IMPACT OF CHRONIC DISEASES ON QUALITY OF LIFE

A DISSERTATION SUBMITTED TO THE DEPARTMENT OF PHARMACY,

EAST WEST UNIVERSITY

IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF PHARMACY

SUBMITTED BY

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Declaration by the Research candidate

I, Jannatul Ferdous Munni, hereby declare that the dissertation entitled **"*IMPACT OF CHRONIC DISEASES ON QUALITY OF LIFE* "**, submitted by me to the Department of Pharmacy, East West University, in partial fulfillment of the requirements for the award of the degree of masters of Pharmacy (M.PHARM) is a complete record of original research work carried out by me during the period 2015-2016 under the supervision and guidance of **Farhana Rizwan,** Assistant Professor, Department of Pharmacy, East West University and it has not formed the basis for the award of any other Degree/Diploma/Fellowship or other similar title to any candidate of any University.

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List of abbreviations:

QOL	Quality of life
COPD	Chronic obstructive pulmonary disease
MLCD	Major life changing decisions
GVHD	Chronic graft-versus-host disease
HRQOL	Health-related quality of life

List of figure

Abstract

Objective

To explore the perspectives of patients who live with multiple chronic conditions as they relate to the challenges of self-management.

Data sources

On September 30, 2013, we searched MEDLINE, EMBASE, and CINAHL using relevant key words including chronic disease, comorbidity, multimorbidity, multiple chronic conditions, self-care, self-management, perspective, and perception.

Study selection

Three reviewers assessed and extracted the data from the included studies after study quality was rated. Qualitative thematic synthesis method was then used to identify common themes. Twenty-three articles met the inclusion criteria, with most coming from the United States.

Synthesis

Important themes raised by people living with multiple chronic conditions related to their ability to selfmanage included living with undesirable physical and emotional symptoms, with pain and depression highlighted. Issues with conflicting knowledge, access to care, and communication with health care providers were raised. The use of cognitive strategies, including reframing, prioritizing, and changing beliefs, was reported to improve people's ability to self-manage their multiple chronic conditions.

Conclusion

This study provides a unique view into patients' perspectives of living with multiple chronic conditions, which are clearly linked to common functional challenges as opposed to specific diseases. Future policy and programming in self-management support should be better aligned with patients' perspectives on living with multiple chronic conditions. This might be achieved by ensuring a more patient-centred approach is adopted by providers and health service organizations.

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CHAPTER 1

INTRODUCTION

Introduction

A chronic condition is a human health condition or disease that is persistent or otherwise long-lasting in its effects or a disease that comes with time. The term chronic is usually applied when the course of the disease lasts for more than three months. Common chronic diseases include arthritis, asthma, cancer, COPD, diabetes and viral diseases such as hepatitis C and HIV/AIDS. Chronic diseases constitute a major cause of mortality and the World Health Organization (WHO) reports chronic non-communicable conditions to be by far the leading cause of mortality in the world, representing 35 million deaths in 2005 and over 60% of all deaths.(Chronic diseases, *World Health Organization*, retrieved 2)

1.1 Chronic diseases and quality of life

The health sciences literature is replete with information related to the current impact of different diseases on patients' quality of life (QoL) and is mainly focused on the traditional health-related quality of life (HRQoL) domains (physical, social and psychological). In contrast, very little is known about the long-term impact of chronic diseases on patients' lives, for example the influence of chronic diseases on major life changing decisions (MLCDs) such as in relation to career choice, having children, marriage, divorce, early retirement and moving abroad.Modern western lifestyles are often blamed for the current chronic disease pandemics (Power and Schulkin, 2009).

This seems plausible as such problems, at a population level, only really began 3-4 decades ago (Cowan et al., 2011.). They are also not usually caused by any microbial agent and have occurred too quickly for genome changes to be a factor (although this does not preclude environmental influences on gene expression). The increased aging of the population is a consideration, but increased risk factors across all age groups limit aging as a sole explanation (Matheson et al., 2011.). Other behaviors and environmental factors have been implicated, but a single causal underpinning is illusive, thus making "lifestyle" an attractive proposition.(Genuis,2012)

1.2 Types of chronic diseases

Examples of chronic diseases and health conditions include:

- Alzheimer's disease, Parkinson's disease and other neurodegenerative diseases

- Addiction
- Autoimmune diseases, such as ulcerative colitis, lupus erythematosus, Crohn's Disease, Coeliac Disease, Hashimoto's Thyroiditis and Relapsing polychondritis
- Blindness
- Cancer / neoplastic diseases not amenable to be cured
- Cardiovascular diseases: cerebrovascular disease, heart failure, ischemic cardiopathy
- Myalgic encephalomyelitis
- Chronic graft-versus-host disease (GVHD)
- Chronic hepatitis
- Cerebral palsy (all types)
- Chronic pain syndromes, such as post-vasectomy pain syndrome and complex regional pain syndrome
- Chronic osteoarticular diseases: osteoarthritis, rheumatoid arthritis
- Chronic renal failure, Chronic Kidney Disease
- Chronic respiratory diseases: asthma, chronic obstructive pulmonary disease (COPD), pulmonary hypertension
- Deafness and hearing impairment
- Hypertension
- Diabetes mellitus
- Endometriosis
- Fibromyalgia

- Epilepsy
- Mental illness
- Osteoporosis
- Periodontal disease
- Sickle Cell Anemia and other hemoglobin disorders
- Thyroid disease
- Lyme Disease
- Blood Pressure abnormalities
- Ehlers-Danlos Syndrome (Various types)
- Sleep apnea
- Postural Orthostatic Tachycardia Syndrome

1.3 Risk factors

While risk vary with age and gender, most of the common chronic diseases in the US are caused by dietary, lifestyle and metabolic risk factors that are also responsible for the resulting mortality. Therefore, these conditions might be prevented by behavioral changes, such as quitting smoking, adopting a healthy diet, and increasing physical activity. Social are important risk factors for chronic diseases. Social factors, e.g., socioeconomic status, education level, and race/ethnicity, are a major cause for the disparities observed in the care of chronic disease. Lack of access and delay in receiving care result in worse outcomes for patients from minorities and underserved populations. (Mead H et al., 2008)

1.3.1 Nutrition.

The importance of nutrition for the prevention and management of chronic disease is well known inadequate or over nutrition has been proposed to account for up to two-thirds of risk for certain chronic problems like type 2 diabetes and cardiovascular disease and a significant proportion of other chronic ailments . Health problems have been related to both specific nutrients and overall meal patterns , with inflammatory biomarkers generally accompanying those foods/eating patterns associated with disease risk in the presence and the absence of obesity .(Egger et al., 2008)

Excessive energy intake, particularly of high energy dense, but low nutrient-dense products, is a major problem of industrialized societies. Still, excessive intake of even healthy foods can increase postprandial (and potentially chronic) meta inflammation, suggesting negative long-term outcomes. At the other extreme, chronic energy restriction is now well documented as being associated with increased longevity and improved heath .In relation to nutrition quality, studies have reported increased risk and elevated meta inflammation from excessive amounts of sugars, salt, alcohol, and (saturated and trans) fats, as well as inadequate levels of fiber, fruit, vegetables, grains, and certain nutrients . Levels of processing have been proposed as a general indication of risk, and there appears to be a clear postprandial “meta inflammatory” trail from processed versus whole foods, suggesting an evolutionary role in nutritional health. Although individual and genetic factors influence outcomes, the worst-case scenario for obesity and chronic disease based on current evidence would be an excessive amount of a modern, western diet made up of highly processed foods. While there may be controversy over an ideal diet (Mediterranean, anti-inflammatory, paleo, etc.), Michael Pollan’s dictum to “Eat food. Mostly plants. Not too much”, provides a simple, concise, and accurate long-term nutritional goal. (D. Dunstan et al., 2012)

1.3.2 Inactivity

Inactivity, as well as sedentary activities like sitting, in contrast to insufficient physical activity, is an independent risk factor for disease. It is one of the major unhealthy anthropogens of our times with links to over 35 different diseases. Movement, physical activity, and exercise can be conceived of as gradations along a scale and all have a role, to different degrees, in primary prevention of a range of diseases and, in some cases, treatment and reversal of risks and/or disease entities (namely, type 2 diabetes). This is mainly through the modems of aerobic capacity and/or

muscle strength and integrity. Flexibility and balance provide musculoskeletal integrity that can enhance quality of life. While controversies exist about type, intensity, frequency, and duration of physical activity, there is no dispute about the health value of an optimal physical activity requirement for humans. A generic prescription based on “volume” (intensity × frequency × duration) incorporating both aerobic and resistance training is appropriate in the absence of a more detailed individual-genetic understanding. In the absence of this, recommendations that “. Any activity is better than none, and more is better than a little”, and for individuals to “think of movement as an opportunity, not an inconvenience” are appropriate. The relationship between activity and health has been referred to as a U-shaped function, with excessive exercise having diminishing health benefits as reflected in increased meta inflammation, similar to that of inactivity .Poor nutrition and inactivity are the best-known inducers of weight gain. Several studies however now show that either poor nutrition or inactivity can independently modify meta inflammation without significant changes in weight (C. Richard et al., 2011)

1.3.3 Stress

The nature of stress has changed in recent times from an acute warning signal to a chronic strain on physiological adaptation. Typically, the body’s reaction to a stressor has been “flight” or “fight,” but these options are less viable in the modern environment, leading to chronic effects such as elevated adrenocortical hormone concentrations, activation of the sympathetic nervous system, ailments like heart disease, and accompanying vascular, metabolic, and inflammatory processes. Of itself, stress is not a health issue, and a certain amount within the coping capacity of the individual is vital for a healthy life. It is the “strain,” resulting from excessive stress, outside the limitations of the stresses to cope, and resulting in anxiety and depression that can lead to allostasis and chronic disease.

