STUDY OF ECONOMIC BURDEN OF CHRONIC DISEASES IN THE UNITED STATES OF AMERICA AND TO EXPLORE POTENTIAL INTERVENTIONS THAT CAN HELP TO REDUCE THIS BURDEN

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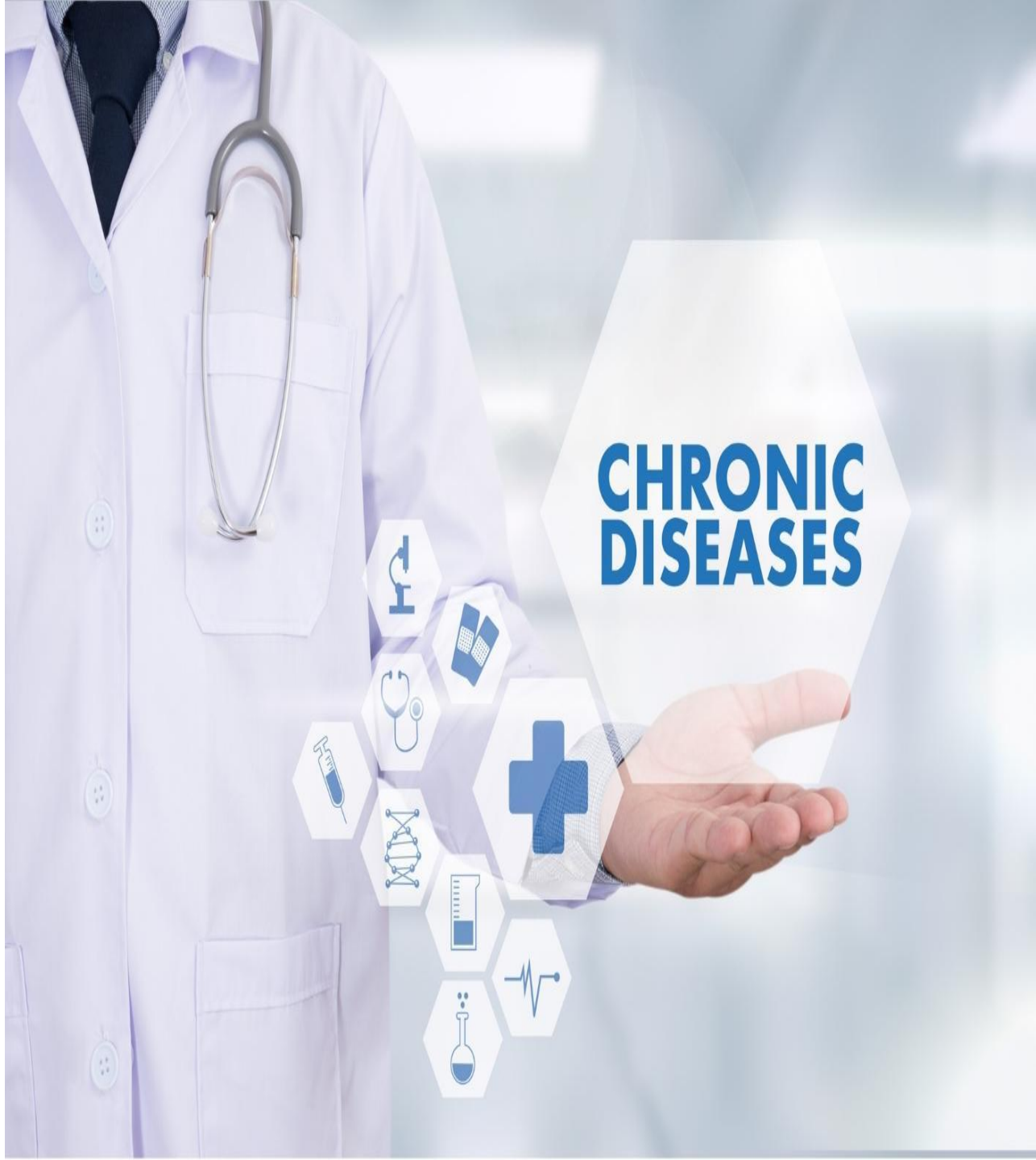

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INTRODUCTION

CHRONIC DISEASES

- Chronic diseases are conditions that are long-lasting (1 year or more) and progress gradually over time.
- They are also called as ‘non-communicable diseases’.
- The most common types of chronic diseases are:
    - Heart disease
    - Cancer
    - Chronic respiratory diseases (such as Chronic obstructive pulmonary disease and asthma)
    - Stroke
    - Alzheimer's Disease
    - Diabetes
    - Chronic Kidney Disease

