 and Table 3).

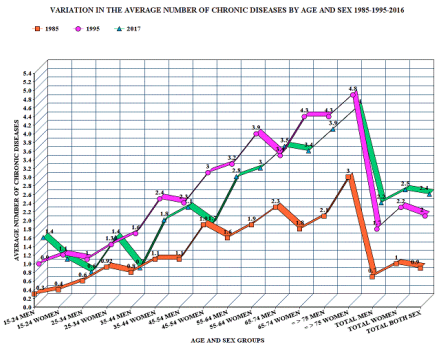

Figure 2: Variation in the average number of chronic diseases by age and sex 1985-1995-2016.

Age groups	Sex	Mean number of chronic diseases 1985 (n=1356)	Mean number of chronic diseases 1995 (n=1424)	Mean number of chronic diseases 2016 (n=300)
15-24 years old	Men	0.3	0.9	1.4
	Women	0.4	1.1	0.9
25-34 years old	Men	0.5	1	0.6
	Women	0.9	1.3	1.4
35-44 years old	Men	0. 8	1.6	0.7
	Women	1.1	2.4	1.8
45-54 years old	Men	1.1	2.3	2.1
	Women	1.9	3	1.7
55-64 years old	Men	1.6	3.2	2.8
	Women	1.9	3.9	3
65-74 years old	Men	2.2	3.4	3.5
	Women	1.8	4.3	3.4
≥ 75 years old	Men	2	4.3	3.9
	Women	3	4.8	4.4
Total Men		0.7	1.7	2.2
Total Women		1	2.2	2.5
Total both sexes		0.9	2	2.4

Table 3: Secular variation of mean number of chronic diseases by age and sex 1985-1995-2016.

Discussion

Changes in disease prevalence

Chronic conditions have become a major challenge to health care systems in the 21st century. Chronic diseases and conditions are on the rise Worldwide. The challenge is especially great among older people (those aged 65 or older); as people age, they become more susceptible to developing chronic conditions. An ageing population and changes in societal behaviour are contributing to a steady increase in these common and costly long-term health problems. According to the World Health Organization (WHO), chronic disease prevalence is expected to rise by 57% by the year 2020. Emerging markets will be hardest hit, as population growth is anticipated be most significant in developing nations. Increased demand on healthcare systems due to chronic disease has become a major concern [26,27].

Almost half of the total chronic disease deaths are attributable to cardiovascular diseases; obesity and diabetes are also showing worrying trends, not only because they already affect a large proportion of the population, but also because they have started to appear earlier in life. In our study, also the groups of Circulatory system, Endocrine, Mental, and Musculo-skeletal showed a greater increase.

The chronic disease problem is far from being limited to the developed regions of the world. Contrary to widely held beliefs, developing countries, are increasingly suffering from high levels of public health problems related to chronic diseases. In five out of the six regions of WHO, deaths caused by chronic diseases dominate the mortality statistics. Although human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), malaria and tuberculosis, along with other infectious diseases, still predominate in sub-Saharan Africa and will do so for the foreseeable future, 79% of all deaths worldwide that are attributable to chronic diseases are already occurring in developing countries [28].

It has been projected that, by 2020, chronic diseases will account for almost three-quarters of all deaths worldwide, and that 71% of deaths due to ischaemic heart disease (IHD), 75% of deaths due to stroke, and 70% of deaths due to diabetes will occur in developing countries. The number of people in the developing world with diabetes will increase by more than 2.5-fold, from 84 million in 1995 to 228 million in 2025. On a global basis, 60% of the burden of chronic diseases will occur in developing countries. Indeed, cardiovascular diseases are even now more numerous in India and China than in all the economically developed countries in the world put together [29].

Eight causes of chronic disease and injury each affected more than 10% of the world's population in 2015: permanent caries, tension-type headache, iron-deficiency anaemia, age-related and other hearing loss, migraine, genital herpes, refraction and accommodation disorders, and ascariasis. The impairment that affected the greatest number of people in 2015 was anaemia, with 2·36 billion individuals affected. The second and third leading impairments by number of individuals affected were hearing loss and vision loss, respectively [30].

Nevertheless, age-specific prevalence rates of chronic diseases were much lower at the end of the 20th century than they were at the beginning of the last century or during the last half of the 19th century, and that there has been a significant delay in the onset of chronic diseases over the course of the 20th century [31]. This important fact also appears in our study, with a deceleration in the increase of in prevalence of chronic diseases from 1995 until 2016.

