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Review Article

GERIATRIC DEPRESSION IN INDIA: A REVIEW ANALYSIS

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A R T I C L E I N F O

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A B S T R A C T

The United Nations General Assembly declared 2021–2030 the Decade of Healthy Ageing. India is the second most populated country in the world after China. As on 1 January 2022, the population of India was estimated to be 1,408,044,253 people. In that, elderly persons (60 years and above) constitute 8.6% of the total population. Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%. It is estimated the prevalence of depression among Indian elderly population as 34.4%. Geriatric depression is a mental and emotional disorder affecting older adults. Feelings of sadness and occasional "blue" moods are normal. However, lasting depression is not a typical part of aging. The aim of the study is to discuss the risk factors for geriatric depression on the background of Indian scenario. For the study, data were collected from PubMed, Scopus, Web of Science, Embase, PsycINFO, IndMed, and Google Scholar s along with books. This study included the articles published after A.D.1990. The main risk factors include medical conditions, such as stroke or cancer, Genetic risk, Stress, Sleep problems Social isolation and loneliness, Dementia, Diabetes, Lack of exercise or physical activity, Functional limitations that make engaging in activities of daily living difficult and Addiction and/or alcoholism —included in Substance-Induced Depressive Disorder. It is concluded that Geriatric Depression is one of the problems that old age face is commonly in India as the other nations and it is the peak time to understand and make appropriate decision to provide treatment and make their old age safe.

INTRODUCTION

India is the second most populated country in the world after China. Today almost 18% (1,408,384,228 people) of world's population live in India. India is projected to be the world's most populous country by 2023. During 2022 India population is projected to increase by 17,727,277 people and reach 1,425,771,530 in the beginning of 2023.As of 1 January 2022, the population of India was estimated to be 1,408,044,253 people.(Indian Population). In India, elderly persons (60 years and above) constitute 8.6% of the total population.

Ageing describes the process of growing old. Aging is a gradual, continuous process of natural change that begins in early adulthood. Aging is associated with changes in dynamic biological, physiological, environmental, psychological, behavioral, and social processes. Some age-related changes are benign, such as graying hair. Others result in declines in function of the senses and activities of daily life and increased susceptibility to and frequency of disease, frailty, or disability. In fact, advancing age is the major risk factor for a number of chronic diseases in humans (National Institute of ageing USA).During early middle age, many bodily functions begin to gradually decline. Describing sub-groups in the 65+ population enables a more accurate portrayal of significant life changes. Defining cut off points for each "age" has been challenging (Warner, D.F, H. & Brown, T.H.,2011) and remains without consensus with researchers suggesting different cut offs. (Cohen-Mansfield J, Shmotkin D, Blumstein Z, Shorek A, Eyal N, Hazan H, World Health Organization). The following is a starting point for considering the span of old age. Between 60 – 75 years = young old. Between 75 – 85 years = old. Those 85+ are considered the frail older population. The divisions confirm older people to be a varied group requiring consideration according to their needs. In 2001 policy from the United Kingdom in the form of the National Service Framework for Older People categorized the three cohorts (Department of Health, 2001). Broadlyas: Entering old age: People from 50 to the official retirement age who has completed their career. They are supposed active and independent and many remain so into late old age. Goals of health and social care policy: To promote and extend healthy active life, and compress morbidity (the period spent in frailty and dependency before death). Transitional phase: A group in transition between healthy, active life and frailty, often occurring in the seventh or eighth decades, but can occur at any stage. Goals of health and social care policy: To identify emerging problems pre-crisis, ensuring effective response that prevents crisis and reduces long-term dependency. Frail older people: A

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vulnerable group due to health problems e.g. stroke or dementia, social care needs or a combination of both. Frailty often experienced in late old age, so services people should be designed with their needs in mind. Goals of health and social care policy: To anticipate and respond to problems, recognizing the complex interaction of physical, mental and social care factors which can compromise independence and quality of life.

People worldwide are living longer. Today most people can expect to live into their sixties and beyond. Every country in the world is experiencing growth in both the size and the proportion of older persons in the population. The elderly population is defined as people aged 65 and over. Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%. And in 2050, 80% of older people will be living in low- and middle-income countries. So we can expect India in this particular group. By 2030, 1 in 6 people in the world will be aged 60 years or over. At this time the share of the population aged 60 years and over will increase from 1 billion in 2020 to 1.4 billion. By 2050, the world's populations of people aged 60 years and older will double (2.1 billion). The number of persons aged 80 years or older is expected to triple between 2020 and 2050 to reach 426 million. This shift in distribution of a country's population towards older ages – known as population ageing – started in high-income countriesal ready. In recognition of this increase, 1999 was designated by the United Nations as The Year of the Older Person. (World Health Organization).