ECONOMIC BURDEN

- The economic burden of chronic diseases refers to the financial impact that chronic illnesses impose on individuals, families, communities, and the healthcare system.
- The economic burden of chronic diseases is significant and multi-faceted.
- It includes the financial strain on **individuals and families** due to out-of-pocket expenses, insurance premiums, and co-payments.
- **Healthcare systems** bear the cost of providing medical services, managing complications, and addressing the increased demand for chronic disease care.
- **Employers** may experience productivity losses and increased healthcare costs for their employees.
- **Society** at large may face reduced economic productivity, increased healthcare expenditures, and the need for public health interventions.

ECONOMIC BURDEN

- It includes direct and indirect costs associated with chronic diseases. Direct costs include expenses directly related to healthcare. Indirect costs refer to the financial consequences beyond healthcare expenses.

DIRECT COSTS

- Medical Services
- Medications
- Diagnostic Tests and Imaging
- Rehabilitation and Therapy
- Assistive Devices and Equipment

INDIRECT COSTS

- Productivity Loss
- Informal Care
- Intangible costs
- Strain on Healthcare Resources

KEY FACTS

As per Centers for Disease Control and Prevention (CDC), March 2023.

- Six in ten adults in the US have a chronic disease and four in ten adults have two or more.
- Nothing kills more Americans than heart disease and stroke. More than 877,500 Americans die of heart disease or stroke every year—that's one-third of all deaths.
- Each year in the United States, more than 1.7 million people are diagnosed with cancer, and almost 600,000 die from it, making it the second leading cause of death.
- 96 million adults in the United States have a condition called prediabetes, which puts them at risk for type 2 diabetes.
- More than 16 million Americans have at least one disease caused by smoking. This amounts to more than $240 billion in healthcare spending. Excessive alcohol use is responsible for 140,000 deaths each year, including 1 in 10 deaths among working-age adults.
- Not getting enough physical activity comes with high health and financial costs. It can lead to heart disease, type 2 diabetes, some cancers, and obesity. Physical inactivity also costs the nation $117 billion a year for related healthcare.

LITERATURE REVIEW

TITLE	AUTHOR/S	YEAR	FEATURES
The enormous financial impact of stroke disability	Jennifer Juhl Majersik, Daniel Woo	2020	1. Ischemic stroke is recognised to have a large societal cost, which is estimated to be close to $50 billion (US dollars) annually in the US. 2. This amount covers the hospital stay for immediate care and early rehabilitation, as well as any follow-up doctor visits, medicines, long-term care, and lost wages from being unable to work. 3. When determining whether novel stroke medicines are acceptable, policymakers take into account these costs and if a new therapy gives enough therapeutic value to justify them.
Health Care Expenditure Burden of Cancer Care in the United States	Joohyun Park, Kevin A. Look	2019	1. Among the four most common malignancies, those with lung cancer had the greatest annual health care spending, more than four times that of those without the condition. 2. The need for comprehensive policies and initiatives to lower the cost of cancer treatment is highlighted by the fact that spending predictions differed by age group, method of payment, and service type.
The direct and indirect financial costs of informal cancer care: A scoping review	Chelsea Coumoundouros 1, Lydia Ould Brahim 2, Sylvie D Lambert 2 3, Jane McCusker	2019	1. Care time was shown to be the biggest financial expense for cancer carer. The palliative stage of the disease had the greatest carer expenses, showing that the degree of care needed at this point greatly contributes to the financial burden faced by carers. 2. This shows that in order to alleviate the financial burden that carers experience, further research and specialised assistance programmes are required.