1.3.4 Anxiety

Anxiety is a form of “feared helplessness” defined as “. A thin stream of fear trickling through the mind. If encouraged, it cuts a channel into which all other thoughts are drained”. Anxiety occurs while an individual is striving to adapt and the association of this with ill-health is diffuse. However it is when striving ceases that depression or “learned helplessness” can result, with more defined channels into a range of chronic diseases.

1.3.5 Depression

High levels of depression have been shown to be related to a range of chronic diseases from type 2 diabetes to Alzheimer's. A consistent finding is a link between stress, anxiety, and depression and increased inflammatory markers, which can be associated with or independent of body weight (P. L. Greenhaff and M. Hargreaves, 2011)

1.3.6 Focusing on use of social media

Other recent problems within this category are acute and chronic problems that occur while focusing on use of social media (e.g., texting and tweeting) whilst carrying out other activities, such as driving. Because of its immediacy, social media bullying and intimidation can also lead to psychological morbidities and even suicide amongst prone youth, although this is not as yet well documented in the medical literature. Other problems such as "Facebook depression" (S. J. Genuis, et al., 2011.) are only beginning to emerge. Social contagion effects on disease are amplified through the use of social media as shown in the association between social networks and chronic disease risks like obesity and smoking. Control of technology misuse is traditionally through legislative restrictions (i.e., use of cell phones while driving) but personal controls on behavior are also likely to be necessary. (S. Puttonen et al., 2011)

1.3.7 Inadequate Sleep

Healthy sleep is the anchor for a healthy life, thus interacting with other chronic disease determinants discussed here. Together with inactivity, inadequate sleep is one of the most underrated lifestyle risk factors for chronic disease. Poor sleep is associated with an increase in inflammatory markers, as well as more classic risk factors and significant social impacts. The cumulative long-term effects of sleep deprivation and sleep disorders have been associated with a wide range of deleterious health consequences including an increased risk of hypertension, diabetes, obesity, depression, heart attack, and stroke. As many as 80% of people in western countries will suffer from a sleep problem at some stage in their life, 30–50% will have difficulty in sleeping. According to the US National Sleep Foundation, the average of eight to nine hours sleep per night in previous years has now dropped to around seven hours per night, with 37% of young adults getting <7 hours in 2002 compared to less than half that (16%) in 1960 .Modern

lifestyles are often in direct competition with sleep so much so that it could be argued that the majority of modern sleep problems have a basis in lifestyle choices. The combination of sufficient sleep with other lifestyle factors (e.g., physical activity, a healthy diet, moderate alcohol consumption, and nonsmoking) has additional value in heart disease prevention than sleep alone . Sleep deprivation can also indirectly affect other disease determinants. Appetitive food mechanisms in the brain for example stimulate a greater desire for "junk" food after sleep deprivation, thus potentially enhancing obesity. Unfortunately chronic disease often interferes with sleep quality and quantity generating a bidirectional vicious cycle, a situation commonly encountered in chronic disease. Inadequate sleep also has a strong relationship with elevated inflammatory markers. On the positive side, sleep can be dramatically improved with a healthy approach to the lifestyle and a structured approach to sleep hygiene. Simple actions like the removal of interactive media from adolescent bedrooms can be a starting point for better sleep (D. Huanget al., 2013)

1.3.8 Environment

Aspects of the environment have always been a consideration in public health. However the rise of chronic diseases has led to a more structured approach to this. , for example, consider four types (physical, economic, policy, and sociocultural) andtwosizes (micro and macro) of "obesogenic" environments, which serve to draw attention away from purely biological explanations of obesity and by extension chronic disease. Small particle pollution from exhaust and industrial fumes as well as a wide range of chemicals in the air, water, soil, and households makes up the natural physical environment. A large group of such pollutants, labeled endocrine disrupting chemicals (EDCs), has been attributed to significant physiological and even behavioral changes such as increased hunger, which can lead to obesity. Exposure data (e.g., to bisphenol A) suggests a link between this and obesity in children, leading to the suggestion of some chemicals being "obesogens". Increases in carbon in the atmosphere are an example of a dramatic macro environmental change with potential health (as well as climate change) impacts. Many environmental factors have also been shown to lead to increased meta inflammation as an intermediatory process with links to chronic disease (Anglin et al., 2013)

1.3.9 Sociocultural influences

Socio cultural influences are reflected, for example, in attitudes to feasting in some cultures which may have been suitable in historical times but are contraindicated with the imposition of a western culture and diets. Political environments make the “rules” that allow, for example, smoking or drinking in the family or unrestricted sales of unhealthy foods and products (e.g., cigarettes) in society. Overarching all of this is the macroeconomic system, including the modern economic growth model which demands consumption that is not necessarily conducive to health (T. J. Caruso and G. Fuzaylov, 2013).

1.3.10 Occupation

Meaningful work is an important component of good health. Generally however it is the direct effects on health and safety—exposure to machinery, chemicals, injury, and so forth—or the adverse health effects of work hours and shift work and their effects on inflammation that are considered. Recent concern has turned more to social factors. Job insecurity and job strain, for example, have been shown to increase the risk of heart disease (although the effect may be modest and largely explainable by socioeconomic factors. Poor job satisfaction is linked to “burn out,” low self-esteem, depression, and anxiety and excessive work hours to a risk of ill-health and damage to social relationships. In work with the British Civil Service, Marmot and colleagues have reported on the health effects of perceived social justice, “burn out”, and social standing relating to occupational status. Changes in the nature and security of work in the modern world mean that both the physical and psychological components of occupations need to be considered part of a lifestyle/environmental perspective on health. Hence some forms of occupation can be seen as modern-day, chronic disease promoting anthropogens.(S. Stringhini, G. D. Batty, P. Bovet et al., 2013)

1.3.11 Drugs, Cigarettes, and (Excessive) Alcohol

Drugs, both licit and illicit, are responsible for a significant and increasing degree of morbidity and mortality in modern societies. The stand-out amongst licit products is cigarette smoking and its links with cancers, heart disease, and respiratory problems. Legal medications form another category of drug related mortality and morbidity. (C. Clark, P. Ridker, M. Ommerborn et al.2012)

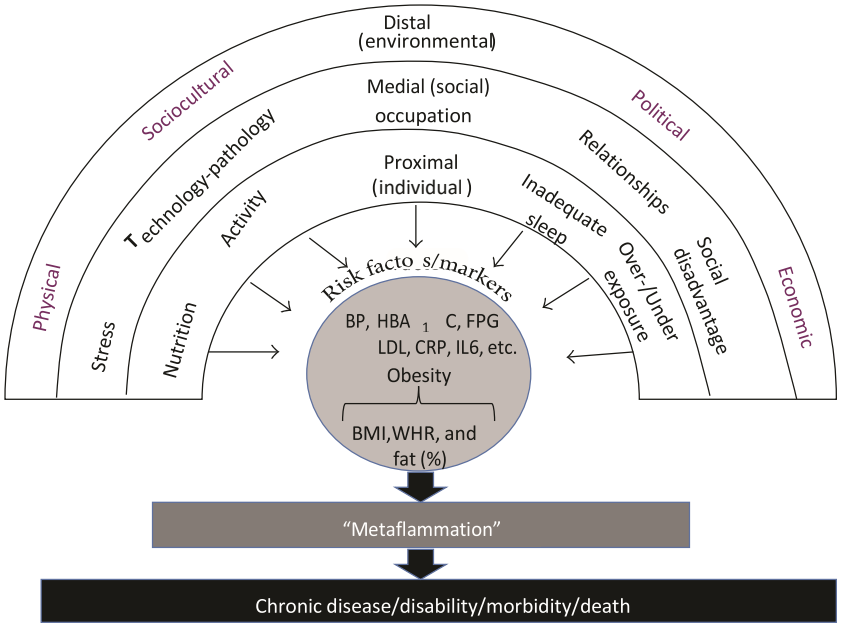


Figure 1: The link between "anthropogens" obesity, meta inflammation, and chronic disease

Unfortunately some of the most effective medications for disorders such as schizophrenia, depression, and certain forms of epilepsy increase hunger, weight gain, and cardio-metabolic risk Illicit drug use (and the accompanying health effects) appears to increase with increased urbanization, economic prosperity, and inequality.

