Journal of Advanced Zoology
ISSN: 0253-7214
Volume 44 Issue 5 Year 2023 Page 1043-1049

Managing Chronic Diseases in Family Medicine: Best practices and Evidence-Based Approaches

Najlaa Mohammad Alsudairy[1*], Yara Sami Bukhari[2], Ali Mansour Alamri[3], Reema Mansoor M Rawah[4], shaima adel aldosary[5], Almutairi Anwar Suwailem[6], Aljowhara Hesham Alsaeed[7], Alotaibi, Abdullah Nasser [8], Abdulrahman Abdulaziz Al Mas [9], Nasser Saleh N Al hyder [10], Abdulrahman Mohammed Alkubur [11], Rawabi Yahya Madkhali [12], Hussain Ali Ekhuraidah[13]

[1]Assistant Consultant Family Medicine, National Guard Hospital, King Abdulaziz Medical City, SCOHS, Jeddah, Saudi Arabia. Email: Najlaa.Alsudairy@gmail.com*
[2]Al salama Hospital, KSA. Email: Yara.sb.95@gmail.com
[3]King Abdulaziz hospital, Makkah, KSA. Email: ali81927@gmail.com
[4]Ibn sina national college for medical studies, KSA. Email: Remamansor1@outlook.sa
[5]Dammam medical complex, Dammam, KSA. Email: shaimaaldosary@gmail.com
[6]Hafar albatin central hospital, KSA. Email: Anwar95sm@gmail.com
[7]Dammam medical complex, Dammam, KSA. Email: Aljowhara432@gmail.com
[8]Ministry of Defense employees, KSA. Email: Dr-abdullah500@hotmail.com
[9]King Faisal University, KSA. Email: VIP.35172@gmail.com
[10]Najran University, Najran, KSA. Email: nh966966@gmail.com
[11]King Faisal University, KSA. Email: abdulrahman753@outlook.com
[12]Najran general hospital, Najran, KSA. Email: rawabiy1997@gmail.com
[13]Dar Al Uloom University, KSA. Email hussain.ekhuraidah@gmail.com

***Corresponding Author:** Najlaa Mohammad Alsudairy*
**Assistant Consultant Family Medicine, National Guard Hospital, King Abdulaziz Medical City, SCOHS, Jeddah, Saudi Arabia. Email: Najlaa.Alsudairy@gmail.com*

Abstract

The management of chronic diseases within the realm of family medicine presents a multifaceted challenge with profound implications for healthcare systems and patients alike. Chronic diseases, such as diabetes, hypertension, and cardiovascular conditions, are prevalent and impose a significant burden on individuals, families, and society as a whole. This article explores best practices and evidence-based approaches for managing chronic diseases in family medicine. It delves into the epidemiological landscape of chronic illnesses, emphasizing the need for effective prevention and management strategies. Evidence-based Models, such as The Chronic Care Model (CCM), Patient-Centered Medical Home (PCMH), and Self-assessment models are discussed in the context of family medicine. The importance of comprehensive, coordinated, and patient-centric approaches is underscored, highlighting the pivotal role of primary care physicians in the ongoing battle against chronic diseases. It is clear, that development in the field of family medicine underscores the importance of patient involvement in diseases management process through shared-decision making model. Although such model require physicans to spend more time educating patients so they can make informed decisions and implement self-management strategies, it has

Introduction:

Chronic diseases, often characterized by their long duration and slow progression, have emerged as a predominant challenge in the realm of global health. According to the World Health Organization, chronic diseases, such as heart disease, stroke, cancer, chronic respiratory diseases, and diabetes, are collectively responsible for 71% of all deaths worldwide [1]. This alarming statistic underscores the critical role of primary care, particularly family medicine, in the early detection, management, and prevention of these conditions.

Family medicine, with its holistic and patient-centered approach, is uniquely positioned to address the multifaceted nature of chronic diseases. It emphasizes the importance of the physician-patient relationship, continuity of care, and a comprehensive understanding of the patient's life circumstances [2]. This specialty is not just about treating a specific disease but understanding its interplay with other conditions, the patient's environment, genetics, and lifestyle.

Evidence-based approaches in family medicine have gained significant traction over the past few decades. These approaches, grounded in rigorous research and clinical trials, offer a systematic way to apply the latest scientific evidence to patient care, ensuring that treatments are both effective and safe. Best practices, on the other hand, are often derived from real-world experiences, expert consensus, and observational studies. They provide practical guidelines and strategies that have been shown to work in specific settings or populations [3].

Integrating best practices with evidence-based approaches can offer a robust framework for managing chronic diseases in family medicine. This synergy ensures that care is not only rooted in the latest scientific evidence but is also tailored to the unique needs and circumstances of each patient [4]. As the burden of chronic diseases continues to rise, it is imperative for family medicine practitioners to stay abreast of the latest research, methodologies, and tools that can aid in delivering optimal care.