TITLE	AUTHOR/S	YEAR	FEATURES
2021 Alzheimer's disease facts and figures	No authors listed	2019	1. 6.2 million Americans age 65 and more seasoned are believed to be impacted with Alzheimer's dementia. On the off chance that clinical advances are not made to forestall, dial back, or fix Alzheimer's infection, this figure could ascend to 13.8 million by 2060. 2. Mortality: Alzheimer's infection is the 6th most normal reason for death from one side of the country to the other and the fifth generally normal among individuals 65 and more seasoned. Alzheimer's sickness was answerable for 121,499 fatalities in 2019, up over 145% from 2000 to 2019. 3. The article highlights rise in prevalence rates, caregiver burden, economic costs, and disparities in healthcare. It emphasizes the need to address these challenges and promote equitable dementia care, increase diversity in the dementia care workforce.
Preventable Cancer Burden Associated With Poor Diet in the United States	Zhang FF, Cudhea F, Shan Z, Michaud DS, Imamura F, Eom H, Ruan M, Rehm CD, Liu J, Du M, Kim D, Lizewski L, Wilde P, Mozaffarian D.	2019	1. Illnesses most frequently linked to nutrition was seen in men, those of relatively advanced age (45–64), and people of colour (non-Hispanic blacks, Hispanics, and others) 2. Over 80.000 new instances of adult cancer were reported in the United States in 2015, according to estimates that a poor diet had a part in this.
Economic Costs of Diabetes in the U.S. in 2017	American Diabetes Association	2018	1. Article showed that in the US the complete financial expense of diabetes in 2017 was 327,000,000,000. 2. Economic burden of diabetes raised by 26% from 2012 to 2017 due to the increased predominance of diabetes and the high expense per individual having diabetes. 3. Discoveries feature the requirement for viable avoidance and methodologies to lessen the financial expenses of diabetes.

TITLE	AUTHOR/S	YEAR	FEATURES
Projected Costs of Informal Caregiving for Cardiovascular Disease: 2015 to 2035: A Policy Statement From the American Heart Association	Sandra B. Dunbar, Olga A. Khavjou, Tamilyn Bakas, Gail Hunt, Rebecca A. Kirch, Alyssa R. Leib, R. Sean Morrison, Diana C. Poehler, Veronique L. Roger and Laurie P. Whitsel and On behalf of the American Heart Association	2018	1. Given the high expenditure of providing care for individuals having CVD, the total cost of CVD in 2035 is expected to rise to '$1.2 trillion'. 2. By 2035, 45% of the US population is predicted to have CVD; thus, planning must take caregiving demands as they increase into account. 3. To finally lessen the burden of CVD, it is important to creat of appropriate care policies. 4. Collaboration between industry associations, patient as well as family representatives groups, and decision-makers might significantly alter this alarming scenario.
Chronic Condition Combinations and Productivity Loss Among Employed Nonelderly Adults (18 to 64 Years)	Meraya, Abdulkarim M. MS; Sambamoorthi, Usha PhD	2016	1. Persons with diabetes/heart disease and adults with arthritis/hypertension missed considerably more days of work than those without these conditions.. 2. Adults with diabetes/hypertension had significantly fewer missed work days. Certain chronic condition combinations have a high burden of disease in terms of productivity loss. 3. Workplace wellness initiatives that address several health issues concurrently should be introduced to reduce missing workdays.
Absenteeism and Employer Costs Associated With Chronic Diseases and Health Risk Factors in the US Workforce	Asay, G. R., Roy, K., Lang, J. E., Payne, R. L., & Howard, D. H	2016	1. Depending on the risk factor or ongoing illness, non-appearance measurements varied from 1 to 2 days for each person each year. Aside from the actual latency and weight evaluations, the risk factor specific assessments in MEPS and MarketScan were equivalent. 2. Absenteeism rose as a result of more ailments or risk factors being recorded. 3. Every condition or risk factor has a direct correlation to yearly absenteeism expenses that exceeded $2 billion nationwide.

TITLE	AUTHOR/S	YEAR	FEATURES
The Economic Costs of Type 2 Diabetes: A Global Systematic Review	Till Seuring, Olga Archangelidi & Marc Suhrcke	2015	1. Expense of-disease (COI) research on diabetes utilize different strategies and cost assessments, with direct expenses much of the time being higher than backhanded costs. The scope of direct expenses was $242 in Mexico to $11,917 in the USA, though the scope of aberrant expenses was $45 in Pakistan to $16,914 in the Bahamas. 2. A critical piece of the expense trouble in low-and center pay nations was borne by patients all through of-pocket treatment charges, as opposed to major league salary nations, where expenses were disseminated in an unexpected way. 3. The study discovered a link between a nation's GDP per person and direct diabetes expenditures, Even after accounting for GDP per person, the USA stands out for having extremely high prices.
Indirect costs in chronic obstructive pulmonary disease: a review of the economic burden on employers and individuals in the United States	Patel JG, Nagar SP, Dalal AA	2014	1. Significant indirect expenditures are related to COPD. The illness burdens both people and companies in terms of lost revenue due to absenteeism, activity limitations, and disability as well as the costs associated with lost productivity. 2. Gaining a more comprehensive understanding of the societal burden of COPD requires taking into account both direct and indirect expenses.
Impact of exacerbations on health care cost and resource utilization in chronic obstructive pulmonary disease patients with chronic bronchitis from a predominantly Medicare population	Margaret K Pasquale, Shawn X Sun, Frank Song, Heather J Hartnett, Stephen A Stemkowski	2012	1. Patients with COPD continue to experience exacerbations while being treated with maintenance drugs, which drives up medical expenses. In addition to offering patients respite and therapeutic benefits, reducing the intensity and frequency of exacerbations can also lessen the financial burden of the condition. 2. The current study made the observation that patients who have more exacerbations pay a much greater price. To further avoid or limit COPD exacerbations, as well as to lower the expense and suffering associated with this condition, it is evident that novel drugs and disease management measures are required.