Changes in the prevalence of selected diseases presenting for health care

There are not many reliable studies with which to compare our results, and thus, the comments presented below on the prevalence of selected chronic diseases come from different data sources. This means there may be some differences in the time periods of reporting and methods of measurement used in relation to specific chronic diseases.

An increase from 35% to 42% in the prevalence of chronic diseases was observed in the general practice registration over the period 2004-2011 and from 41% to 47% based on self-reported diseases over the period 2001-2011. Multimorbidity increased from 13% to 16% and from 14% to 17%, respectively; aging of the population explained part of these trends [32].

It has been published that between 1991 and 2001 there was a general reduction in the prevalence of disease caused by infection and an increase of degenerative disorders. The prevalence of mental disorders, skin disease and musculoskeletal disorders showed little change. Particular increases were noted for other malignant and benign neoplasms of the skin, hypothyroidism and diabetes. There were marked reductions for disorders of the conjunctiva, ear infections, acute myocardial infarction and heart failure, respiratory infections and injuries [33]. Our data from 1985 to 2016 do not coincide except in the increase in the Endocrine group.

Cardiovascular

A systematic review of trends in blood pressure changes over the last 50 years in the 5 to 34 year age group in the Western world, found that has declined [34,35]. Nevertheless, the overall pooled prevalence of hypertension in Africa suggests that is increasing [36]. There has been communicated a decline in IHD mortality that is now entering its third decade. IHD increased in most Western countries during the twentieth century until a decline began during the 1970s and early 1980s. Decreasing incidence, reduced case fatality and demographic development result in an increased prevalence of IHD, since the decline in incidence is more than offset by a larger decline in case fatality [37]. In New Zealand, hospitalisation and/or IHD death between 2005 and 2015 there was a steady decline in numbers [38]. Global and regional estimates of acute myocardial infarction by age, sex, and world region in 1990 and 2010, indicate a decrease [39]. Between 1971-1982 and 1982-1992, cardiovascular disease incidence rates decreased from 293.5 (95% CI: 284.5 to 302.4) to 225.1 (95% CI: 216.6 to 233.5) per 10,000 person-years in USA (40-42). In our study, Circulatory system showed the most increase (15% in 1095, 27% in 1995, and 43% in 2016; p<0.00001).

Mental

The prevalence of mental disorders continues to increase, causing considerable effects on people's health and serious socio-economic and human rights impacts in all countries. In studies of secular trends in mental illness, we can see an increase in both the prevalence and incidence of depression in recent years [40]. Our study reproduced this trend (22% in 1985, 22% in 1995, and 31% in 2016; p<0.00001).

Endocrine

Regarding the secular tendency of diabetes, some communications indicate that the prevalence could be increasing since the 1970s [41]. We also found a tendency to increase the prevalence of the Endocrine group (4% in 1985, 17% in 1995, and 28% in 2016; p<0.00001).

Nervous

In England and Wales, despite the decrease in incidence and age specific prevalence of dementia, the number of people with the disease is projected to increase by 57% from 2016 to 2040. This increase is mainly driven by improved life expectancy.

We did not find significant differences in the prevalence of the group of Nervous and senses (18%, 21%, and 18%; p=0.10215. NS).

Respiratory

Global COPD cases based on a spirometry-defined prevalence from 1990 to 2010 increased from 10.7% to 11.7%. Across WHO regions, the highest prevalence was estimated in the Americas (13.3% in 1990 and 15.2% in 2010), and the lowest in South East Asia (7.9% in 1990 and 9.7% in 2010). The percentage increase in COPD cases between 1990 and 2010 was the highest in the Eastern Mediterranean region (118.7%), followed by the African region (102.1%), while the European region recorded the lowest increase (22.5%).

In Africa it is suggest an increasing of prevalence of asthma over the past two decades: in 1990, it was estimated prevalence of asthma in 74.4 million (11.7%) and in 2000, 94.8 million (12.0%) in the total population. In our study the increase in prevalence of diseases of Respiratory system seems to have stabilized (10%, 19%, and 20%; p<0.00001).

Neoplasms

In developed countries, incidence and mortality rates are generally declining among males and are starting to plateau for females, reflecting previous trends in smoking prevalence.

In contrast, there are some populations in less developed countries where increasing lung cancer rates are predicted to continue, due to endemic use of tobacco. In our study we observed a continuous increase (1%, 6%, and 8%; P=0.00001).

Multimorbidity

It is common in the general population, but although much is known about the prevalence of Multiple Chronic Conditions (MCCs), well-designed studies on the trends in its prevalence are scarce. Several studies examined the prevalence of MCCs in Australia, Canada, Australia, Canada, the Netherlands, Spain, Sweden, and the United States found a prevalence ranging from 20% to 30% (52-57).