Depression, otherwise known as major depressive disorder or clinical depression is a common and serious mood disorder. Those who suffer from depression experience persistent feelings of sadness and hopelessness and lose interest in activities they once enjoyed. Aside from the emotional problems caused by depression, individuals can also present with a physical symptom such as chronic pain or digestive issues. To be diagnosed with depression, symptoms must be present for at least two weeks(*Diagnostic and statistical manual of mental disorders DSM)*).The DSM-5 outlines the following criterion to make a diagnosis of depression. The individual must be experiencing five or more symptoms during the same 2-week period and at least one of the symptoms should be either (1) depressed mood or (2) loss of interest or pleasure. Depressed mood most of the day, nearly every day, Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day, Significant weight loss when not dieting or weight gain, or decrease or increase in appetite nearly every day, A slowing down of thought and a reduction of physical movement (observable by others, not merely subjective feelings of restlessness or being slowed down),Fatigue or loss of energy nearly every day, Feelings of worthlessness or excessive or inappropriate guilt nearly every day, Diminished ability to think or concentrate, or indecisiveness, nearly every day, Recurrent thoughts of death, recurrent suicidalideation without a specific plan, or a suicide attempt or a specific plan for committing suicide. To receive a diagnosis of depression, these symptoms must cause the individual clinically significant distress or impairment in social, occupational, or other important areas of functioning. The symptoms must also not be a result of substance abuse or another medical condition (DSM).Depression is a common illness worldwide, with an estimated 3.8% of the population affected, including 5.0% among adults and 5.7% among adults older than 60 years. Approximately 280 million people in the world have depression. At its worst, depression can lead to suicide. Over 700 000 people die due to suicide every year. More women are affected by depression than men (World Health Organization).Geriatric depression is a mental and emotional disorder affecting older adults. Feelings of sadness and occasional "blue" moods are normal. However, lasting depression is not a typical part of aging. Older adults are more likely to suffer from Subsyndromal depression. This type of depression doesn't always meet the full criteria for major depression. However, it can lead to major depression if left untreated. Depression in older adults can reduce quality of life, and it increases risk of suicide In India, elderly persons (60 years and above) constitute 8.6% of the total population (India Census 2011), which is projected to reach 19% by 2050. The number of older people is growing in India. As of 2019; over 139 million people living in India are aged over 60 which is over 10% of the country's total population. The proportion of older people is expected to almost double to 19.5% in 2050 with 319 million people aged over 60. This means that every 1 in 5 Indians is likely to be a senior citizen. Population aged 60 and above (total) in 2019 was 139,610,000 and in 2050 it will be 319,918,000.An ageing population increases the demand for health services. Older people suffer from both degenerative and communicable diseases due to the ageing of the body's immune system. Psychological problems also affect elderly very much. Thus, depression among elderly population is likely to be a major cause of disease burden in the future. The Department of Senior Citizens under the Ministry of Social Justice and Empowerment implements programmes and services for senior citizens. The *National Policy on Senior Citizens* aims to encourage healthcare, safety and security, safe housing, and protected welfare.

METHODS

PubMed, Scopus, Web of Science, Embase, PsycINFO, IndMed, and Google Scholar were searched along with books to find out information about depression among elderly population. This study included the articles published after A.D.1990.

DISCUSSION

India is the second most populated country in the world after China. In India, elderly persons (60 years and above) constitute 8.6% of the total population. Depression, otherwise known as major depressive disorder or clinical depression is a common and serious mood disorder). Depression is a common illness worldwide, with an estimatedof5.7% among adults older than 60 years. So, it is very important to consider geriatric depression.

Depression is a true and treatable medical condition, not a normal part of aging. However older adults are at an increased risk for experiencing depression. Older adults are at increased risk. We know that about 80% of older adults have at least one chronic health condition, and 50% have two or more. Depression is more common in people who also have other illnesses (such as heart disease or cancer) or whose function becomes limited. Older adults are often misdiagnosed and undertreated. Healthcare providers may mistake an older adult's symptoms of depression as just a natural reaction to illness or the life changes that may occur as we age, and therefore not see the depression as something to be treated.

Older adults themselves often share this belief and do not seek help because they don't understand that they could feel better with appropriate treatment. (National Institute on Aging)

There are several types of depression that older adults may experience: *Major Depressive Disorder* – includes symptoms lasting at least two weeks that interfere with a person's ability to perform daily tasks, *Persistent Depressive Disorder (Dysthymia)* – a depressed mood that lasts more than two years, but the person may still be able to perform daily tasks, unlike someone with Major Depressive Disorder, *Substance/Medication-Induced Depressive Disorder* – depression related to the use of substances, like alcohol or pain medication, *Depressive Disorder Due to A Medical Condition* – depression related to a separate illness, like heart disease or multiple sclerosis. Depression in older adults may be difficult to recognize because older people may have different symptoms than younger people. The following is a list of common symptoms. Persistent sad, anxious, or "empty" mood, Feelings of hopelessness, guilt, worthlessness, or helplessness, Irritability, restlessness, or having trouble sitting still, Loss of interest in once pleasurable activities, including sex, Decreased energy or fatigue, Moving or talking more slowly, Difficulty concentrating, remembering, or making decisions, Difficulty sleeping, waking up too early in the morning, or oversleeping, Eating more or less than usual, usually with unplanned weight gain or loss, Thoughts of death or suicide, or suicide attempts(National Institute of ageing)

Late life depression is an important public health problem. It is associated with increased risk of morbidity, increased risk of suicide, decreased physical, cognitive and social functioning, and greater self-neglect, all of which are in turn associated with increased mortality (Blazer, 2003). At the same time, contrary to common perception, major depression appears to be less frequent among older adults than at earlier ages (Hasin, Goodwin, Stinson, & Grant, 2005).

There are many things that may be risk factors of depression. Research has shown that these factors are related to the risk of depression, but do not necessarily cause depression:

Medical conditions, such as stroke or cancer

Coronary artery disease (CVD) is the buildup of plaque in the arteries that supply oxygen-rich blood to your heart. Plaque causes a narrowing or blockage that could result in a heart attack. Symptoms include chest pain or discomfort and shortness of breath.The annual number of deaths from CVD in India is projected to rise from 2.26 million (1990) to 4.77 million (2020) .Coronary heart disease prevalence rates in India have been estimated over the past several decades and have ranged from 1.6% to 7.4% in rural populations and from 1% to 13.2% in urban populations (Huffman, M. D., Prabhakaran, D., Osmond, C., Fall, C. H., Tandon, N., Lakshmy, R., Ramji, S., Khalil, A., Gera, T., Prabhakaran, P., Biswas, S. K., Reddy, K. S., Bhargava, S. K., Sachdev, H. S., & New Delhi Birth Cohort, 2011). India like other developing countries is in the midst of a stroke epidemic. There is a huge burden of stroke with significant regional variations. Cardiovascular diseases are prevalent in India. Stroke is one of the leading causes of death and disability in India. The estimated adjusted prevalence rate of stroke range, 84-262/100,000 in rural and 334-424/100,000 in urban areas. The incidence rate is 119-145/100,000 based on the recent population-based studies (Sudhan,P, &Pandian ,J. D,2013). Depression is particularly prevalent in cardiovascular disease. Approximately 20-25% of heart disease patients experience major depression, and another 20-25% report symptom of depression that do not meet criteria for major depressive disorder (Carney & Freedland, 2003). Consequences of depression in heart disease patients include rehospitalization, slower recovery, disability, mortality, and increased health care costs (Krishnan *et al*., 2002).

Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body. Cancer can start almost anywhere in the human body.(National cancer institute).Based on the cancer registry data it is estimated that there will be about 800,000 new cancers cases in India every year. At any given point there is likely to be 3 times this load that about 240,000 cases. Cancer sites associated with tobacco from 35 to 50% of all cancers in men and about 17% of cancers in women (Varghese, C, 2021) Depression is a common comorbidity in cancer cases, affecting >10% of patients. A cancer diagnosis is life-changing, and is a source of considerable psychological and emotional stress. Non-pathological sadness may be a normal response to a cancer diagnosis, however, stress beyond the coping mechanisms of patients may result in major depressive disorder (Smith, H. R., 2015).

Genetic risk

Genetic factors have an important role in the susceptibility to depression. Genetic risk is the contribution our genes play in the chance we have of developing certain illnesses or diseases. Genes are not the only deciding factor for whether or not we will develop certain diseases and their influence varies depending on the disease. Genetic risk seems to express itself most strongly earlier in the lifespan rather than later. Risk of major depression in the co-twin was higher when age of onset was earlier in the depressed twin, with first onset older than age 35 not meaningfully affecting risk of depression for the co-twin (Kendler, Gatz, Gardner, & Pedersen, 2005). In older adults, Jansson and colleagues (2003) found a significant effect for the A/A genotype of the 5-HTR2A gene promoter polymorphism and depressed mood for older males but not for older females. Research on GRP50 polymorphisms is scarce yielding mixed findings for connection between polymorphisms and mood disorder (Macintyre DJ, McGhee KA, Maclean AW et, 2010 & Thomson PA, Wray NR, Thomson AM *et al*., 2005) although one included study in this review found a increase of risk by GPR50 polymorphism *rs561077* for incident depression which makes further research necessary. The APOE allele being insignificant in findings supports the assumption of a previous study that found associations between ApOE4 alleles and depression might be due to confounding through individuals with Alzheimer's disease (Thomson PA, Wray NR, Thomson AM *et al*., 2005) as demented patients were excluded and mild cognitive impairment was controlled for in the included study (Weyerer, S., Eifflaender-Gorfer, S., Wiese B *et al*., 2013 & Cole MG, Dendukuri, N., 2003) In addition, this result is consistent with previous longitudinal findings (Dendukuri, N., 2003)

Stress

Stress is a feeling of emotional or physical tension. It can come from any event or thought that makes you feel frustrated, angry, or nervous. Stress is our body's reaction to a challenge or demand. In short bursts, stress can be positive, such as when

it helps us avoid danger or meet a deadline. But when stress lasts for a long time, it may harm our health. Stress can be acute or chronic. Conducted by Delhi-based The Center of Healing (TCOH), a preventive healthcare platform, the study noted that stress and anxiety levels have been on the rise with 74 per cent and 88 per cent Indians suffering from stress and anxiety respectively. According to the study, 57 per cent respondents were suffering from mild stress, 11 per cent were feeling moderately stress, four per cent were facing moderately severe symptoms of stress and two per cent reported severe stress(The Indian Express.) On World Mental Health Days, check out the disturbing stats revealed by a LinkedIn report that shows 55% of Indian professionals feel stressed. In India around 82.4 per cent elderly are dealing with health anxiety and stress issues due to rising COVID-19 cases and fatalities around them. A study done by Selvamani,Y.& Arokiasamy,P shows higher perceived stress scores in India, Russia, South Africa, and Ghana. Older people coming from a lower wealth gradient are more vulnerable to have stressful life events further adding more risk for common mental health disorders and psychological distress situations. Older people, there is a wide disparity of experiencing psychological distress across different socio-economic groups with significant factors being responsible for inequality in psychological distress. (Srivastava, S., Purkayastha, N., Chaurasia, H. *et al.*2021). Agewell Foundation, an NGO working for the welfare and empowerment of old people across the country since 1999, concluded that nearly 80% complained of health anxiety while more than 50% confirmed about other issues. Elders aged 85 and older are more vulnerable to stress and depression than other age groups (Blazer 2000; Dunkle, Roberts, and Haug 2001) due to increasing stressors with age resulting from declining health and dwindling social relationships (Borson *et al*. 2001). Diminishing psychosocial resources with increasing age further contribute to increasing depression (Dunkle *et al*. 2001; Long and Martin 2000). This is an important consideration as psychological and social resources act as protective factors to depression by contributing to decreasing depression directly or mediating the impact of stress on depression (Hobfoll *et al*.2003)