RESEARCH QUESTION

What is the economic burden of chronic diseases on the United States, and what potential interventions can be implemented to reduce this burden?

OBJECTIVES OF THE STUDY

1) To identify the prevalence and cost of chronic diseases in the US, including healthcare spending and productivity losses.
2) To explore potential interventions to reduce the economic impact of chronic diseases.
3) To provide recommendations for policymakers, healthcare providers, and individuals on how to mitigate the economic impact of chronic diseases in the US.

METHODOLOGY

- STUDY DESIGN

Descriptive & Exploratory

- STUDY SETTING

Online platform- research was conducted using online platforms and sources to gather information and data for analysis.

Organization- FIGmd an MRO company, Pune, Maharashtra

- STUDY POPULATION

Inclusion criteria

1. Studies that were conducted in the United States
2. Studies that examine the economic burden of one or more chronic diseases
3. Studies that provide data on the cost of chronic diseases to individuals, families, or society as a whole
4. Studies that explore potential interventions to reduce the economic burden of chronic diseases

Exclusion criteria

1. Studies that were conducted outside the United States
2. Studies that do not focus on chronic diseases or their economic burden
3. Studies that do not provide data on the cost of chronic diseases
4. Studies that do not explore potential interventions to minimize the financial impact of chronic diseases

- STUDY DURATION

The study was done for Three months (22nd Feb 2023 – 22nd May 2023)

- SAMPLE SIZE

The sample size comprised of relevant studies that met the inclusion criteria.
27 such studies were identified and included in the study.

- SAMPLING TECHNIQUE

Purposive sampling- To select relevant reports, articles, or case studies.