Its more ambiguous outcomes make alcohol a more diverse problem. Some health and social benefits of moderate consumption are difficult to weigh up against the severe health and social disruption of excessive consumption, binge drinking, social and economic costs, and other chronic disease outcomes . Overuse of alcohol is also known to have deleterious effects on several forms of disease including cancers, although this literature is not expanded on here. While excessive alcohol intake is inflammatory, moderate intake has an anti-inflammatory effect (S. Ramsayet al, 2008)

1.3.12 Over- and Underexposure

While many lifestyle-related behaviors have a linear association with health (e.g., smoking and sleep), others have a “U” or “tick-shaped” relationship (e.g., physical activity, alcohol, and sleep). Exposure to ultraviolet radiation (UVR) from sunlight is a case in point. UVR is classified as a carcinogen and a major determinant for several forms of skin disorders. The incidence of melanoma, the most deadly form of skin cancers, has doubled in recent years, although this is less common than other forms of skin cancers and photo aging. Intermittent extreme exposures and sunburn, as well as chronic overexposure can have differing degrees of risk. Overexposure to heat and dryness (low humidity) is also thought to have adverse effects on the skin. Passive smoking is yet another form of overexposure with increased risks of chronic diseases like type 2 diabetes.

(S. L. Pagoto and B. M. Appelhans,, 2013)

At the other extremes, underexposure to sunlight can lead to deficiencies in vitamin D, thus increasing risks of heart disease , type 2 diabetes , and depression , as well as more well-known problems such as rickets . Underexposure to daylight can also have unhealthy consequences in seasonal affective disorders (SAD) suffered at extreme latitudes. (C. Clark, P. Ridker, M. Ommerborn et al., 2012)

1.3.13 Relationships

The quality of personal and social relationships is clearly linked to chronic disease outcomes including heart disease, stroke, some cancers, and allcause mortality.The pathways for this are, as yet, unclear and psychological mediators have not been proven, but inflammatory processes have been associated with poor social relations such as spousal ambivalence and isolation and can even stem back to maternal separation in childhood. People who have supportive close relationships have lower levels of systemic inflammation compared to people who have unsatisfactory relationships (S. L. Pagoto and B. M. Appelhans, 2013)

1.4 People with multiple chronic diseases

People with multiple chronic conditions experienced a great deal of suffering from physical and emotional symptoms (e.g, depression). Undesirable physical and emotional symptoms and

impaired physical functioning can directly prevent patients from carrying out normal daily activities, including tasks required to appropriately and successfully self-manage. In people with multiple chronic conditions, physical and emotional symptoms can compound and build off of each other, resulting in a larger negative effect on their daily lives. These symptoms are interdependent and symptoms of one condition can be aggravated by the symptoms, treatment, or medications of another condition. Some symptoms might overshadow others and reduce the patient's ability to manage his or her care. For example, many patients reported that their pain was one of the biggest emotionally unstable; lacked motivation or self-disc factors limiting their ability to self-manage effectively or experienced anxiety, sleep disturbances, lack

Depression featured prominently for people with of energy, worry, fear of activity, and fear for personal multiple chronic conditions. Many felt health and of death.(Schoenberg NEet al., 2009)

CHAPTER 2

Literature review

2.1 Effect of chronic disease-related symptoms and impairments on universal health outcomes in older adults

Mary E. Tinetti et al. worked on Effect of chronic disease-related symptoms and impairments on universal health outcomes in older adults and they found that the diseases were associated with the universal health outcomes ($p<0.001$) except osteoarthritis with death (both cohorts) and cognitive impairment with self-rated health (Health ABC). Symptoms/impairments accounted for ≥30% of each disease's effect on the universal health outcomes. In CHS, for example, HF, compared with no HF, was associated with one fewer (0.918) BADLs-IADL performed without difficulty; 27% of this effect was accounted for by HF symptoms, only 5% by EF. The hazard ratio for death with HF was 6.5 (95% CI, 4.7, 8.9) with 40% accounted for by EF and only 14% by HF symptoms.(Abbreviations: SE, Standard Error; HR, hazard ratio; CI, confidence intervals; BADL-IADL, basic and instrumental activities of daily living; CHS, Cardiovascular Health Study; EF, ejection fraction; HF, heart failure; UO, universal health outcome)

2.2 The impact of patients' chronic disease on family quality of life: an experience from 26 specialties

Catherine Jane Golics et al. researched on "the impact of patients' chronic disease on family quality of life: an experience from 26 specialties". Most family members were female (61%), the partner or spouse of the patient (56%), or the parent (22%). Their mean age was 56.1 years (range: 21–85 years) and the mean duration of the patient's disease was 8.9 years (range: 1 month to 60 years). Ten key themes of family quality of life were identified from interviews. The median number of themes reported by family members was six (range: 1–10). The key themes included: emotional impact (mentioned by 92% of subjects), daily activities (91%), family relationships (69%), sleep and health (67%), holidays (62%), involvement in medical care and support given to family members (61%), work and study (52%), financial impact (51%), social life (37%), and time planning (14%). Relationships between the themes were identified. This large scale multi-specialty study has demonstrated the significant, yet similar, impact that illness can have on the quality of life of patients' family members. Family quality of life is a previously neglected area of health care which needs to be addressed in order to provide appropriate support for the patient and the family unit. This large scale multi-specialty study has demonstrated the significant, yet similar,

impact that illness can have on the quality of life of patients' family members. Family quality of life is a previously neglected area of health care which needs to be addressed in order to provide appropriate support for the patient and the family unit.

2.3 Impact of chronic disease on quality of life among the elderly in the state of São Paulo, Brazil.

Margareth Guimarães Lima and Marilisa Berti de Azevedo Barros worked on Impact of chronic disease on quality of life among the elderly in the state of São Paulo, Brazil.Among the 1 958 elderly individuals (60 years of age or older), 13.6% reported not having any of the illnesses, whereas 45.7% presented three or more chronic conditions. The presence of any of the seven chronic illnesses studied had a significant effect on the scores of nearly all the SF-36® scales. HRQOL achieved lower scores when related to depression/ anxiety, osteoporosis, and stroke. The higher the number of diseases, the greater the negative effect on the SF-36® dimensions. The presence of three or more diseases significantly affected HRQOL in all areas. The bodily pain, general health, and vitality scales were the most affected by diseases. The study detected a high prevalence of chronic diseases among the elderly population and found that the degree of impact on HRQOL depends on the type of disease. The results highlight the importance of preventing and controlling chronic diseases in order to reduce the number of comorbidities and lessen their impact on HRQOL among the elderly. (HRQOL=health related quality of life)

2.4 Personality change associated with chronic diseases:

M. Jokela and C. Hakulinen Research on Personality change associated with chronic diseases After adjustment for age, they observed consistent decreases in extraversion [−0.25 T-scores per one disease; 95% confidence interval (CI) −0.40 to −0.10], emotional stability (−0.40, 95%−0.61 to −0.19), conscientiousness (−0.44, 95% CI −0.57 to −0.30) and openness to experience (−0.25, 95% CI −0.37 to −0.13) but not in agreeableness (−0.05, 95% CI −0.19 to 0.08) after the onset of chronic diseases. The onset of each additional chronic disease accelerated the average age-related personality change by 2.5 years in decreasing extraversion, 5.5 years in decreasing conscientiousness, and 1.6 years in decreasing openness to experience, and attenuated the increasing levels of emotional stability by 1.9 years. Co-morbid conditions were associated with larger changes than single diseases, suggesting a dose–response association between morbidity

and personality change. These results support the hypothesis that chronic diseases influence personality development in adulthood.

2.5 Individual and social determinants of multiple chronic disease behavioral risk factors among youth

Arsham Alamian and Gilles Paradis worked on youth people. Multivariate longitudinal Poisson models showed that social distal variables including parental/peer smoking and peer drinking (Log-likelihood ratio (LLR) = 187.86, degrees of freedom (DF) = 8, $p < .001$), as well as individual distal variables including low self-esteem (LLR = 76.94, DF = 4, $p < .001$) increased the rate of occurrence of multiple behavioral risk factors. Individual ultimate variables including age, sex, and anxiety (LLR = 9.34, DF = 3, $p < .05$), as well as social ultimate variables including family socioeconomic status, and family structure (LLR = 10.93, DF = 5, $p = .05$) contributed minimally to the rate of co-occurrence of behavioral risk factors. The results suggest targeting individual/social distal variables in prevention programs of multiple chronic disease behavioral risk factors among youth.