Sleep problems

Sleep disorders are a group of conditions that affect the ability to sleep well on a regular basis. Whether they are caused by a health problem or by too much stress, sleep disorders are becoming increasingly common in all counties. Good sleep is necessary for optimal health and can affect hormone levels, mood and weight. Sleep problems, including snoring, sleep apnea, insomnia, sleep deprivation, and restless legs syndrome, are common. Older adults (ages 65 and older) need 7-8 hours of sleep each day. Most people occasionally experience sleeping problems due to stress, hectic schedules, and other outside influences. However, when these issues begin to occur on a regular basis and interfere with daily life, they may indicate a sleeping disorder. Depending on the type of sleep disorder, people may have a difficult time falling asleep and may feel extremely tired throughout the day. The lack of sleep can have a negative impact on energy, mood, concentration, and overall health.A study done by Mondal,G., Bajaj,V., Goyal,B.L. & Mukherjee,N.2016, state that 83.4% of the population had some type of sleep disorder. Symptoms of insomnia were reported by 78.2% of the population and 29.2% had moderate to severe insomnia. 78.4% of the population had poor sleep quality. The prevalence of sleep disorders in India is high. A study has pegged the percentage of insomnia to be as high as 33% among adults in India (Bhaskar S, Hemavathy D, Prasad S). Daytime sleepiness in adults and older adults can lead to reduced productivity. Sleep deprived people are less effective in making quality decisions and are more likely to experience distress, (Glozier N, Martiniuk A, Patton G, Ivers R, Li Q, Hickie I, *et al*., 2010) develop obesity and are more likely to get coronary heart disease. Ayas, N.T., White, D.P., Manson, J.E., Stampfer, M.J., Speizer, F.E., Malhotra. A., *et al*. (2003).Insomnia was present in 32% of populationin Indian elderly elderly (Gambhir, I.S., Chakrabarti,S.S., Sharma,A.R., & Saran, D.P., 2014). Insomnia is one of the most common troubling symptoms in elderly. It is often incorrectly attributed to aging phenomenon. The prevalence of insomnia varies depending on setting and criteria used, and it is nearly 42% in age group above 65 years (Bloom, H.G., Ahmed. I., Alessi, C.A., Ancoli-Israel, S., Buysse, D.J., Kryger, M.H., *et al*, 2009).The etiology for insomnia is generally multifactorial in elderly. Although insomnia is a common symptom, it is under recognized and undertreated. Sleep disturbance is a risk factor for depression among older adults, with a pooled odds ratio of 2.6 and a population attributable risk of 57.0% demonstrated in a meta-analysis (Cole & Dendukuri, 2003). Insomnia, a type of sleep disturbance, becomes more common with age, affecting a quarter of older men and as much as 40% for women in their 80s (Lichstein, Stone, Nau, McCrae, & Payne, 2006). Previously conceptualized as a symptom of depression, prospective studies have recently shown that insomnia often precedes the onset of depression (Perlis *et al*., 2006). Among older adults, insomnia is a risk factor for both onset and persistence of depression. Acute insomnia may be conditioned or may be maintained by a person's compensatory behaviors, such that it takes on a chronic course independent of the original precipitating factors. Residual insomnia symptoms often persist after remission of a depressive episode and predict earlier relapse. Promising recent research in a mixed age sample shows that concurrent treatment for co morbid insomnia may enhance effects of depression treatment (Manber *et al*., 2008).

Social isolation and loneliness

Social isolation and loneliness are distinct but related concepts. "Loneliness" is the painful subjective feeling – or "social pain" – that results from a discrepancy between desired and actual social connections. "Social isolation" is the objective state of having a small network of kin and non-kin relationships and thus few or infrequent interactions with others. Some studies have found only a weak correlation between social isolation and loneliness: socially isolated people are not necessarily lonely and vice versa. How lonely a person feels depends partly on their own and their culture's expectations 3 of relationships. For some aspects of the problem – such as its scale, distribution and trends – more evidence is available on loneliness than on social isolation Everyone need social connections to survive and thrive. But as people age, they often find themselves spending more time alone. Being alone may leave older adults more vulnerable to loneliness and social isolation, which can affect their health and well-being. Studies show that loneliness and social isolation are associated with higher risks for health problems such as heart disease, depression, and cognitive decline. The number of older adults age 65 and older is growing, and many are socially

isolated and regularly feel lonely. Older adults are at higher risk for social isolation and loneliness due to changes in health and social connections that can come with growing older, hearing, vision, and memory loss, disability, trouble getting around, and/or the loss of family and friends. Loneliness and social isolation in older adults are serious public health risks affecting a significant number of people in the United States and putting them at risk for dementia and other serious medical conditions. The National Academies of Sciences, Engineering, and Medicine (NASEM) points out that more than one-third of adults aged 45 and older feel lonely, and nearly one-fourth of adults aged 65 and older are considered to be socially isolated.[1] Older adults are at increased risk for loneliness and social isolation because they are more likely to face factors such as living alone, the loss of family or friends, chronic illness, and hearing loss. Social isolation significantly increased a person's risk of premature death from all causes, a risk that may rival those of smoking, obesity, and physical inactivity. Social isolation was associated with about a 50% percent increased risk of dementia. Poor social relationships (characterized by social isolation or loneliness) was associated with a 29% increased risk of heart disease and a 32% increased risk of stroke. Loneliness was associated with higher rates of depression, anxiety, and suicide. Loneliness among heart failure patients was associated with a nearly 4 times increased risk of death, 68% increased risk of hospitalization, and 57% increased risk of emergency department visits. Social isolation and loneliness among older people are widespread. For instance, 20–34% of older people in China, Europe, Latin America, and the United States of America are lonely. Among 9836 older people, 19.7% were observed to be socially isolated in India(Kotian,D.B., Mathews,M.,Parsekar,S.S.,Nair,S., Binu, V.S.,Subba,S.H.,2018).In the research of V.R. Muraleedharan and Dr. Alok Ranjan(2021), they say that "Our research highlights ways in which the elderly may have suffered even due to COVID-19 control measures, such as social/physical distancing that could increase depression, and lead to a higher chance of inflammatory response in the elderly". About 5.7 per cent of the country's senior citizens (age 60 and above) live on their own without the support of family or friends. Tamil Nadu and Nagaland have the highest percentage of the elderly population living alone without their spouse, children or any other support, the report said, and the lowest is found in Jammu & Kashmir, Punjab and Delhi. The states of Bihar, Himachal Pradesh, Jammu and Kashmir, Kerala, Punjab and the union territory of Lakshadweep, however, are exceptions (Sengupta,A.S.& Guha,S.,2021).For instance, 20–34% of older people in 25 European countries and 25–29% in the USA reported being lonely. A study in 2021 indicated a prevalence of loneliness of 25–32% in Latin America, 18% in India but only 3.8% in China Other estimates of the prevalence of loneliness among older people, however, were 29.6% in China and 44% in India– on a par with or higher than in the rest of the world(World Health Organization). Loneliness among older women is a concern, as life changes such as widowhood and relocation, which are associated with greater vulnerability to social isolation and loneliness, affect women more than men. Researchers have reported the negative effects of loneliness on health in old age (Heikkinen *et al*., 1995). Loneliness, coupled with other physical and mental problems, gives rise to feelings of depression in the elderly persons. It was also found that 63% elderly have developed symptoms of depression due to isolation and social isolation (Agewell Foundation, an NGO). Loneliness may lead to serious health-related consequences. It is one of the 3 main factors leading to depression (Green *et al*., 1992), and an important cause of suicide and suicide attempts. A study carried out by Hansson *et al*) revealed that loneliness was related to poor psychological adjustment, dissatisfaction with family and social relationships. As people grow old, the likelihood of experiencing age-related losses increases. Such losses may impede the maintenance or acquisition of desired relationships, resulting in a higher incidence of loneliness. Many people experience loneliness either as a result of living alone, a lack of close family ties, reduced connections with their culture of origin or an inability to actively participate in the local community activities. When this occurs in combination with physical disablement, demoralization and depression are common accompaniments. The negative effect of loneliness on health in old age has been reported by researchers (Heikkinen *et al*., 1995). The death of spouse and friends and social disengagement after leaving work or a familiar neighborhood are some of the ubiquitous life-changing events contributing to loneliness in older people. Those in the oldest age cohort are most likely to report the highest rates of loneliness, reflecting their increased probability of such losses.