The prevalence of MCCs increased steeply with older age, has different patterns in men and women, and varies by race/ethnicity. A random sample of multimorbid patients in Switzerland, from 100 general practitioners, showed a mean of 5.5 chronic conditions. Our data indicate a slow increase, with lower average figures (0.9, 2.0, and 2.4 of mean).

Continuity of care in family medicine as a source of information on the secular variation of diseases

Family medicine/General practice is an important source of information on the occurrence, distribution and evolution of chronic disease in the population. For most illnesses the general practitioner is the first point of contact in the health care system and he looks after a population whose age and sex composition is known.

"Numerator" of prevalence data

A great accessibility of patients to their family doctor, and the role of first contact with the patient, it allowing in family medicine the estimation of the probability of health problems of the population (diagnoses: clinical onset, symptoms). Diagnoses of the chronic diseases (using homogeneous definitions of diseases) recorded in general practice are generally valid with low numbers of false positive cases, and with a good concordance between health survey and Family Medicine prevalence data was good for chronic conditions. We used for the coding of diagnoses in the 1985 and 1995 studies the ICPC (WONCA), but ICD-10 in 2016. However, a technical conversion between ICPC and ICD-10 is practically always possible.

Working with a population as a "Denominator" to obtain prevalence data

Many health problems can only be identified within a population as a "denominator" (attack rate, incidence and prevalence). Registries in general practice are key sources for morbidity estimates, especially if all people are registered in a general practice and if the general practitioner is the gatekeeper of health care, diagnoses from medical specialists and other health care providers will also be known by the general practitioner. The population registered in general practices is representative of the whole population outside of long term health care facilities.

In developed countries around two-thirds of any population consults in a Family Medicine service at least once a year, and more than 80% contact once every 5 years. On the other hand, different methods have been proposed to solve the denominator problem in family medicine where the list of patients to be attended is unknown. Further, the collection of data in family medicine is cumulative and continuous. "The path of all patients begins and ends with the family doctor".

Limitations of the study

In spite of the above, the prevalence results shown in our study should be considered with caution:

Since the frequency figures of certain diseases obtained from the family medicine consultation may not represent their total prevalence, but the proportion which is presented at this level of care, being a "minimum prevalence". In addition, it has been argued that medical morbidity registers have a high under-registration of diseases (between 25 and 40%).

An adjustment for age and sex has not been made with respect to the general population. Our prevalence data are raw numbers. Women were included in 1985, 56% in 1995, 55% in 1995, and in 57% in 2016 (χ^2=0.575, p=0.750148, Not significant at p<0.05). But in 2016 more patients older than 65 years were included: 11%>65 years in 1985, 12% in 1995, and 28% in 2016 (χ^2=73.71, p<0.00001).

In epidemiology and demography, most rates, such as incidence, prevalence, mortality, are strongly age-dependent, with risks rising (e.g. chronic diseases) For many purposes, age-specific comparisons may be the most useful. However, comparisons of crude age-specific rates over time and between populations may be very misleading if the underlying age composition differs in the populations being compared. To avoid this, an adjustment procedure should be performed. The dominant method currently in use is the direct age-standardization of rates using an arbitrary standard population. In this new WHO World Standard age-structure the age composition of the new standard has been chosen to better reflect the future age structure of the world's population for which comparative rates will be needed.

But, as our population>65 years old is larger in the 3 studies than the new WHO World Standard Population (8%>65 years), we can assume that our results are overvalued and would decrease, especially with respect to the raw data of 2016 where the difference of over 65 is greater (28%), if standardized data are compared. But, as our results show a slowing of the increase of a few diseases and the stagnation or diminution of others, it could be predicted that this regression of the prevalence would be even greater of the found, and the tendency of limitation of prevalence, accentuated. Further, it has been reported that the variation in morbidity rate estimates between general practices do not decrease after adjusting for age, gender, socio economic status, urbanization level, and ethnicity characteristics. On the other hand, although the data provided by the primary care consultations may be of limited utility for the calculation of frequency measures in epidemiological studies, however, they seem adequate to identify temporal variables of morbidity.

As patients were sampled at family doctor consultations in the cross-sectional study of 2016, the likelihood of being sampled is dependent on visit frequency. Therefore, frequent attenders (such as older patients who may have more health problems) will be more likely sampled than infrequent attenders. Other authors have adjusted the result according to the number of visits of the patients in the sample. However our patients were included only one time; thus, were excluded the repeated consultations of same patient, including only the first visit.