2.6 Chronic inflammatory diseases are stimulated by current lifestyle: how diet, stress levels and medication prevent our body from recovering

Margarethe M Bosma-den Boer, Marie-Louise van Wetten and Leo Pruimboom worked on chronic inflammatory diseases.Serhan and colleagues introduced the term “Resoleomics” in 1996 as the process of inflammation resolution. The major discovery of Serhan’s work is that onset to conclusion of an inflammation is a controlled process of the immune system (IS) and not simply the consequence of an extinguished or “exhausted” immune reaction. Resoleomics can be considered as the evolutionary mechanism of restoring homeostatic balances after injury, inflammation and infection. Under normal circumstances, Resoleomics should be able to conclude inflammatory responses. Considering the modern pandemic increase of chronic medical and psychiatric illnesses involving chronic inflammation, it has become apparent that Resoleomics is not fulfilling its potential resolving capacity.They suggest that recent drastic changes in lifestyle, including diet and psycho-emotional stress, are responsible for inflammation and for disturbances in Resoleomics. In addition, current interventions, like chronic use of antiinflammatory medication, suppress Resoleomics. These new lifestyle factors, including the use of medication,

should be considered health hazards, as they are capable of long-term or chronic activation of the central stress axes. The IS is designed to produce solutions for fast, intensive hazards, not to cope with long-term, chronic stimulation. The never-ending stress factors of recent lifestyle changes have pushed the IS and the central stress system into a constant state of activity, leading to chronically unresolved inflammation and increased vulnerability for chronic disease. Their hypothesis is that modern diet, increased psycho-emotional stress and chronic use of antiinflammatory medication disrupt the natural process of inflammation resolution ie Resoleomics**.**

2.7 Physical activity for the prevention and treatment of major chronic disease

David Nunan, Kamal R Mahtani, Nia Roberts and Carl Heneghan carry out an overview of Cochrane systematic reviews.They will search the Cochrane Database of Systematic Reviews for systematic reviews of randomised controlled trials that have a primary focus on disease-related outcomes.They will restrict reviews to those in selected major chronic diseases. Two authors will independently screen search outputs, select studies, extract data and assess the quality of included reviews using the assessment of multiple systematic reviews tool; all discrepancies will be resolved by discussing and reaching a consensus, or by arbitration with a third author. The data extraction form will summarise key information from each review, including details of the population(s) (for example, disease condition), the context (for example, prevention, treatment or management), the participants, the intervention(s), the comparison(s) and the outcomes. The primary outcomes of interest are the prevention of chronic disease and/or improved outcomes, in the treatment or management of chronic disease. These outcomes will be summarised and presented for individual chronic diseases (for example, any change in blood pressure in hypertension or glucose control in diabetes). Secondary outcomes of interest are to describe the structure and delivery of physical activity interventions across chronic disease conditions and adverse events associated with physical activity.They anticipate that Their results could inform researchers, guideline groups and policymakers of the most efficacious physical activity interventions in preventing and/or managing major chronic disease.

2.8 The complexity of the relationship between chronic pain and quality of life: a study of the general Norwegian population

In 2009, Astrid K. Wahl Æ Tone Rustøen Æ Berit Rokne Æ worked on Norwegian population. The aims of this study were to evaluate the relationship between chronic pain and global quality of life (GQOL) and to explore the effect of possible confounders, mediators, and moderators such as selected demographic variables, chronic illnesses, stress-related symptoms, fatigue, and subjective health of the relationship between chronic pain and GQOL.They used a cross-sectional design, including 1,893 respondents from a population of 4,000 of Norwegian citizens, aged 19–81 years, who were randomly drawn from the National Register by Statistics Norway in disorders 4th edition(FSS - Fatigue Severity Scale, GQOL -Global quality of life,HRQOL-Health-related quality of life,ICD-10- International classification of diseases related health problems 10th revision and ss,QOL-Quality of life,QOLS-N-The Quality Of Life Scale-Norwegian version)

2.9 Beyond Obesity and Lifestyle: A Review of 21st Century Chronic Disease Determinants

Garry Egger and John Dixon research on obesity affecting lifestyle.The obesity epidemic and associated chronic diseases are often attributed to modern lifestyles. The term “lifestyle” however, ignores broader social, economic, and environmental determinants while inadvertently “blaming the victim.” Seen more eclectically, lifestyle encompasses distal, medial, and proximal determinants. Hence any analysis of causality should include all these levels. The term “anthropogens,” or “. man-made environments, their by-products and/or lifestyles encouraged by these, some of which may be detrimental to human health” provides a monocausal focus for chronic diseases similar to that which the germ theory afforded infectious diseases. Anthropogens have in common an ability to induce a form of chronic, low-level systemic inflammation (“meta inflammation”). A review of anthropogens, based on inducers with a meta inflammatory association, is conducted here, together with the evidence for each in connection with a number of chronic diseases. This suggests a broader view of lifestyle and a focus on determinants, rather than obesity and lifestyle per se as the specific causes of modern chronic disease. Under such an analysis, obesity is seen more as “a canary in a mineshaft” signaling problems in the broader environment, suggesting that population obesity management should be focused more upstream if chronic diseases are to be better managed.

2.10 Personality Traits and Chronic Disease: Implications for Adult

Personali, Angelina R. Sutin, Alan B. Zonderman, Luigi Ferrucci research on a group people. Participants from the Baltimore Longitudinal Study of Aging (N = 2,008) completed the Revised NEO Personality Inventory and a standard medical interview at regularly scheduled visits; the Charlson Comorbidity Index, a weighted sum of 19 serious diseases, was derived from this interview. Using data from 6,685 visits, they tested whether personality increased risk of disease and whether disease was associated with personality change. Measured concurrently, neuroticism and conscientiousness were associated with greater disease burden. The impulsiveness facet of neuroticism was the strongest predictor of developing disease across the follow-up period: For every standard deviation increase in impulsiveness, there was a 26% increased risk of developing disease and a 36% increased risk of getting more ill. Personality traits changed only modestly with disease: As participants developed chronic illnesses, they became more conservative (decreased openness).This research indicates that personality traits confer risk for disease, in part, through health-risk behaviors. These traits, however, were relatively resistant to the effect of serious disease.

2.11 Vitamin D and Calcium Insufficiency-Related Chronic Diseases: an Emerging World-Wide Public Health Problem

Meinrad Peterlik, Steven Boonen, Heide S. Crossand Christel Lamberg-Allardt woeked onVitamin D and Calcium Insufficiency-Related Chronic Diseases Vitamin D and calcium insufficiencies are risk factors for multiple chronic diseases. Data from 46 recent studies from Europe, North America, South-East Asia and the South Pacific area clearly indicate that a low vitamin D status and inadequate calcium nutrition are highly prevalent in the general population (30–80%), affecting both genders. The extent of insufficiencies is particularly high in older populations, and in some geographical areas, also in children and in young women of child-bearing age, in ethnic minorities and immigrants, as well as in people of low socio-economic status. Enrichment of cereal grain products with vitamin D and calcium would be a viable approach to increase consumption and improve health outcomes in the general population worldwide.

2.12 Impact of health education on compliance among patients of chronic diseases in Al Qassim, Saudi Arabia

Sharaf and Fawzy used data from a clustered experimental study in selected primary health care (PHC) centers in Al-Qassim. The study was conducted during January to October 2009 to assess the impact of an enhanced health education program on smoking, diet and exercise. The intervention comprised refresher training of PHC centers' staff to improve communication skills and use of health education materials. Special health education sessions in the PHC centers were also organized with the help of medical students from Qassim University. Target population included patients of chronic diseases as well as patients visiting for other complaints. Baseline and end-line surveys were conducted to assess the impact of health education program on the prevalence of smoking, unhealthy diet and physical inactivity. The sample size was estimated to detect the impact of health education on these risk factors. Data were analyzed using SPSS (version 11.5) to conduct multivariate analysis to assess the impact of health education among chronic disease patients. At baseline, chronic disease patients had generally healthier diet and did more exercise than patients of other diseases. Among chronic disease patients, significant improvements in smoking, diet and exercise habits were observed at end-line survey compared to baseline. These changes persisted after controlling for age, sex, marital status and education. They conclude that health education for patients visiting the PHC centers for follow-up of chronic diseases will significantly improve compliance to doctor's advice regarding smoking, diet and exercise.