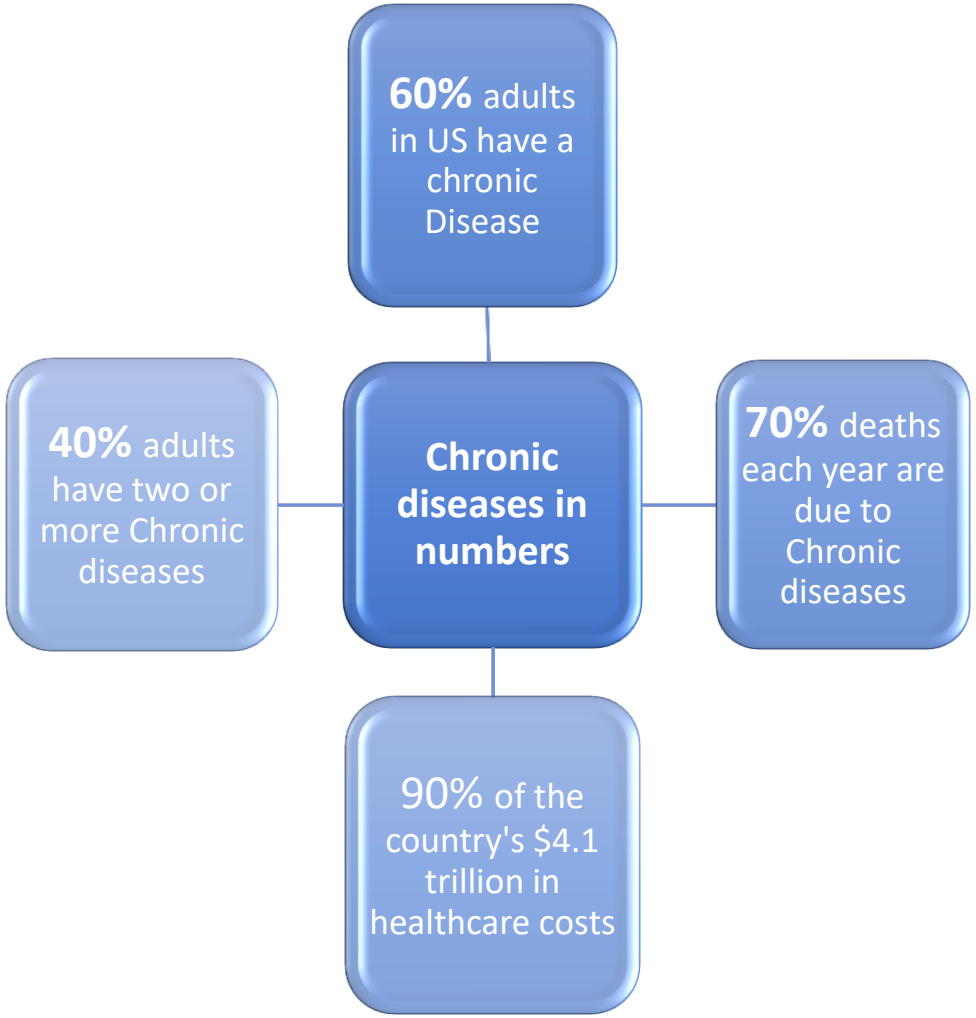
- DATA COLLECTION TOOLS

Study tools included databases such as PubMed, Google Scholar, Government websites, Government publications to identify relevant studies.

- RESEARCH PROCEDURE

Relevant databases were searched using appropriate keywords. studies that met the inclusion criteria were evaluated to obtain the data. Public domain website - Centres for Disease Control and Prevention (CDC) and publicly accessible data sources were used to obtain the data. Data contained facts about the potential therapies to lessen the economic impact of chronic illnesses as well as additional important study material.

RESULTS



Total population	Adults with one or more chronic conditions
331 million	**198.6 million**

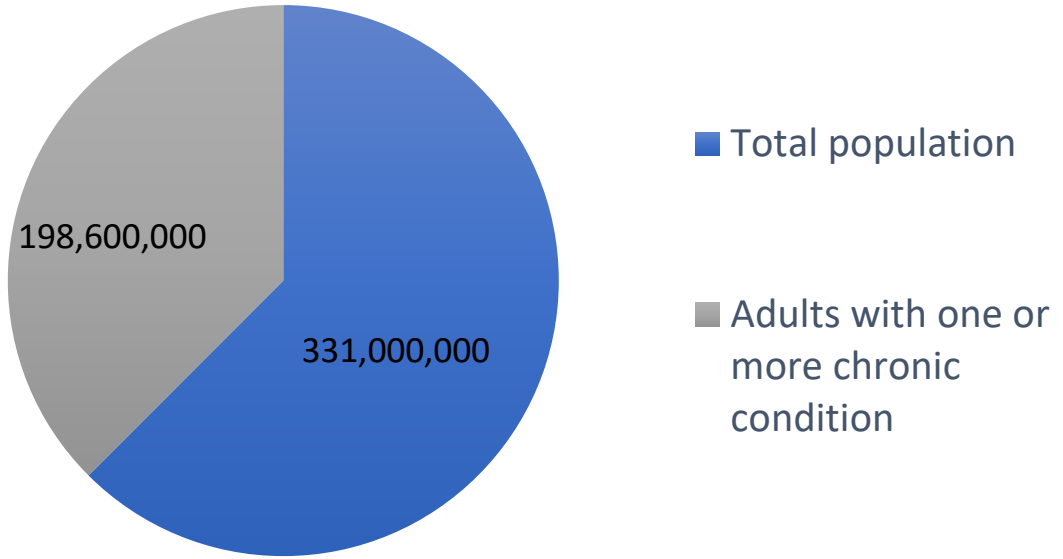


Figure - Adults with one or more chronic conditions

Chronic Diseases	Prevalence
Heart Disease	20,100,000
Breast Cancer	1,095,754
Colorectal Cancer	485,288
Prostate Cancer	924,837
Lung Cancer	416,765
Skin Cancer	362,890
Asthma	26,000,000
COPD	16,000,000
Stroke	7,800,000
Alzheimer's Disease	5,800,000
Diabetes	37,300,000
CKD	37,000,000