Regarding the 2016 cross-sectional study, visitation is not random but is a function of variables in addition to disease incidence. It is found that women consult more often than men. Health status (need) and social role factors (including parenthood and marital status) are found to be more important for men, while psychological predisposition is of greater significance among women in this setting. It should be noted that the classification by ICHPPC-2-Defined, although not without some deficiencies (it was used in the studies of 1985 and 1995), has shown to be of epidemiological utility in primary care.

Therefore, these facts, and that having been the same principal investigator with the same methodology and a very similar population in all studies (1985, 1995, and 2016), would give greater consistency to the results, makes us think that the results, although should be taken with caution, are reasonably correct.

Conclusion

Coronary heart disease, type 2 diabetes, breast cancer and many other chronic diseases are unnecessary. Their occurrence is not mandated by genes passed down to us through thousands of years of evolution. Chronic diseases are not the inevitable lot of humankind.

They are the result of the changing pattern of human development. We could readily prevent them, had we the will to do so.

In our study, the comparison of consistent, comparable and stable series between 1985, 1995 and 2016 in our context shows that although not all disease groups behave the same, there is a general trend of secular variation of chronic diseases of increasing prevalence of chronic diseases from 1985 to 1995, and a reduction or slowdown in prevalence growth from that date to 2016: there is only a clear increase in Circulatory system, Endocrine, Mental, and Musculo-skeletal, but not of the expected magnitude, and in all other groups the increase is weak, or there is no or there is a decrease in prevalence.

Contextualizing these trends within epidemiologic transition theory reveals implications for clinical practice, global health policies, and future research within epidemiology. We need to assess chronic disease from a holistic perspective that captures multimorbidity and upstream factors, to facilitate broader and more context-appropriate associations with healthy living, quality of life, health care costs and mortality. Special consideration should be given to the role that social deprivation plays in the development of multimorbidity.

This study could provide an example based on family medicine that would, allow across different places, produces overall estimates. Family medicine consultation data has many potential uses. Local databases, for example, have potential value in measuring the local burden of disease and healthcare utilisation, evaluating trends over time, and allowing comparison with national data [42].