2.13 Chronic diseases influence major life changing decisions: a new domain in quality of life research

The purpose of this review is to identify knowledge about the influence of chronic disease on major life changing decisions (MLCDs). This review was carried out in three stages: identification of key search terms; selection of databases and searching parameters; and evaluation of references. Only two articles matched the main search term 'major life changing decisions'. No article reviewed or measured the influence of chronic disease on major life changing decisions. However, 76 articles and various sections of seven books were identified that provided insight into this area and these are reviewed in detail. This literature review has brought together previously scattered information on chronic disease impact on important patient life decisions. These include decisions

related to having children, marriage and divorce, job and career choice ,social life, holidays, travelling and education. Lifestyle decisions viewed by patients as major decisions are also documented. The influence of cancer on life decisions is discussed, as are affected life decisions of other family members. Very little information is available about the long-term impact of chronic disease on patients' lives and methodology to assess long-term impact is incomplete. This review points to a novel dimension to health-related outcome research, the impact of chronic disease on major life changing decisions, and its possible implication for patients' future health.

2.14 Obesity, Obesity Related Disease, and article Disability

Obesity increases the risk of many chronic diseases and contributes to functional disabilities. This study used data from the 2005 Korean National Health and Nutrition Examination Survey. A total of 5,462 persons (2,325 men, 3,137 women) aged 20 years and older were included in this analysis. Obesity was measured by body mass index and abdominal obesity was by waist circumference. Information on the presence of chronic diseases was based on the self-report of having been diagnosed by physicians. Functional disability was assessed using the Korean activities of daily living (K-ADL) and the Korean instrumental ADL (K-IADL) scales. The relationship between obesity and prevalence of obesity-related chronic diseases was higher in the older aged group (>60 years for men, >70 years for women) than in the younger aged group. Waist circumference was more related to a higher prevalence of chronic diseases than body mass index in the younger aged group. Abdominal obesity increased the risk (odds ratio, 2.59; 95% confidence interval, 1.19 to 5.66) of having limitation in activities of daily living for the younger aged men after adjustments for age, smoking status, presence of chronic diseases, and body mass index. Body mass index was not associated with disability in either men or women. The association between obesity and prevalence of chronic disease differed depending on age and sex. It is important to control abdominal obesity to prevent disability in younger aged men.

2.15 Physical Activity Transitions and Chronic Disease

Professor, Health and Human Performance, University of Tennessee at Chattanooga and Professor of Medicine, University of Tennessee College of Medicine, Chattanooga.The 20th century in the

United States (U.S.) has experienced a dramatic increase in life expectancy among adult men and women, an increase unprecedented in the history of this country. As a result, the pattern of disease and conditions most responsible for death in the U.S. shifted during the past century from infectious diseases and unintentional injuries to the current array of the leading causes of mortality dominated by the chronic diseases. During this same period, daily lifestyle dramatically shifted from a life full of active living to one of inactivity. The argument has been made that in the case of human beings, there has been little or no change in our genotype within the past 50 years. However, there have been major changes documented in the living environment among economically developed societies during this same time period. Through the collection of epidemiologic, clinical, and experimental findings, evidence exists to suggest that physical inactivity is associated with the onset of chronic diseases of our day. Trends in physical inactivity evident through the monitoring of transport, recreational, sport, and purposeful activity have demonstrated that the current lifestyle of the 21st century has contributed substantially to the chronic disease burden in the U.S. and elsewhere. By addressing the domains that influence physical activity behaviors including the environment (both physical and social/cultural), health systems access, and behavioral correlates of physical activity and inactivity, the current chronic disease crisis can potentially be addressed.

2.16 Lack of exercise is a major cause of chronic diseases

Frank W. Booth, Christian K. Roberts, and Matthew J. Layer worked on chronic diseases.Chronic diseases are major killers in the modern era. Physical inactivity is a primary cause of most chronic diseases. This study considers: activity and prevention definitions; historical evidence showing physical inactivity is detrimental to health and normal organ functional capacities; cause vs. treatment; physical activity and inactivity mechanisms differ; gene-environment interaction [including aerobic training adaptations, personalized medicine, and co-twin physical activity]; and specificity of adaptations to type of training. Next, physical activity/exercise is examined as primary prevention against 35 chronic conditions [Accelerated biological aging/premature death, low cardiorespiratory fitness (VO2max), sarcopenia, metabolic syndrome, obesity, insulin resistance, prediabetes, type 2 diabetes, non-alcoholic fatty liver disease, coronary heart disease, peripheral artery disease, hypertension, stroke, congestive heart failure, endothelial dysfunction, arterial dyslipidemia, hemostasis, deep vein thrombosis, cognitive dysfunction, depression and

anxiety, osteoporosis, osteoarthritis, balance, bone fracture/falls, rheumatoid arthritis, colon cancer, breast cancer, endometrial cancer, gestational diabetes, preeclampsia, polycystic ovary syndrome, erectile dysfunction, pain, diverticulitis, constipation, and gallbladder diseases]. This study ends with consideration of deterioration of risk factors in longer-term sedentary groups; clinical consequences of inactive childhood/adolescence; and public policy. In summary, the body rapidly mal adapts to insufficient physical activity, and if continued, results in substantial decreases in both total and quality years of life. Taken together, conclusive evidence exists that physical inactivity is one important cause of most chronic diseases. In addition, physical activity primarily prevents, or delays, chronic diseases, implying that chronic disease need not be an inevitable outcome during life.

2.17 Health-Related Quality of Life among Adults With Multiple Chronic Conditions in the United States

Han-Yang Chen, Dennis J. Baumgardner and Jessica P. Riceused data from the Behavioral Risk Factor Surveillance System (BRFSS) in 2007 (n = 430,912) to compare 4 HRQOL measures for people with any of 8 chronic conditions. They also assessed the frequency of self-reported physical and mental distress and the number of days activity was limited because of chronic conditions. They estimated prevalence and adjusted odds ratios (AORs) and 95% confidence intervals (CIs) by using survey logistic regression analyses. People with 3 or more chronic conditions had the highest risk of reporting fair or poor health compared with respondents with no chronic conditions (AOR, 8.7; 95% CI, 8.0-9.4). People with cardiovascular conditions or diabetes had higher risk of reporting poor HRQOL outcomes than those with other chronic conditions. The odds ratios for frequent physical distress were consistently higher than those for frequent mental distress and frequent activity limitations for all conditions. Strategies that help clinicians to manage their patients' chronic conditions may contribute to improved HRQOL among adults.

2.18 The Preventable Causes of Death in the United States: Comparative Risk Assessment of Dietary, Lifestyle, and Metabolic Risk Factors

Goodarz Danaei and his colleagues were worked on a group of people. Knowledge of the number of deaths caused by risk factors is needed for health policy and priority setting. Their aim was to estimate the mortality effects of the following 12 modifiable dietary, lifestyle, and metabolic risk

factors in the United States (US) using consistent and comparable methods: high blood glucose, low-density lipoprotein (LDL) cholesterol, and blood pressure; overweight–obesity; high dietary trans fatty acids and salt; low dietary polyunsaturated fatty acids, omega-3 fatty acids (seafood), and fruits and vegetables; physical inactivity; alcohol use; and tobacco smoking. They used data on risk factor exposures in the US population from nationally representative health surveys and disease-specific mortality statistics from the National Center for Health Statistics. We obtained the etiological effects of risk factors on disease-specific mortality, by age, from systematic reviews and meta-analyses of epidemiological studies that had adjusted (i) for major potential confounders, and (ii) where possible for regression dilution bias. They estimated the number of disease-specific deaths attributable to all non-optimal levels of each risk factor exposure, by age and sex. In 2005, tobacco smoking and high blood pressure were responsible for an estimated 467,000 (95% confidence interval [CI] 436,000–500,000) and 395,000 (372,000–414,000) deaths, accounting for about one in five or six deaths in US adults. Overweight–obesity (216,000; 188,000–237,000) and physical inactivity (191,000; 164,000–222,000) were each responsible for nearly 1 in 10 deaths. High dietary salt (102,000; 97,000–107,000), low dietary omega-3 fatty acids (84,000 ; 72,000–96,000), and high dietary trans fatty acids (82,000; 63,000–97,000) were the dietary risks with the largest mortality effects. Although 26,000 (23,000–40,000) deaths from ischemic heart disease, ischemic stroke, and diabetes were averted by current alcohol use, they were outweighed by 90,000 (88,000–94,000) deaths from other cardiovascular diseases, cancers, liver cirrhosis, pancreatitis, alcohol use disorders, road traffic and other injuries, and violence. Smoking and high blood pressure, which both have effective interventions, are responsible for the largest number of deaths in the US. Other dietary, lifestyle, and metabolic risk factors for chronic diseases also cause a substantial number of deaths in the US

