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Review Article

Understanding chronic disease risk factors and multimorbidity

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ABSTRACT

Chronic diseases and multimorbidity are becoming an alarming public health problem of this century. Multimorbidity is defined as "having two or more chronic diseases at one time in a person" and a result of complex biological, psychological and social phenomenon. The risks of multimorbidity can be divided into modifiable (behavioral factors) and non-modifiable (age, genetics) factors. Socioeconomic disadvantage and environmental factors can also influence on causation of it. Strategies aligned with primary, secondary and tertiary stages of prevention can help in the prevention of multimorbidity and reduction in complications among diseased. Multimorbidity requires multidimensional programs implemented through multiple stakeholder and policymaker's collaboration.

Keywords: Multimorbidity, Chronic diseases, Modifiable risk factors, Prevention

INTRODUCTION

Multimorbidity is emerging as a prominent public health problem of this century and defined as the presence of any type of chronic disease with another acute or chronic health condition(s) and/or existence/interaction of complex biological, social and psychological risk factors or simply (a person) having two or more chronic health conditions or diseases at one time.[1-3] Multimorbidity usually considered a health problem of the elderly; however, younger populations can also suffer from it.[2] Having multiple health issues can exert a negative impact on the quality of life, physical, mental and socioeconomic circumstances among individuals and communities.[1-3]

ETIOLOGICAL FACTORS

Causes of multimorbidity are identical to the etiological factors related to chronic diseases. Population dynamics, cultural, socio-economic and political environment have health impacts.[3-5] Modifiable risk factors that can cause multimorbidity are mostly behavioral ones such as the preference of unhealthy dietary options, not being physically active, sedentary lifestyle, tobacco, alcohol, and addiction drug use, etc. Genetic factors and aging can be considered as non-modifiable risk factors. The above-mentioned risks can lead to health situations such as high blood pressure, body weight, waist circumference, abnormal blood glucose, and lipid, etc. that can eventually lead to one or more types of chronic diseases. Increased body weight (overweight and obesity) which like multimorbidity, itself is associated with complex social, environmental, and hereditary factors alone can predispose to many diseases such as heart disease, diabetes, certain cancers, and osteoarthritis.[6] Also, smoking and tobacco use can lead to chronic conditions such as cancers, stroke, heart disease, peripheral vascular disease, and chronic respiratory diseases and others. The epidemiological transition which is an increase in incidence and prevalence of non-communicable and

decline in infectious diseases during the past century has contributed to multimorbidity.[7] The past century has experienced advancements in healthcare and research, mass immunizations, improved food safety, and sanitation all of which led to population growth and an increase in the number of people within older age groups.[7] Barnett et.al examine that among one-third of the Scottish population, around 42% suffered from 1 or more chronic health condition(s) while ~23% had multimorbidity. Moreover, the number of chronic diseases and the prevalence of multimorbidity increased with the age of the populace. Socio-economic disadvantage also found to be responsible for having more physical and mental health issues.[1] Cassell et al found in their retrospective cohort study that over 27% of participants suffered from multimorbidity with most common conditions being hypertension, chronic pain, and mental health issues (anxiety, depression). Furthermore, participants of increased age, low socioeconomic status, and female gender had a higher prevalence of multimorbidity than their counterpart groups respectively.[8] Al-Thani et al studied the role of several behavioral and intermediate-risk factors in the causation of diabetes. They found in their cross-sectional population-based study that diabetes was significantly higher among respondents with the following characteristics: older age group, currently or previously married, less education, generalized or abdominal obesity, hypertension, high blood cholesterol and family history of diabetes compared to their counterpart groups.[9] This study indicates that health risks and chronic diseases can be interrelated through complex underlying mechanisms.