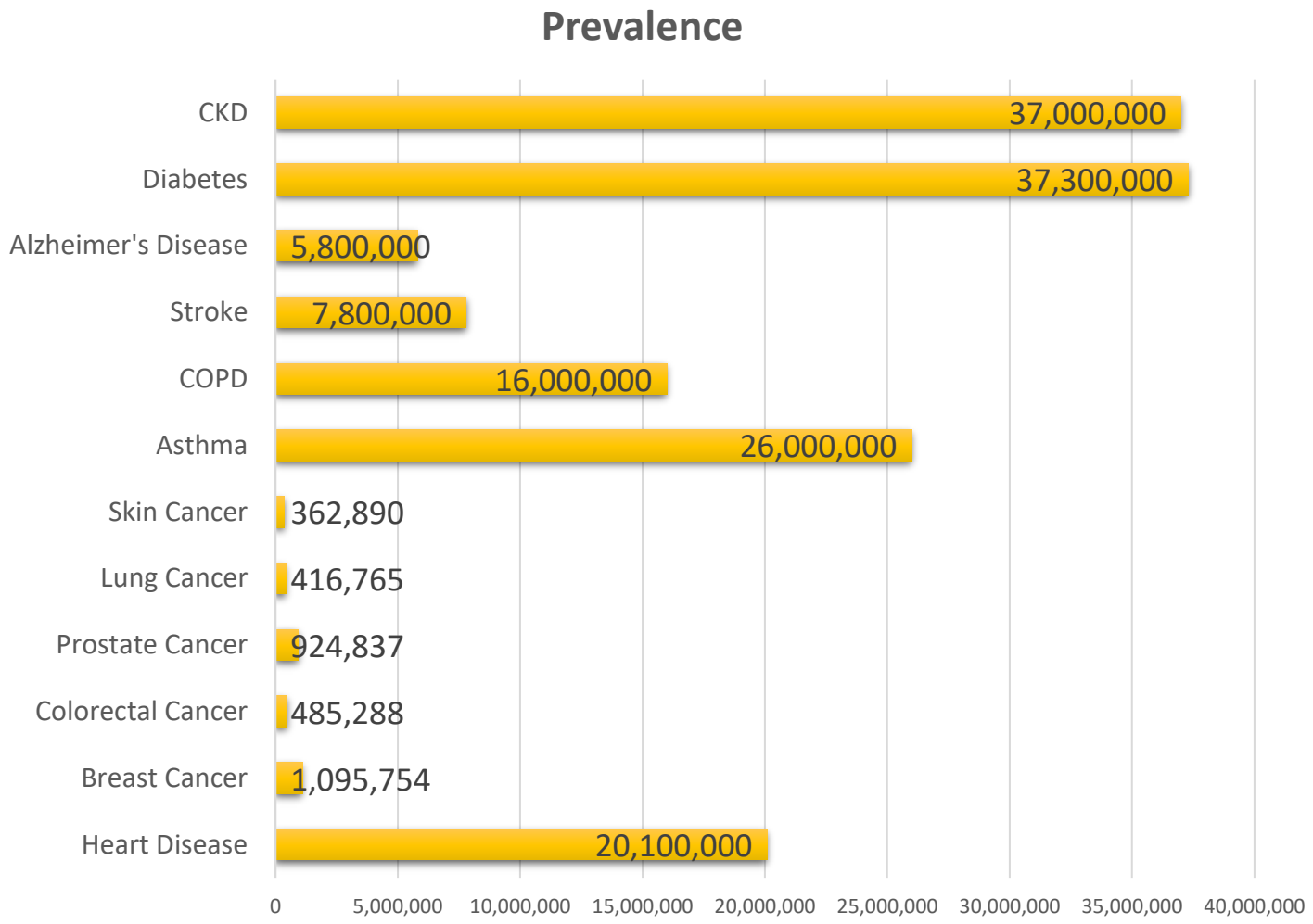


Figure - Prevalence of Chronic Diseases

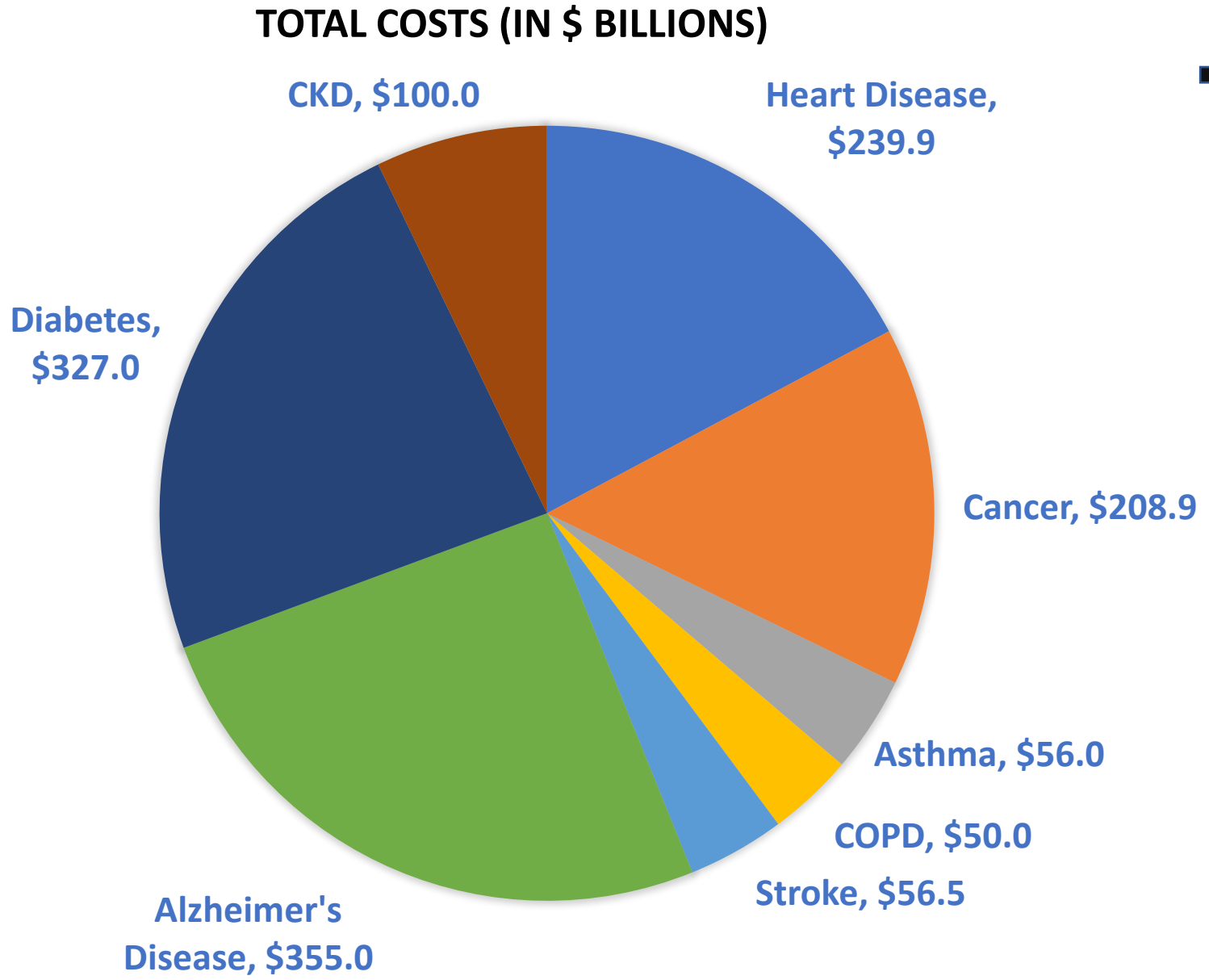


Figure - Total Costs of Chronic Diseases

Figure - Potential Interventions

- **Prevention and Health Promotion Strategies:**

In order to lessen the financial burden of chronic illnesses, the study emphasized the value of preventative measures and health promotion methods. Results indicated that investments in community-based programmes, lifestyle treatments, and targeted public health campaigns might result in considerable cost savings by delaying the start or development of chronic illnesses.

- **Early Detection and Timely Intervention:**

The study emphasized the value of early identification and prompt treatment in reducing the financial burden of chronic diseases. Potential treatments that might help with early diagnosis of chronic illnesses, enabling quick treatment and lowering healthcare costs, were identified as screening programmes, diagnostic instruments, and improved referral pathways.

- **Chronic Disease Management Approaches:**

The study investigated several disease-specific therapies and integrated care models as well as general methods for managing chronic diseases. Results showed that patient-centered strategies, multidisciplinary teams, and complete care coordination might increase the quality of life, improve health outcomes, and perhaps lower long-term healthcare expenditures.