2.19 Quality of Life and Affective Well-Being in Middle-Aged and Older People with Chronic Medical Illnesses

Anna Wikman, Jane Wardle and Andrew Steptoe worked on Middle-Aged and Older People with Chronic Medical Illnesses. There has been considerable research into the impact of chronic illness on health-related quality of life. However, few studies have assessed the impact of different chronic conditions on general quality of life (QOL). The objective of this study was to compare general (rather than health-related) QOL and affective well-being in middle aged and older people across

eight chronic illnesses. This population-based, cross-sectional study involved 11,523 individuals aged 50 years and older, taking part in wave 1 of the English Longitudinal Study of Ageing. General QOL was assessed using the CASP-19, happiness was evaluated using two items drawn from the GHQ-12, and depression was measured with the CES-D. Analysis of covariance and logistic regression, adjusting for age, gender and wealth, were performed. General QOL was most impaired in people with stroke (mean 37.56, CI 36.73–38.39), and least in those reporting cancer (mean 41.78, CI 41.12–42.44, respectively), compared with no illness (mean 44.15, CI 43.92–44.39). Stroke (mean 3.65, CI 3.58–3.73) was also associated with the greatest reduction in positive well-being whereas diabetes (mean 3.81, CI 3.76–3.86) and cancer were least affected (3.85, CI 3.79–3.91), compared with no illness (mean 3.97, CI 3.95–4.00). Depression was significantly elevated in all conditions, but was most common in chronic lung disease (OR 3.04, CI 2.56–3.61), with more modest elevations in those with osteoarthritis (OR 2.08, CI 1.84–2.34) or cancer (OR 2.07, CI 1.69–2.54). Multiple co-morbidities were associated with greater decrements in QOL and affective well-being. The presence of chronic illness is associated with impairments in broader aspects of QOL and affective wellbeing, but different conditions vary in their impact. Further longitudinal work is needed to establish the temporal links between chronic illness and impairments in QOL and affective well-being.

2.20 Healthy Lifestyles Reduce the Incidence of Chronic

Peter Elwood and his coworkers were worked on chronic diseases affecting healthy life style. Healthy lifestyles based on non-smoking, an acceptable BMI, a high fruit and vegetable intake, regular physical activity, and low/moderate alcohol intake, are associated with reductions in the incidence of certain chronic diseases, but to date there is limited evidence on cognitive function and dementia. In 1979 healthy behaviors were recorded on 2,235 men aged 45–59 years in Caerphilly, UK. During the following 30 years incident diabetes, vascular disease, cancer and death were recorded, and in 2004 cognitive state was determined. Men who followed four or five of the behaviors had an odds ratio (OR) and confidence intervals (CI) for diabetes, corrected for age and social class, of 0.50 (95% CI: 0.19, 1.31; P for trend with increasing numbers of healthy behaviors, 0.0005). For vascular disease the OR was 0.50 (95% CI: 0.30, 0.84; P for trend, 0.0005), and there was a delay in vascular disease events of up to 12 years. Cancer incidence was not significantly related to lifestyle although there was a reduction associated with non-smoking (OR:

0.65; 95% CI: 0.54, 0.79). All-cause mortality was reduced in men following four or five behaviors (OR 0.40; 95% CI: 0.24, 0.67; P for trend, 0.005). After further adjustment for NART, the OR for men following four or five healthy behaviors was 0.36 (95% CI: 0.12, 1.09; P for trend, 0.001) for cognitive impairment, and 0.36 (95% CI: 0.07, 1.99; P for trend, 0.02) for dementia. The adoption of a healthy lifestyle by men was low and appears not to have changed during the subsequent 30 years, with under 1% of men following all five of the behaviors and 5% reporting four or more in 1979 and in 2009.

CHAPTER 3

Chronic Diseases

3.1. ASTHMA

Asthma is a common long term inflammatory disease of the airways of the lungs. It is characterized by variable and recurring symptoms, reversible airflow, and bronchospasm. Symptoms include episodes of wheezing, coughing, chest tightness, and shortness of breath. These episodes may occur a few times a day or a few times per week. Depending on the person they may become worse at night or with exercise. Asthma is thought to be caused by a combination of genetic and environmental factors. Environmental factors include exposure to air pollution and allergens. Other potential triggers include medications such as aspirin and beta. Diagnosis is usually based on the pattern of symptoms, response to therapy over time, and spirometry. Asthma is classified according to the frequency of symptoms, forced expiratory volume in one second (FEV1), and peak expiratory flow rate. It may also be classified as atopic or non-atopic where atopy refers to a predisposition toward developing a type 1 hypersensitivity reaction. (Kumar et al, 2010)

There is no cure for asthma. Symptoms can be prevented by avoiding triggers, such as allergens and irritants, and by the use of inhaled corticosteroids. Long-acting beta agonists (LABA) or anti leukotriene agents may be used in addition to inhaled corticosteroids if asthma symptoms remain uncontrolled. Treatment of rapidly worsening symptoms is usually with an inhaled short-acting beta-2 agonist such as salbutamol and corticosteroids taken by mouth. In very severe cases, intravenous corticosteroids, magnesium sulfate, and hospitalization may be required. (NHLBI Guideline 2007, pp. 373–375)

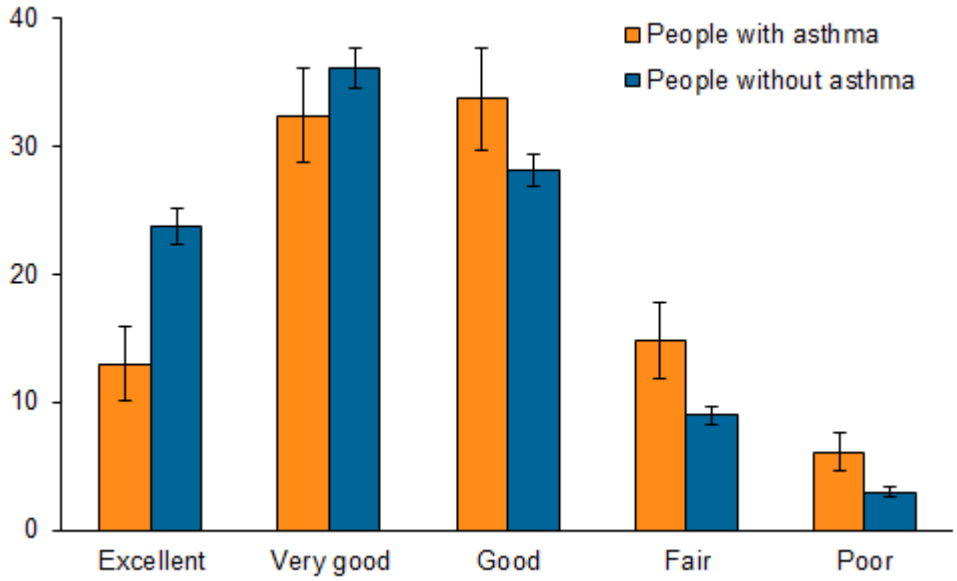
3.1.1. Asthma affect quality of life

Asthma is associated with poorer quality of life, with disease severity and the level of control both having an impact. Asthma may have varying degrees of impact on the physical, psychological and social wellbeing of people living with the condition. People with asthma are more likely to report a poor quality of life. This trend is more pronounced among people with severe or poorly controlled asthma (ACAM 2011, ACAM 2004).

Asthma is described as well-controlled when there are few symptoms and little reliever use (e.g. less than 3 days/week), and no night waking or limitation of activity due to asthma. A 2012 survey

of 2,686 Australians aged 16 years and older with current asthma found that asthma was not well-controlled in 45% of people with current asthma. More than half of this group were not using a preventer inhaler, or were using it infrequently. In 2011-12, self-assessed health was, on average, worse among people with asthma, compared with people without the condition. People with asthma were less likely to report excellent health, and more likely to report fair or poor health, than people without the condition (ABS 2014).

Self-reported health among people with or without asthma, 2011–12, per cent



Notes

- Age-standardized to the Australian population as at 30 June 2001.
- The thin vertical bars attached to the top of each column are 95% confidence intervals. We can be 95% confident that the true value is within the interval depicted.

Source: ABS 2014.

3.1.2. Lifestyle modification

Avoidance of triggers is a key component of improving control and preventing attacks. The most common triggers include allergens, smoke (tobacco and other), air pollution, non selective beta-blockers, and sulfite-containing foods. Cigarette smoking and second-hand smoke (passive smoke) may reduce the effectiveness of medications such as corticosteroids. Laws that limit smoking decrease the number of people hospitalized for asthma. Dust mite control measures,

including air filtration, chemicals to kill mites, vacuuming, mattress covers and others methods had no effect on asthma symptoms. Overall, exercise is beneficial in people with stable asthma. Yoga could provide small improvements in quality of life and symptoms in people with. (Been and Jasper Mar 28,2014).