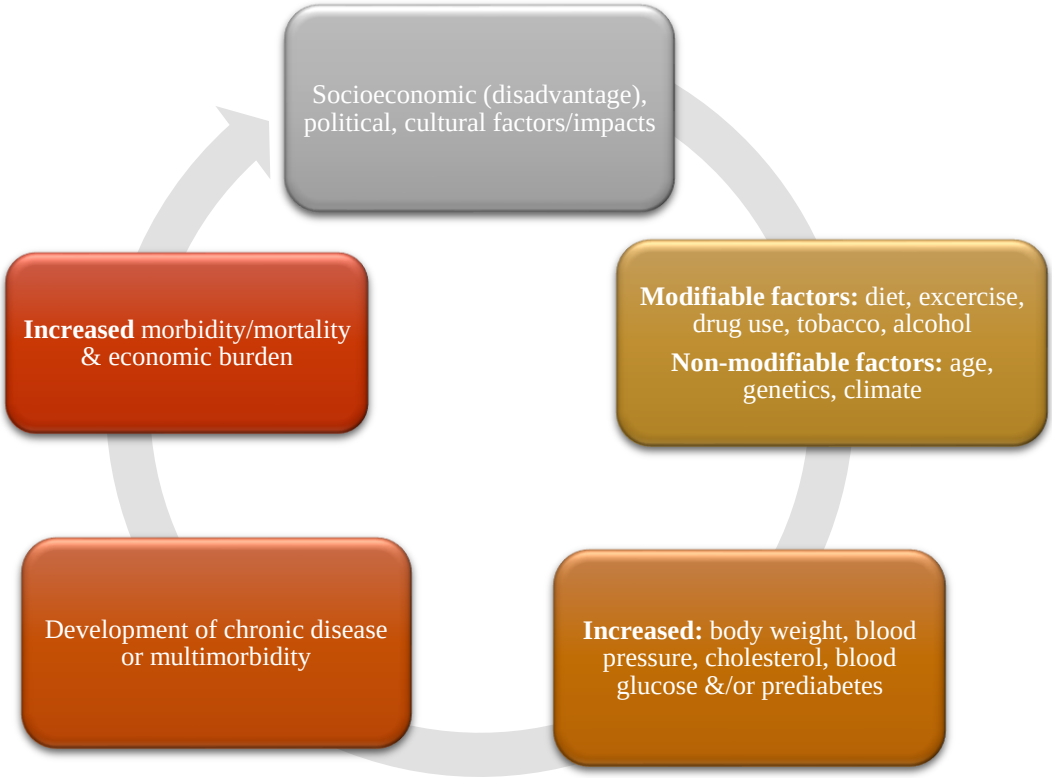

Figure 1: Cycle of multimorbidity.

Some examples of diseases that can be listed under multimorbidity include coronary artery disease (heart failure, atrial fibrillation, hypertension), diabetes or metabolic syndrome, COPD, cancers, cerebrovascular disease (stroke, transient ischemic attack), neurological or psychological diseases (dementia, anxiety, depression), pain disorder, joint problems.[1,8] These conditions can directly or indirectly be associated with modifiable and/or non-modifiable health risk factors as shown in Figure 1.

MANAGING MULTIMORBIDITY

Managing multimorbidity is challenging and requires multidimensional approaches. Since the health conditions can vary, a patient-centered approach is favorable in long-term improvement in the quality of life.[10] Management can be categorized by different stages (primary, secondary & tertiary) of preventive care as these relate to the extent or progression of the disease(s) among sufferers.[10,11] Figure 2 shows the description of each stage along with several approaches that can be utilized to prevent disease, slow progression and/or reduce complications. At the primary prevention stage, the aim is to avoid the onset of disease or multimorbidity by behavioral modification, education, and counseling. Secondary preventive approaches allow healthcare systems to detect disease or subclinical health problems earlier and treat them accordingly. Finally, at the tertiary

stage, the aim is to reduce complications associated with the disease and to improve the quality of life of an individual by appropriate treatment and rehabilitation. Mental health support can be applied at each level of prevention.[11,12]