References

1. Camel FV (1987) Medical and public health statistics. Havana.
2. Martí Tusquets JL, Murcia Grau M (1987) Fundamental concepts of psychiatric epidemiology. Herder, Barcelona.
3. Turabian JL (1995) Family and community medicine notebooks. An introduction to the principles of family medicine. Díaz de Santos, Madrid.
4. Boshuizen HC, Poos MJJC, van den Akker M, van Boven K, Korevaar JC, et al. (2017) Estimating incidence and prevalence rates of chronic diseases using disease modeling. Popul Health Metr 15: 13.
5. Hart JT (1981) A new kind of doctor. J R Soc Med 74: 871-883.
6. Hart JT (1988) A new kind of doctor. The General Practitioner's part in the health of the community. Merlin Press, London.
7. Harrison C, Henderson J, Miller G, Britt H (2017) The prevalence of diagnosed chronic conditions and multimorbidity in Australia: A method for estimating population prevalence from general practice patient encounter data. PLoS ONE 12: e0172935.
8. Hippisley-Cox J, Vinogradova Y (2009) Trend in consultation rates in general practice 1995 to 2008: analysis of the QRESEARCH database. The NHS information centre.
9. Peach H, Heller RF (1984) Epidemiology of common diseases. William Heinemann Medical Books, London.
10. Hernández B, Velasco-Mondragón HE (2000) Cross-sectional surveys. Public Health Mexico 42.
11. García Olmos LM, Pérez Férnandez MM, Bassolo Abad A, Gervas JJ (1987) Outpatient morbidity studies: what sample do you choose ?. Primary Health Care 4: 136-139.
12. Ebrahim S (1995) Changing patterns of consultation in general practice: Fourth national morbidity study, 1991-1992. Br J Gen Pract 45: 283-285.
13. Anderson R, Bury M (1988) Living with chronic illness. The experience of patients and their families. Unwin Hyman, London.
14. Knottnerus JA, Metsemakers J, Hoppener P, Limonard C (1992) Chronic illness in the community and the concept of "social prevalence". Fam Pract 9: 15-21.
15. Turabián JL, Rivas A, Plaza O, Cordero B, Jaén JI, et al. (1987) Frequency of chronic diseases and risk factors in primary care. Med Clin (Barc) 88: 140-143.
16. Turabián JL, Gutiérrez V (1996) Variations in frequencies of chronic illnesses and risk factors in Primary Care (1985-1995). Aten Primaria 18: 65-69.
17. Turabian JL (2017) Prevalence of chronic diseases in defence of epidemiological craftsmanship in family medicine. CP Epidemiology 1: 5.
18. Schellevis FG, Van de Lisdonk E, Van Der Velden J, Van Eijk JTHM, Van Weel C (1993) Validity of diagnoses of chronic diseases in general practice. The application of diagnostic criteria. J Clin Epidemiol 46: 461-468.
19. https://www.amazon.com/ICHPPC-2-Defined-International-Classification-Problems-Publications/dp/0192614266
20. Pinsent JFH (1980) CHPPC-2 (International classification of health problems in primary care) 2nd edition. J R Coll Gen Pract 30: 246.
21. http://apps.who.int/classifications/icd10/browse/2016/en
22. Strauss AL (1984) Chronic illness and the quality of life. The C.V. Mosby Company, St Louis.
23. Gill M (2017) Augmented care: An alternative model of care for people with chronic disease. Int J Care Coord 20: 5-7.
24. Calderón-Larrañaga A, Vetrano DL, Onder G, Gimeno-Feliu LA, Coscollar-Santaliestra C, et al. (2016) Assessing and measuring chronic multimorbidity in the older population: A proposal for its operationalization. J Gerontol A Biol Sci Med Sci 1-7.
25. Coggon D, Rose G, Barker DIP (2017) Epidemiology for the uninitiated (4th edn) Chapter 2. Quantifying disease in populations.
26. Fu S, Huang N, Chou YJ (2014) Trends in the prevalence of multiple chronic conditions in taiwan from 2000 to 2010: A population-based study. Prev Chronic Dis 11: E187.
27. http://www.pwc.com/gx/en/industries/healthcare/emerging-trends-pwc-healthcare/chronic-diseases.html
28. http://www.who.int/whr/2002/en/
29. http://www.who.int/nutrition/topics/2_background/en/
30. GBD 2015 Disease and injury incidence and prevalence collaborators (2016) Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: A systematic analysis for the global burden of disease study 2015. Lancet 388: 1545-1602.
31. Fogel RW (2005) Changes in the disparities in chronic diseases during the course of the 20th century. Perspect Biol Med 48: S150-S165.
32. van Oostrom SH, Gijsen R, Stirbu I, Korevaar JC, Schellevis FG, et al. (2016) Time trends in prevalence of chronic diseases and multimorbidity not only due to aging: Data from general practices and health surveys. PLoS One 11: e0160264.
33. Fleming DM, Cross KW, Barley MA (2005) Recent changes in the prevalence of diseases presenting for health care. Br J Gen Pract 55: 589-595.
34. Nadar S, Lip GYH (2002) Secular trends in cardiovascular disease. J Hum Hypertens 16: 663-666.
35. McCarron P, Smith GD, Okasha M (2002) Secular changes in blood pressure in childhood, adolescence and young adulthood: Review of trends from 1948-1998. J Hum Hypertens 16: 677-689.
36. Adeloye D, Basquill C (2014) Estimating the prevalence and awareness rates of hypertension in Africa: A systematic analysis. PLoS One 9: e104300.
37. Koch MB, Davidsen M, Andersen LV, Juel K, Jensen GB (2015) Increasing prevalence despite decreasing incidence of ischaemic heart disease and myocardial infarction. A national register based perspective in Denmark, 1980-2009. Eur J Prev Cardiol 22: 189-195.
38. Grey C, Jackson R, Wells S, Wu B, Poppe K, White H, et al. (2017) First and recurrent ischaemic heart disease events continue to decline in New Zealand, 2005-2015. Heart.

39. Moran AE, Forouzanfar MH, Roth GA, Mensah GA, Ezzati M, et al. (2014) The global burden of ischemic heart disease in 1990 and 2010: The Global Burden of Disease 2010 study. Circulation 129: 1493-1501.

40. Ergin A, Muntner P, Sherwin R, He J (2004) Secular trends in cardiovascular disease mortality, incidence, and case fatality rates in adults in the United States. Am J Med 117: 219-227.

41. Stern MP, Bradshaw BS, Eifler CW, Fong DS, Hazuda HP, et al. (1987) Secular decline in death rates due to ischemic heart disease in Mexican Americans and non-Hispanic whites in Texas, 1970-1980. Circulation 76: 1245-1250.

42. Hunink MGM, Goldman L, Tosteson ANA, Mittleman MA, Goldman PA, et al. (1997) The recent decline in mortality from coronary heart disease, 1980-1990. The effect of secular trends in risk factors and treatment. JAMA 277: 535-542.