3.2.1. Diabetes mellitus (DM)

Diabetes mellitus (DM), commonly referred to as diabetes, is a group of metabolic in which there are high blood sugar levels over a prolonged period. Symptoms of high blood sugar include frequent urination, increased thirst, and increased hunger. If left untreated, diabetes can cause many complications. Acute complications include diabetic ketoacidosis and non ketotic hyperosmolar coma. Serious long-term complications include cardiovascular disease, stroke, chronic kidney failure, foot ulcers, and damage to the eyes.("Diabetes Fact sheet N°312". WHO. October 2013)

Diabetes is due to either the pancreas not producing enough insulin or the cells of the body not responding properly to the insulin produced. There are three main types of diabetes mellitus:

- Type 1 DM results from the pancreas's failure to produce enough insulin. This form was previously referred to as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes". The cause is unknown.

- Type 2 DM begins with insulin resistance, a condition in which cells fail to respond to insulin properly. As the disease progresses a lack of insulin may also develop. This form was previously referred to as "non-insulin-dependent diabetes mellitus" (NIDDM) or "adult-onset diabetes". The primary cause is excessive body weight and not enough exercise.

Gestational diabetes, is the third main form and occurs when pregnant women without a previous history of diabetes develop high blood-sugar levels.("Diabetes Fact sheet N°312". WHO. October 2013. Archived from the original on 26 Aug 2013. Retrieved 25 March 2014)

3.2.2. Lifestyle

People with diabetes can benefit from education about the disease and treatment, good nutrition to achieve a normal body weight, and exercise, with the goal of keeping both short-term and long-term blood glucose levels within acceptable bounds. In addition, given the associated higher risks of cardiovascular disease, lifestyle modifications are recommended to control blood pressure. *(Adler AI et al.,2000)*

3.2.3. Signs and symptoms

Figure 2: Overview of the most significant symptoms of diabetes

The classic symptoms of untreated diabetes are weight loss, polyuria (increased urination), polydipsia (increased thirst), and polyphagia (increased hunger). Symptoms may develop rapidly (weeks or months) in type 1 DM, while they usually develop much more slowly and may be subtle or absent in type 2 DM.

Several other signs and symptoms can mark the onset of diabetes, although they are not specific to the disease. In addition to the known ones above, they include blurry vision, headache, fatigue,

slow healing of cuts, and itchy skin. Prolonged high blood glucose can cause glucose absorption in the lens of the eye, which leads to changes in its shape, resulting in vision changes. A number of skin rashes that can occur in diabetes are collectively known as diabetic dermadromes. (*Cooke DW, Plotnick L (November 2008)*

3.2.4. Complications

All forms of diabetes increase the risk of long-term complications. These typically develop after many years (10–20), but may be the first symptom in those who have otherwise not received a diagnosis before that time.

The major long-term complications relate to damage to blood vessels. Diabetes doubles the risk of cardiovascular disease and about 75% of deaths in diabetics are due to coronary artery disease. Other "macrovascular" diseases are stroke, andperipheral vascular disease.The primary complications of diabetes due to damage in small blood vessels include damage to the eyes, kidneys, and nerves. Damage to the eyes, known as diabetic retinopathy, is caused by damage to the blood vessels in the retina of the eye, and can result in gradual vision loss and blindness.] Damage to the kidneys, known as diabetic nephropathy, can lead to tissue scarring, urine protein loss, and eventually chronic kidney disease, sometimes requiring dialysis or kidney transplant. Damage to the nerves of the body, known as diabetic neuropathy, is the most common complication of diabetes. The symptoms can include numbness, tingling, pain, and altered pain sensation, which can lead to damage to the skin. Diabetes-related foot problems (such as diabetic foot ulcers) may occur, and can be difficult to treat, occasionally requiring amputation. Additionally, proximal diabetic neuropathy causes painful muscle wasting and weakness.There is a link between cognitive deficit and diabetes. Compared to those without diabetes, those with the disease have a 1.2 to 1.5-fold greater rate of decline in cognitive function.(Cukierman, 2005).

3.3.1. Hypertension (**HTN** or **HT**)

Hypertension (HTN or HT), also known as high blood pressure (HBP), is a long medical condition in which the blood pressure in the arteries is persistently elevated. High blood pressure usually does not cause symptoms. Long term high blood pressure, however, is a major risk factor

for coronary artery disease, stroke, heart failure, peripheral vascular disease, vision loss, and chronic kidney disease.**(***Mendis et al .,2011).*

High blood pressure is classified as either primary (essential) high blood pressure or secondary high blood pressure. About 90–95% of cases are primary, defined as high blood pressure due to nonspecific lifestyle and genetic factors. Lifestyle factors that increase the risk include excess salt, excess body weight, smoking, and alcohol. The remaining 5–10% of cases are categorized as secondary high blood pressure, defined as high blood pressure due to an identifiable cause, such as chronic kidney disease, narrowing of the kidney arteries, an endocrine disorder, or the use of birth control pills.(*Poulter et al., 2015).*

Blood pressure is expressed by two measurements, the systolic and diastolic pressures, which are the maximum and minimum pressures, respectively. Normal blood pressure at rest is within the range of 100–140 millimeters mercury (mmHg) systolic and 60–90 mmHg diastolic. High blood pressure is present if the resting blood pressure is persistently at or above 140/90 mmHg for most adults. Different numbers apply to children. Ambulatory blood pressure monitoring over a 24-hour period appears more accurate than office best blood pressure measurement. Lifestyle changes and medications can lower blood pressure and decrease the risk of health complications. Lifestyle changes include weight loss, decreased salt intake, physical exercise, and a healthy diet. If lifestyle changes are not sufficient blood pressure medications are used.Up to three medications controls blood pressure in 90% of people. The treatment of moderately high arterial blood pressure (defined as >160/100 mmHg) with medications is associated with an improved life expectancy. The effect of treatment of blood pressure between 140/90 mmHg and 160/100 mmHg is less clear, with some reviews finding benefit· and others not finding benefit. High blood pressure affects between 16 and 37% of the population globally. n 2010 hypertension was believed to have been a factor in 18% (9.4 million) deaths.(*Campbell et al., 2015).*

3.3.2. Sign and Symptoms

Hypertension is rarely accompanied by any symptoms, and its identification is usually through screening, or when seeking healthcare for an unrelated problem. Some with high blood pressure report headaches (particularly at the back of the head and in the morning), as well as lightheadedness, vertigo, tinnitus (buzzing or hissing in the ears), altered vision or fainting

episodes. These symptoms, however, might be related to associated anxiety rather than the high blood pressure itself. On physical examination, hypertension may be associated with the presence of changes in the optic fundus seen by ophthalmoscopy. The severity of the changes typical of hypertensive retinopathy is graded from I–IV; grades I and II may be difficult to differentiate. The severity of the retinopathy correlates roughly with the duration and/or the severity of the hypertension.(*Fisher ND, Williams GH ,2005).*

3.3.3. Lifestyle modifications

The first line of treatment for hypertension is lifestyle changes, including dietary changes, physical exercise, and weight loss. Though these have all been recommended in scientific advisories, a review by Cochrane found no evidence for effects of weight loss diets on death or long-term complications and adverse events in persons with hypertension. The review did find a decrease in blood pressure. Their potential effectiveness is similar to and at times exceeds a single medication. If hypertension is high enough to justify immediate use of medications, lifestyle changes are still recommended in conjunction with medication. Dietary changes shown to reduce blood pressure include diets with low sodium ,the DASH diet, vegetarian diets and high potassium diets. Physical exercise regimens which are shown to reduce blood pressure include isometric resistance exercise, aerobic exercise, resistance exercise, and device-guided breathing.

Stress reduction techniques such as biofeedback or transcendental meditation may be considered as an add-on to other treatments to reduce hypertension, but do not have evidence for preventing cardiovascular disease on their own.(*Dickinson et al., 2008).*

3.4.1. Osteoporosis

Osteoporosis is a disease where decreased bone strength increases the risk of a broken bone. It is the most common reason for a broken bone among the elderly. Bones that commonly break include the back bones, the bones of theforearm, and the hip. Until a broken bone occurs there are typically no symptoms. Bones may weaken to such a degree that a break may occur with minor stress or spontaneously. Chronic pain and a decreased ability to carry out normal activities may occur following a broken bone. (*"Handout on Health: Osteoporosis". August 2014. Retrieved 16 May 2015.)*

Osteoporosis may be due to lower than normal peak bone mass and greater than normal bone loss. Bone loss increases after menopause due to lower levels of estrogen. Osteoporosis may also occur due to a number of diseases or treatmentsincluding alcoholism, anorexia, hyperthyroidism, surgical removal of the ovaries, and kidney disease. Certain medications increase the rate of bone loss including some ant seizure medications, chemotherapy, proton pump inhibitors, selective serotonin reuptake inhibitors and steroids. Not enough exercise and smoking are also risk factors. Osteoporosis is defined as a bone density of 2.5 standard deviations below that of a young adult. This is typically measured by dual-energy X-ray absorptiometry at the hip.(WHO,2000)

Prevention of osteoporosis includes a proper diet during childhood and efforts to avoid medications that cause the condition. Efforts to prevent broken bones in those with osteoporosis include a good diet, exercise, and fall prevention. Lifestyle changes such as stopping smoking and not drinking alcohol may help. Medication of the bisphosphonate type are useful in those with previous broken bones due to osteoporosis. In those with osteoporosis but no previous broken bones they are less effective. A number of other medications may also be useful.(Nelson et al 2010)

Osteoporosis becomes more common with age. About 15% of white people in their 50s and 70% of those over 80 are affected. It is more common in women than men. In the developed world, depending on the method of diagnosis, 2% to 8% of males and 9% to 38% of females are affected. Rates of disease in the developing world are unclear. About 22 million women and 5.5 million men in the European Union had osteoporosis in 2010. In the United States in 2010 about eight million women and one to two million men had osteoporosis. White and Asian people are at greater risk. The word osteoporosis is from the Greek terms for "porous bones.(King et al., 2011).