Dementia

Dementia is not a specific disease but is rather a general term for the impaired ability to remember, think, or make decisions that interferes with doing everyday activities. Alzheimer's disease is the most common type of dementia. Though dementia mostly affects older adults, it is not a part of normal aging. Of those at least 65 years of age, there is an estimated 5.0 million adults with dementia in 2014 and projected to be nearly 14 million by 2060(Centre for disease control and prevention)Increasing lifespan means that the incidence and prevalence of dementia in India is growing and is expected to rise dramatically in the coming decades. The Indian population currently has a very high burden of vascular risk factors, such as diabetes, hypertension and obesity, which can adversely impact the onset and progression of dementia. To identify risk and protective factors that contribute to dementia in India, longitudinal cohort studies need to be performed in urban and rural settings. These studies should include brain imaging, detailed genetic analysis and measurement of blood biomarkers, in addition to the use of well-adapted clinical and cognitive assessments. Evidence from studies performed outside of India indicate that dementia burden can be reduced through community-based, multimodal, early interventions, including dietary changes, increased physical activity and control of vascular risks; however, to be effective in India, interventions need to be adapted to the specific sociocultural milieu. (Ravindranath, V., Sundarakumar, J.S.,2021). Studies show that 2.93 million people from India suffering from dementia. Prevalence of dementia in India is reported to be 2.7%. As the age increase, prevalence of dementia increases. For example, nearly 20% of people above 80 suffer from dementia. Mean age of presentation is relatively younger at 66.3 years in India, about 10 years lesser than in the developed countries. (National Health Portal, India).There is substantial co-morbidity of major depression and dementia, and differential diagnosis is often challenging. Major depression with cognitive impairment was once considered a form of reversible dementia. Individuals who have late onset major depression with cognitive impairment are especially at

risk of developing Alzheimer's disease, with as many as 40% developing dementia within three to five years (Alexopoulos, 2005; Schweitzer *et al*., 2002). It seems most likely is that depression can be both an early or midlife risk factor for dementia and also an early sign of incipient dementia, with both dementia and depression resulting from the same neuropathological changes. Most studies find that the risk of subsequently developing dementia is greater when there is a shorter interval between the diagnoses of depression and Alchemies disease.

Diabetes

Diabetes is a disease that occurs when blood glucose, also called blood sugar, is too high. Blood glucose is main source of energy and comes from the food we eat. Insulin, a hormone made by the pancreas, helps glucose from food get into cells to be used for energy. Sometimes body doesn't make enough—or any—insulin or doesn't use insulin well. Glucose then stays in blood and doesn't reach cells.Although diabetes has no cure, we can take steps to manage your diabetes and stay healthy. (National institute of diabetics and kidney diseases). India is often called the 'diabetes capital' of the world and the burden has been skewed towards the urban centers. Now, a recent study has shown by how much — 26.1 per cent urban respondents aged 60 years or more were diagnosed with high blood sugar levels. The disease was diagnosed in 9.3 per cent senior citizens living in India's rural areas, according to a recent study by the Union Ministry of Family and Health Welfare (MoFHW) published on January 6, 2021. In Delhi and Punjab, more than 20 per cent of senior citizens and more than 15 per cent of those in the age group 45-59 years were diagnosed with diabetes. Kerala had the largest number of people with diabetes. Meghalaya, Nagaland, Madhya Pradesh, Uttar Pradesh and Bihar had a low share (under 8 per cent) of cases.11.5% Indians above 45 years have high blood sugar. Diabetes is the third major contributor to non-communicable diseases and overall mortality in India. In 2016, 2.5 times more people were diagnosed with diabetes than in 1990 and the condition was linked to 3 per cent of all deaths in this period, according to a study published in *Lancet.* Prevalence estimates for depression in patients with Type II diabetes are as high as 15% for major depression and approximately 20% for elevated depressive symptoms (Li, Ford, Strine, &Mokdad, 2008). Recent prospective research strongly suggests that risk of diabetes is higher in patients with major depressive disorder or elevated depressive symptoms and appears to be independent of health behaviors and other risk factors (Engum, 2007; Golden *et al*., 2008). Overall, contrary to what is commonly reported, the evidence appears to be stronger for depression as a risk factor for diabetes than the reverse.