- **Cost Containment Strategies:**

An in-depth examination of cost-containment strategies designed to lessen the financial effect of chronic illnesses was another aspect of this study. This included a variety of tactics such as using health technology evaluations to inform resource management decisions and value-based care models to change payment laws, introduce novel funding mechanisms, and reform reimbursement policies

- **Consideration of Socioeconomic Factors:**

The study emphasized the need of taking socioeconomic variables into account when developing strategies to reduce the financial cost of chronic illnesses. Results indicated that addressing socioeconomic determinants of health, lowering health inequities, and enacting fair policies might help to make treatments more successful and long-lasting.

DISCUSSION

- According to this study, chronic diseases place a large financial strain on patients and public US healthcare systems, emphasizing their impact in the US. Based on prevalence figures, which show that over 198.6 million individuals suffer from comparable disorders, there is a pressing need for effective mitigation techniques that address the prevalence of these illnesses worldwide.

- Therefore, it is crucial to first identify costly medical diseases and then promote treatments aimed at patient behavioral changes, supporting cost-saving options, and comparing costs with commensurate benefits across various nations.

- Of these persistent chronic conditions, the greatest expense influence is because of Alzheimer's disease, counting clinical expenses, treatment expenses, and productivity lost, it costs $355 billion every year. Furthermore, diabetes, coronary illness, and malignant growth have major monetary outcomes and are anticipated to cost $327 billion, $239 billion, and $208 billion, respectively.

- Additionally, conditions such as COPD, asthma, and chronic renal disease all contribute significantly to the cost of healthcare; thus, preventative measures must be targeted in interventions. Public health initiatives that increase awareness while promoting routine check-ups and vaccines can significantly reduce the need for expensive treatment procedures in the future.

CONTD.

- Utilising hospital value-based care models, which incentivize based on quality outcomes rather than imposed volume service supply, may lower economic costs related to patient-centered care interventions, eventually leading to better results & lower costs.
- Finally, in order to achieve healthier outcomes in America's diverse society, interdisciplinary care teams made up of various health professionals from different fields are committed to providing comprehensive healthcare approaches that are conducive to lower costs and in line with shared patient-centered ethical considerations.
- In particular, when it comes to managing chronic illnesses where self-management techniques are essential, patient outcomes can be significantly improved through a methodical approach that integrates the expertise of various healthcare professionals such as doctors, nurses, chemists, and others in providing comprehensive care that accounts for all physical and psychological requirements of patients.
- Additionally, by empowering people with tools like education materials and resources, healthcare costs can be reduced overall as people become more aware of their habits and can make educated decisions about healthy behaviour. This eliminates the need for medication and ensures overall improvement.

CONCLUSION

- Families must deal with serious financial obligations related to chronic illnesses together with the unrelenting financial demands of the US health service sector. Complex medical conditions like Alzheimer's disease, diabetes diagnosis complications like cardiovascular disease, or cancer necessitate quick action towards preventative measures along with timely accurate diagnoses through efficient remediation techniques that tackle such terrifying challenges head-on with mighty efficiency and minimal cost impacts.
- Improved health outcomes are possible by implementing coordinated preventive procedures that improve care quality through carefully considered valuing principles that support targeted care provision efficacy, complemented by tailored interdisciplinary support frameworks focused exclusively on providing comprehensive patient-directed management of a caregiver program specifically designed to address each patient's specific needs.
- As a result, it is the joint responsibility of policymakers, concerned public officials, skilled medical professionals, and patients to establish initiatives leading to the achievement of sustainable economic stability for everyone, subject to successfully addressing this distinctly difficult challenge as one team united under our collective responsibility to each other's welfare needs.
- In order to effectively manage such chronic diseases and simultaneously lessen their detrimental economic impact on our communities, ongoing research and new financial investments are essential.

RECOMMENDATIONS

The following recommendation can be made to reduce the economic burden of chronic diseases :-

For policymakers

- Implement policies promoting healthy environments
- Invest in early detection and intervention
- Support research and innovation

For Healthcare Providers

- Emphasize preventive care
- Enhance health literacy
- Utilize artificial intelligence (AI) for early detection:
- Implement predictive analytics for resource allocation
- Encourage Chronic Disease Management Programs

For Individuals

- Embrace digital health tools
- Adhere to treatment plans
- Stay informed about insurance coverage
- Disease Management Education

THANK - YOU