Osteoporosis itself has no symptoms; its main consequence is the increased risk of bone fractures. Osteoporotic fractures occur in situations where healthy people would not normally break a bone; they are therefore regarded as fragility fractures. Typical fragility fractures occur in the vertebral column, rib, hip and wrist.

3.4.2. Lifestyle

Weight-bearing endurance exercise and/or exercises to strengthen muscles improve bone strength in those with osteoporosis. Aerobics, weight bearing, and resistance exercises all maintain or

increase BMD in postmenopausal women. Fall prevention can help prevent osteoporosis complications. There is some evidence for specifically among those who are in care homes. (*Kasturi GC, Adler RA ,2011).*

Chapter 4

Method

Data collection

We chose to examine the qualitative literature, as this type of research is most likely to provide patients' perspectives with "conceptual depth about the patient experience."20 Conversely, the quantitative literature on self-management focused largely on the effectiveness of various programs designed to promote self- management. There were several stages to the review, including development of the search strategy, application of inclusion and exclusion criteria, quality appraisal, and synthesis of the findings. On March30, 2015, we searched MEDLINE, PUBMED CENTRAL, BIOMED CENTRAL,EMBASE using relevant key words including chronic disease, comorbidity, multimorbidity, multiple chronic conditions, self-care, self-management, perspective, and perception. In addition, we did a hand search of references and searched the International Research Community on Multimorbidity.(University of Sherbrooke; 2012)

Study period

Data collection was carried out from October, 2015 to March, 2016. Information on sociodemographic characteristics, lifestyle, and self-reported medically-diagnosed chronic diseases was obtained from a few of journel.

Independable variable

Socio-demographic variables included sex, age, marital status (single, married, widow/widower/divorcee), educational level (no formal education, primary, secondary, tertiary), current work status (working/not working) .

Synthesis

Important themes raised by people living with multiple chronic conditions related to their ability to selfmanage included living with undesirable physical and emotional symptoms, with pain and depression highlighted. Issues with conflicting knowledge, access to care, and communication with health care providers were raised. The use of cognitive strategies, including reframing, prioritizing, and changing beliefs, was reported to improve people's ability to self-manage their multiple chronic conditions.

Chapter 5

Result and Discussion

Table 1: Percentage of chronic diseases affecting lifestyle

Data Source	Hypertension	Back pain	Arhritis	Depression/Anxety	Obessity	Diabetes Mellitus	Stroke	Osteoprpsis	Asthma	Heart disease
Lima M. G. et al., 2009. n = 1958	51%	30.10 %	27.20 %	24.50 %	–	15.40%	4.50%	14.50%	–	–
Chan et al., 2015. n = 18184	15%	–	5.50 %	–	–	9.30%	–	–	6.30%	3.10 %
Chan H. Y. et al., 2007. n = 430912	28%	–	27%	–	26%	48%	17 %	–	15%	53%
Zhlheng. Z. et al., 2014.	29.50 %	–	16.20 %	14.70 %	–	9.40%	5.60%	12.20%	–	14.60 %
Rothrock N. E. et al., 2010	41%	17%	16%	26%	–	–	–	–	16%	–
Jokela M. et al., 2014	55%	–	–	–	–	18.50%	10.80 %	–	–	21.40 %
Wikmanet al., 2011	–	–	11.70 %	–	–	7.40%	4.40%	18.90%	11.70 %	12.30 %

Table 2 Distribution of socio-demographic characteristics, lifestyle factors, and self-reported medically-diagnosed chronic diseases

Data Source	Age	Gender		Education	Marital status
		Male	Female		
Jayasinghe et al., 2016	60 years or older	32.80%	67.20%	High school 46%, Diploma 54%	–
Zhiheng Z. et al.,2014	60 - 75	24.60%	21.80%	Illiterate 19%, Primary 19.1%, Secondary 24.7%, college/University 26.2%	Married
Lima M G et al., 2009	60 - 80	42.70%	57.20%		Married
Alamian et al., 2012	10 − 11	–	–		Unmarried
Lima et al., n=3220	34 − 54	–	–	Primary 65%, Secondary 27.5%,Higher 7.5%	Married
Jokela M. et al., 2014	25 − 33	–	–		
Wikmanet al., 2011	50 − 80	45.40%	54.60%		Married
Rothrock N. E. et al., 2010		47.96%	52.14%	<High school 2.61% > High school 23.2 % College 38.65%	
Lv et al., 2011	18 − 64	–	–	Junior school or below 25.6% High school 23.2% College or university 51.3%	Married
Astrial K. Wahl, 2009	18 − 60	48%	52%		Married
Golics et al., 2013		39%	61%	less than school 11% Secondary school 34% College or university 17%	Married 56% Child 15%
Chan H. Y. et al., 2007. n = 430912	18 − 64	49%	51%	<High school 12% > High school 239 %	Married 61% Single 18%

Table 3 Risk factos affecting lifestyle

Data Source	Drinking alcohol	Smoking	Diet	Insufficient Physical activity	Tobacco use
Lima M G et al., 2009	11%	–	–	–	7%
Jayasinghe et al., 2016	7%	12%	83%	63%	–
Narishin et al., 2012	86%	37%	–	–	–
Chan H. Y. et al., 2007.	5%	19%	80%	91%	–
Alamien et al., 2012	28%	26%		50%	10%

The present study found that the most prevalent chronic diseases had a significant influence on the quality of life of the elderly individual. The magnitude of the impact and the abilities most affected varied according to the disease. It was also observed that the greater number of comorbidities reported by an individual, the more acute the negative effect on HRQOL. In this study, the prevalence of chronic diseases was greater than what has been recorded . The present study also showed that 45.7% had three or more chronic conditions, the higher prevalence of disease is probably due to better access to health services and a greater awareness and understanding of symptoms. The most prevalent disease in this study was hypertension, followed by back pain, arthritis/rheumatism/arthrosis, and depression/anxiety.(table 1)

In table 2 socio demographic factor are discussied.It was showed that how sociodemografic factor affect the quality of life.

Chapter 6

Conclusion

There is little specific information in the literature about the impact of chronic diseases on major life changing decisions. There is no defined measure to capture this vital information. Up to now the assessment of the long-term impacts of a disease has been based on the repeated evaluation of its current impacts on patients' lives, thereby, potentially missing major aspects of the impact. Important specific questions remain unanswered: what is the definition of a 'major life changing decision'? How do patients take their life changing decisions while suffering from long-term health problems? To what extent do chronic diseases influence major life changing decisions? What influential factors are involved in life changing decision-making? How capable are patients to take appropriate life changing decisions? There is a need for strategies for healthcare providers to assist patients to take appropriate decisions and allow them to maximize their control over their lives.

The lack of knowledge in this area revealed by this review suggests new areas for research. In addition to both follow-up and prospective research techniques, exploratory retrospective research methodology is essential to understand the magnitude of the influence of chronic diseases on life changing decisions. This review has highlighted a novel dimension to health-related outcome research, the new domain of 'major life changing decisions'. Encompassing this concept may make health-related quality of life estimation closer to reality. There is a need for multidisciplinary research to capture fundamental information for further conceptualization, to determine the definition of health-associated major life changing decisions, to create a suitable instrument for its measurement, to assess the feasibility of this new concept as a new measurable dimension and to assess its possible implications on patients' lives and on healthcare resources.

There are many complexities to the delivery of care for people with multiple chronic conditions. The burden of suffering is great, as is the increasing burden to the health care system and society as a whole. This review provides a unique view into patients' perspectives of living with multiple chronic conditions, which are clearly linked to functional challenges and are not disease specific. Future policy and programming in self- management support should be better aligned with patients' perspectives of living with multiple chronic conditions and this might be achieved by ensuring a more patient-centred approach is adopted by providers and health service organizations

Chapter 7

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