Lack of exercise or physical activity

Exercise is defined as any movement that makes your muscles work and requires your body to burn calories. There are many types of physical activity, including swimming, running, jogging, walking, and dancing, to name a few. Exercise "A subcategory of physical activity that is planned, structured, repetitive, and purposive in the sense that the improvement or maintenance of one or more components of physical fitness is the objective", as defined by Centers for Disease Control and Prevention .Being active has been shown to have many health benefits, both physically and mentally. It may even help us live longer. Exercise can make us feel happier. It can help with weight loss. It is good for our muscles and bones. Exercise can increase our energy levels and can reduce our risk of chronic disease. Exercise can help skin health. It can help our brain health and memory. It can help with relaxation and sleep quality. Exercise can reduce pain. And can promote a better sex life. Regular exercise helps prevent or manage many health problems including depression. Not getting enough physical activity comes with high health and financial costs. It can contribute to heart disease, type 2 diabetes, several cancers, and obesity. An underappreciated primary cause of most chronic conditions is the lack of sufficient daily physical activity ("physical inactivity"). Overwhelming evidence proves the notion that reductions in daily physical activity are primary causes of chronic diseases/conditions and that physical activity/exercise is rehabilitative treatment (therapy) from the inactivity-caused dysfunctions. "Exercise is almost always good for people of any age," says Chhanda Dutta, PhD, chief of the Clinical Gerontology Branch at the National Institute on Aging. Exercise can help make you stronger, prevent bone loss, improve balance and coordination, lift your mood, boost your memory, and ease the symptoms of many chronic conditions. The dose of Physical Activity or exercise is described by the duration, frequency, intensity, and mode (Brown DW, Brown, D.R., Heath, G.W., Balluz, L., Giles, W.H., Ford, E.S., & Mokdad, A.H.,2004) . For optimal effects, the older person must adhere to the prescribed exercise program and follow the overload principle of training, i.e., to exercise near the limit of the maximum capacity to challenge the body systems sufficiently, to induce improvements in physiological parameters such as VO2max and muscular strength. Inactivity is associated with alterations in body composition resulting in an increase in percentage of body fat and a concomitant decline in lean body mass. Thus, significant loss in maximal force production takes place with inactivity. Skeletal muscle atrophy is often considered a hallmark of aging and physical inactivity. Sarcopenia is defined as low muscle mass in combination with low muscle strength and/or low physical performance (Cruz-Jentoft, A.J., Baeyens, J.P., Bauer, J.M., Boirie, Y., Cederholm, T., Landi, F., Martin, F.C., Michel, J.P., Rolland, Y., Schneider, S.M., Topinková, E., Vandewoude, M.,& Zamboni,2010) M.Consequently, low physical performance and dependence in activities of daily living is more common among older people (Idland, G., Rydwik, E., Småstuen, M.C., Bergland, A.,2013).Self-efficacy, Fear of Injury, Inertia, Depression and Anxiety, Self-conscious, Health Problem, No Time, Lack of Knowledge, are the main reason why senior citizen stay away from physical exercise.

Inactive daily life results in loss of strength and energy even to perform daily tasks. Hence, regular exercise is important to almost everyone, including senior citizens. Practicing regular exercise improves balance and flexibility, as well as improves mental and physical health. Here are some simple exercises for senior citizens that will promote good health and physical fitness. The requirement of physical as activity for older people depends on their health condition and mobility of the body Adults aged 65 years or old ideally require about 30 minutes of moderate exercise, 5 days a week. Muscle strengthens exercise for 2 or more days. (Venketekrishnan, H., 2019). Statistics show that 75 per cent of senior citizens are not active enough. "They think they should not be exercising since they are aged but this is a huge mistake. Rather, they should be

exercising to slow down the process of ageing," said physiotherapist Debapriya Mukherjee at Bairag, the senior citizens' home in IB Block. We wanted to start by giving courage to the elderly to start working out," said Mukherjee, the founder. Residents were above the age of 80 and that not everyone went for daily walks. The goal for senior citizens is to be able to continue regular daily activities for as long as possible and to do them independently. Exercise is a means to achieve this. Working out helps control blood pressure, diabetes, lipid profile and keeps the heart healthy. Elderly women are especially prone to osteoporosis. "This is when the bones lose density and get hollow such that a minor fall leads to fractures. Exercise improves balance and strengthens the muscles around joints to reduce the impact on bones," said Mukherjee.

Current theories about depression suggest that sleep problems, a lack of energy, and physical inactivity can result from a depressed mood. To investigate the relationship between mood disorders and these factors, a team led by Dr. Kathleen Merikangas at NIH's National Institute of Mental Health (NIMH) and Dr. Vadim Zipunnikov at John Hopkins University collected real-time measures of physical activity and sleep. The researchers found that physical activity affected the participants' mood afterward, but mood didn't affect the amount of physical activity they engaged in later. Physical activity also affected how energetic participants felt and how long they slept. These relationships went both ways: energy levels and sleep also affected how much physical activity participants later engaged in. Among those with bipolar disorder, 25 had a more severe form called bipolar I. The relationships among physical activity, sleep, mood, and energy were substantially stronger in people with this disorder than in other participants, suggesting that people with bipolar-I disorder may react more strongly to changes in these areas of day-to-day life. The results suggest that physical activity may play a central role in mood regulation, and thus might be an effective target for interventions to change mood states. It is known that older adults are at significant risk of multiple problems affecting organs, such as cardiovascular, respiratory and memory problems. In addition, there is growing evidence that depression, lack of physical activity and cognitive disorders are common in older adults. The symptoms of depression have also been negatively associated with physical activity level (Yuenyongchaiwat, K., 2016). Furthermore, a number of studies have revealed that older adults with low physical activity exhibited a high level of depression (Davidson, R.J., Lewis, D.A., Alloy, L.B., Amaral, D.G., Bush, G., Cohen, J.D., Drevets, W.C., Farah. M.J,, Kagan, J., McClelland, J.L., Nolen-Hoeksema, S, Peterson, B.S.,2002). Wassink-Vossen *et al*. (2014) reported that older adults with depression symptoms had lower physical activity compared to non-depressed older adults. In addition, they found that physical inactivity in elderly with depressive symptoms displayed more functional limitations.A study suggests that individuals who exhibited decline in cognition had low physical activity and higher depression scores; therefore; the cognitive function in elderly persons might be enhanced by improving physical activity and this may decrease depression in older adults. (Yuenyongchaiwat, K., Pongpanit, K., &Hanmanop, S. 2018).