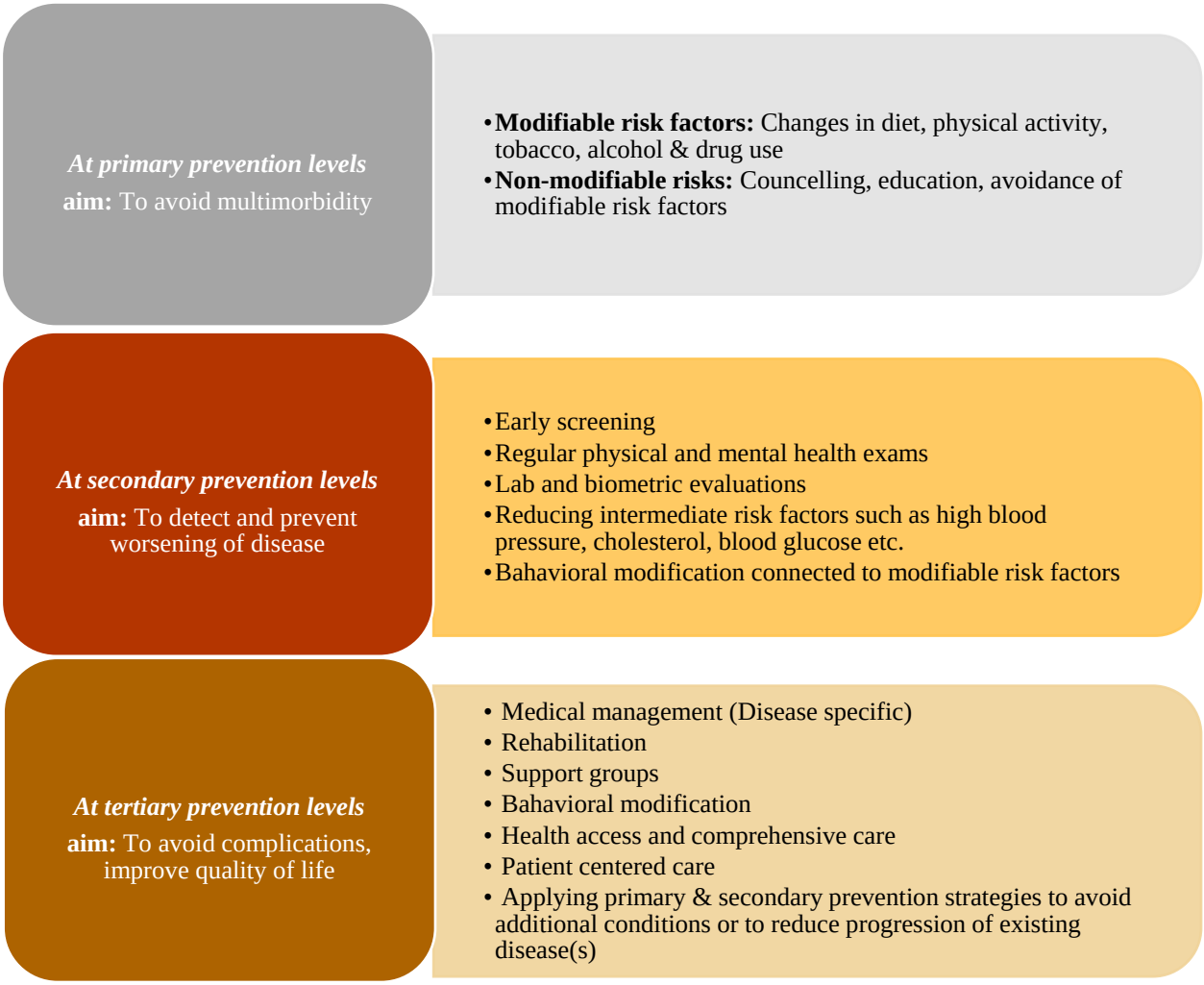

Figure 2: The stages in prevention of disease.

CONCLUSION

Chronic diseases and multimorbidity both are interrelated and becoming an alarming public health problem of our era. Collaborative efforts are needed among multidisciplinary stakeholders and policymakers to address this issue. One example of such efforts could be the implementation of youth or school-based programs specifically focusing on the modifiable risk factors assuming that behavioral modification at an earlier age can have a persistent and lifelong impact. Furthermore, implementation of policies relating to the healthier community and environment are essential some examples of which are: soda tax, tobacco tax, healthier food choices at schools and restaurants, easily accessible parks, better and low-cost healthcare access, etc. Enhanced surveillance and mixed-method approaches can be useful in tracking and designing studies aimed to track, assess and manage multimorbidity and related risk factors.[13-15]

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