Functional limitations that make engaging in activities of daily living difficult

Functional limitation is defined as restriction or lack of ability in performing an action as a result of a disability. For example, a person who is unable to move safely about his or her home or community or is otherwise unable to travel independently has a functional limitation in mobility. (American psychological association dictionary of psychology). Several definitions of 'function limitation' exist. However, basically, a functional limitation is a restriction or impairment in a person's ability to function in a way that falls within the normal range for the activity. Functional limitations relate to a person's ability to work. In addition, routine activities of daily living ("ADLs) are included in the type of activities that may be restricted due to impairment. The three major categories of functional limitations are: Mental: Most mental impairments do not affect a person's ability to move around. Depression and conversion orders are the exceptions. Mental disorders that do not affect movement can still be considered disabilities that are eligible for disability benefits. Physical: Some limitations related to physical activity may be easy to spot, like: walking, climbing, balancing, kneeling, crawling, sitting, standing, and crouching. Environmental: This functional limitation may be the most surprising. Sometimes people might be able to work, but doing so is risky. Older adults are at greatest risk developing chronic illnesses and related functional limitations. (He.W., Larsen,L.J..2014) "Healthy People 2020" of America prioritizes the reduction in the proportion of older adults with moderate to severe functional limitations from 29.3% in 2007 to 26.4% in 2020 . A study in India shows that moderate or severe functional limitation is more common among older adults with joint pain or backache (Das, R. A., Kumar, S. G., & Roy, G. 2017). A study conducted in India found that the prevalence of functional disability was estimated to be 37.4% .It was less among men -35.9 then women -38.8. The prevalence increased with age, from 23.7% in the youngest age-group of 60-64 years, to 63.8% in the oldest age-group of >75 years. The prevalence rate of functional disability was 37.4% and increased with age. Functional disability was found to be positively and significantly associated with increasing age, marital status other than married, diabetes and chronic obstructive airway disease. In a community-based study from West Bengal using the activities of daily living (ADL) scale, 16.16% elderly persons were found to be functionally disabled. Another community-based study from rural Tamil Nadu reported a prevalence of functional disability of 22% using the same scale. In rural Bangalore, 32.4% elderly persons were found to be facing problems completely or partially in at least one of the ADL activities. Thus, as far as the ADL activities go, the results of the present study are somewhat less than those reported from other community-based studies from India. (Gupta,P., Mani,K., Kumar Rai,S.,, Nongkynrih, B., &, Gupta, K.S., 2014). Another study form India observed that nearly 7.5% of older adults were not fully independent for activities of daily living. More than half (56.8%) were not fully independent for Instrumental Activities of Daily Living (IADL). Overall, ADL, IADL, and impairments were higher among older adult's aged 80+ years, older adults with poor self-rated health, and those suffering from chronic diseases. The likelihood of ADL, IADL and impairment were significantly higher among older adults aged 80+ years compared to 60–69 years. Furthermore, older adults

who had poor self-rated health and suffered from chronic diseases were more likely to report ADL and impairment respectively compared to their counterparts. (Patel, R., Srivastava, S., Kumar, P. *et al*., 2021). In Another Indian study the prevalence of at least one ADL difficulty was 23.8%, at least one IADL difficulty was 48.4%, and at least one ADL/IADL difficulty was 52.0% (43.2% among men, and 60.0% among women) in older adults (Pengpid, S. &, Karl.P.,2021). In one study conducted in India Overall, 43.7% % (Male 42.9%, Female 44.5%) of the participants had a functional disability. Increasing age, being widowed, having no formal education, being underweight (body mass index (BMI)<18.5 kg/m^2), and increasing numbers of morbidities were significantly associated with functional disability among the elderly in this study in age and gender-adjusted logistic regression analysis. Being ≥80 years was associated with a three-fold greater risk of functional disability than the youngest age group (60-69 years). On the other hand, the presence of more than five morbidities was associated with a nearly 20 times increased risk than those with zero to two morbidities. (Medhi G K, Visi V, Bora P J, *et al*, 2021)

Research has established the association between depression and declines in functional abilities that are crucial for older adults' well-being (Lenze, E.J., Rogers, J.C., Martire, L.M., Mulsant, B.H., Rollman, B.L., Dew,M.A, Schulz, R.,& Reynolds,C.F.2021) Researchers have increasingly focused on the dynamic relationships between functional limitations and depression using longitudinal panel data involving three or more waves of data. Taylor and Lynch (2004) modeled disability, social support and depressive symptoms using a four-wave dataset, and found that trajectories of disability were strongly related to trajectories of depressive symptoms. Those relationships were mediated by trajectories of perceived support, but not by those of received support. Ormel, *et al*. (2002) used three waves of panel data to examine the temporal character of the reciprocal effects between disability and depressive symptoms to show that disabilities and depressive symptoms mutually reinforce over time, suggesting changes in physical function have stronger and more immediate effects on depression than vice versa. However, there remain important research questions, including how changes in cognitive as well as daily living function are associated with depression, and how social support resources could buffer the impact of functional declines on depression.

Addiction and/or alcoholism -included in Substance-Induced Depressive Disorder

Drug addiction, also called substance use disorder, is a disease that affects a person's brain and behavior and leads to an inability to control the use of a legal or illegal drug or medication. Substances such as alcohol, marijuana and nicotine also are considered drugs. When you're addicted, you may continue using the drug despite the harm it causes. Drug addiction can start with experimental use of a recreational drug in social situations, and, for some people, the drug use becomes more frequent. For others, particularly with opioids, drug addiction begins with exposure to prescribed medications, or receiving medications from a friend or relative who has been prescribed the medication. The risk of addiction and how fast we become addicted varies by drug. Some drugs, such as opioid painkillers, have a higher risk and cause addiction more quickly than others. As time passes, we may need larger doses of the drug to get high. As our drug use increases, and we may find that it's increasingly difficult to go without the drug. Attempts to stop drug use may cause intense cravings and make feel physically ill (withdrawal symptoms).

Substance/medication-induced depressive disorder is characterized by a prominent and persistent change in mood, exhibiting clear signs of depression or a marked decrease in interest or pleasure in daily activities and hobbies, and these symptoms start during or soon after a certain substance/medication has been taken, or during withdrawal from the substance/medication. The individual's mental health history, as well as the nature of the substance/medication taken must be taken into account, to ensure that the depressive symptoms cannot be better explained by a different diagnosis. The symptoms of the depressive disorder must also be severe enough to cause impairment in the day to day functionality of the individual. Withdrawal times for various substances from the body vary, and so the depressive symptoms may continue for some time after the individual has ceased taking the substance/medication. Substance/medication-induced depressive disorder is caused directly by a specific substance/medication that is taken or during withdrawal from the substance/medication. There are a number of substances and medications that could cause this, including: Alcohol, Phencyclidine, Hallucinogens, Inhalants, Opioids, Amphetamines.

Depression and bipolar disorder frequently co-occur with substance use disorders (SUDs) and are prevalent in the general population.Substance-induced disorders may develop in the context of either intoxication or withdrawal. Of the depressive episodes occurring in the general population, nearly half precipitate in the context of heavy alcohol use. (Brown, S.A., Inaba, R.K., Gillin, J..C, Schuckit, M.A, Stewart,&M.A., Irwin, M.R,1995). The next most frequently associated substances are cocaine and opioids, especially heroin. Iatrogenic substances can also induce pathological affective states. Examples of such medications include interferon (IFN), corticosteroids, digoxin, and antiepileptic drugs. (Patten, S.B, Barbui, C,2004) Either class - substance or medication - can induce states of mania or depression.

While illicit drug use typically declines after young adulthood, nearly 1 million adults aged 65 and older live with a substance use disorder (SUD), as reported in 2018 data. While use of illicit drugs in older adults is much lower than among other adults, it is currently increasing. Older adults are often more susceptible to the effects of drugs, because as the body ages, it often cannot absorb and break down drugs and alcohol as easily as it once did. Older adults are more likely to unintentionally misuse medicines by forgetting to take their medicine, taking it too often, or taking the wrong amount. Some older adults may take substances to cope with big life changes such as retirement, grief and loss, declining health, or a change in living situation. Most admissions to substance use treatment centers in this age group are for alcohol. Many behavioral therapies and medications have been successful in treating substance use disorders, although medications are underutilized. It is never too late to quit using substances—quitting can improve quality of life and future health. More science is needed on the effects of substance use on the aging brain, as well as into effective models of care for older adults with substance use disorders. Providers may confuse symptoms of substance use with other symptoms of aging, which could include chronic health conditions or reactions to

stressful, life-changing events (National institute on drug abuse).

Depression is common among people battling an addiction to drugs or alcohol. Substance abuse can trigger or intensify the feelings of loneliness, sadness and hopelessness often associated with depression. An estimated one-third of people with major depression also have an alcohol problem. For those struggling with depression that feel there is no end in sight, drugs and alcohol may sometimes appear to be an easy solution to their problems. These substances can temporarily subside any emotional pain and bring about a sense of happiness. However, these substances can become addictive. The more we consume the more dependent our body will become on their effects. Over time, substance abuse can exacerbate symptoms of depression as well as lead to health problems like brain damage down the road. For someone suffering from depression, it can be extremely tempting to want to relieve these feelings with drugs or alcohol. Ultimately, though, abusing substances to ease depression can cause even more harm to an individual's life – from financial troubles to personal hardships. There are several reasons why alcohol and drug use at lower levels can also be problematic. Even moderate drinking may reduce antidepressant response and increase risk of side effects (Worthington, J., Fava, M., Agustin, C., *et al*.,1996). It may be particularly important to understand alcohol and drug use among older patients. Compared with younger individuals, older adults are more sensitive to alcohol because of physiological changes that occur with age (Vestal, R.E., McGuire, E.A., Tobin,J.D., *et al*.,1997) They are more likely to have alcohol and drug problems that do not meet criteria for dependence, which contributes to low rates of detection. (Satre, D,D., Mertens, J, Arean, P.A., *et al*,2003)Older adults with depression are at elevated suicide risk, and alcohol is an additional significant risk factor (Blow, F.C., Brockmann, L.M., & Barry, K.L., 2004). As with younger adults, substance problems may exacerbate depressive symptoms and interfere with treatment. Older adults may be particularly vulnerable to stigma and thus more easily deterred from accessing chemical dependency programs. For these reasons, it is important for clinicians in mental health and primary care to identify alcohol and drug use problems among older patients with depression.

The other risk of depression in older people include: Being female, Being single, unmarried, divorced, or widowed, Lack of a supportive social network, Stressful life event. Physical conditions like stroke, hypertension, atrial fibrillation, diabetes, cancer, dementia, and chronic pain further increase the risk of depression. Additionally, these risk factors for depression are often seen in older adults: Certain medicines or combination of medicines, Damage to body image (from amputation, cancer surgery, or heart attack),Dependence, whether through being hospitalized or needing home health care, Family history of major depressive disorder, Fear of Other illnesses, Past suicide attempt(s), Presence of chronic or severe pain, Previous history of depression and Recent loss of a loved on

CONCLUSION

The United Nations General Assembly declared 2021–2030 the Decade of Healthy Ageing and asked WHO to lead the implementation. The Decade builds on the WHO Global Strategy and Action Plan and the United Nations Madrid International Plan of Action on Ageing and supports the realization of the United Nations Agenda 2030 on Sustainable Development and the Sustainable Development Goals. The Decade of Healthy Ageing (2021–2030) seeks to reduce health inequities and improve the lives of older people, their families and communities through collective action in four areas: changing how we think, feel and act towards age and ageism; developing communities in ways that foster the abilities of older people; delivering person-centered integrated care and primary health services responsive to older people; and providing older people who need it with access to quality long-term care.

Common conditions in Old age (60 years and above) include hearing loss, cataracts and refractive errors, back and neck pain and osteoarthritis, chronic obstructive pulmonary disease, diabetes, depression and dementia. As people age, they are more likely to experience several conditions at the same time. Older age is also characterized by the emergence of several complex health states commonly called geriatric syndromes. Geriatric depression is now becoming common among old age people. Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%. In India. It is estimated the prevalence of depression among Indian elderly population as 34.4%. In India now, elderly persons (60 years and above) constitute 8.6% of our total population. So it is high time to think and took proper action plans to made and treat geriatric depression and make the old age a safe period.

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