In clinical documents and health service structures, the terms "chronic disease" and "chronic illness" are frequently used as synonyms, but they have distinct implications. "Chronic disease" is categorized based on medical definitions and encompasses conditions like diabetes, asthma, and depression. On the other hand, "chronic illness" refers to the individual's personal experience of living with the ongoing condition often linked to chronic diseases. Health systems might overlook this personal experience since it doesn't align with standard medical or administrative categories. The core values of family medicine emphasize the personalized care of chronic illness. [5]

Over the past few decades, the patient profiles encountered by family doctors have significantly evolved. There's a decline in patients with infectious diseases and a rise in those with several chronic diseases. A significant portion of elderly Canadians report having at least one chronic ailment, with a notable number having three or more. Common chronic conditions include diabetes, high blood pressure, and arthritis. While there are numerous clinical guidelines, they often overlook the complexities of having multiple conditions. These conditions can interact with each other, and factors like socioeconomic status, environmental conditions, and health inequalities can impact them all. [6]

A significant majority of Americans aged over 65 have at least one chronic health issue. Women, across all age brackets, tend to have chronic conditions more frequently than men, with some having multiple. Around half of all adults had a chronic health condition in 2012, and a quarter of them had more than one diagnosis. In 2005, 133 million Americans had at least one such condition, a figure projected to rise to 157 million by 2020. Additionally, the number of people with multiple chronic illnesses was 63 million in 2005, expected to increase to 81 million by 2020. [7-11]

Chronic diseases and illnesses are intricately linked and persist throughout a person's life. Factors like socioeconomic background, education, job status, and environment play a significant role in their occurrence. Therefore, without addressing the foundational factors affecting health and well-being, and by not providing continuous support from wellness to disease management, the most vulnerable individuals will face increasing health disparities. [5]

Family physicians play a crucial role in caring for complex patients at all stages, even amidst specialized treatments. They have a distinct responsibility to support their patients throughout their health journeys. The CFPC's latest guide on Chronic Disease Management in a Patient's Medical Home is both timely and pertinent. This guide offers the latest insights on the scope of this challenge, outlines models of care for chronic diseases, and importantly, recommends forward-thinking strategies suitable for family practices. With proactive

management, a significant portion of early heart disease, stroke, type 2 diabetes, and certain cancers can be prevented. [6]
In this review, we delve deep into the best practices and evidence-based approaches in managing chronic diseases within the context of family medicine, highlighting the importance of continuous learning, adaptation, and patient-centered care.

Status of Chronic diseases:

Chronic diseases have become a significant public health concern, impacting millions of individuals globally and contributing to increased healthcare costs, reduced quality of life, and premature mortality. The rise in chronic diseases can be attributed to various factors, including an aging population, lifestyle changes, and environmental factors.
According to the World Health Organization (WHO), chronic diseases, such as cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes, are the leading cause of mortality worldwide, accounting for 63% of all deaths [1]. These diseases are not only prevalent in high-income countries but are also rapidly increasing in low and middle-income countries, primarily due to urbanization and the adoption of western lifestyles.
Tackling chronic diseases poses a significant hurdle for global healthcare systems, which have traditionally been designed for short-term, acute care rather than sustained care for ongoing conditions. Chronic diseases typically demand extended oversight and management. Primary care's inherent qualities, such as consistent care, coordination, and all-encompassing services, make it apt for handling these long-term ailments. There's a growing emphasis on shifting health policies and medical services towards systems that prioritize chronic care, especially proactive primary care, over merely reactive approaches. Nations with robust primary care infrastructures generally achieve superior health results at a more affordable expense. [12]
The Centers for Disease Control and Prevention (CDC conducted a study analyzing the prevalence of chronic conditions among U.S. adults in 2018, it was found that over half (51.8%) of the noninstitutionalized civilian adult population had at least one of ten selected diagnosed chronic conditions, such as arthritis, cancer, and hypertension. Furthermore, 27.2% of these adults had multiple chronic conditions. The study utilized data from the 2018 National Health Interview Survey and highlighted that the prevalence of multiple chronic conditions was higher among women, increased with age, and was most common among non-Hispanic white adults. Additionally, adults with public insurance and those living in rural areas showed a higher prevalence of multiple chronic conditions. [13]. These statistics are alarming, especially considering that many of these conditions are preventable. Lifestyle factors, such as tobacco use, poor nutrition, lack of physical activity, and excessive alcohol consumption, are major contributors to the onset and progression of many chronic diseases.
Furthermore, a study published in the Journal of the American Medical Association (JAMA) highlighted the economic burden of chronic diseases. Between 1996 and 2013, healthcare expenditures totaling $30.1 trillion were broken down by 155 medical conditions, patient demographics, and care type. In 2013, diabetes topped the list with a healthcare expenditure of approximately $101.4 billion. Of this, over half was spent on medications, and nearly a quarter on outpatient care. Ischemic heart disease followed with an expenditure of around $88.1 billion, while low back and neck pain was third with about $87.6 billion spent. The top spending conditions varied based on factors like age, gender, and the nature of care. From 1996 to 2013, healthcare spending rose for 143 out of the 155 conditions. The most significant spending increases were observed in low back and neck pain, and diabetes, with increments of roughly $57.2 billion and $64.4 billion, respectively. During this period, the fastest growth in spending was seen in emergency care and retail pharmaceuticals, surpassing the growth rates for inpatient and nursing facility care. [14].

In a study by John P. Ansah and Chi-Tsun Chiu that aimed to project the future burden of chronic diseases in the U.S. as the population ages. The researchers developed a multi-state population model that categorizes the U.S. adult population into three health states: healthy, one chronic condition, and multimorbidity. Suggested that by 2050, the U.S. population aged 50 and older will grow by 61.11%, with those having at least one chronic disease nearly doubling. Specifically, the number of older adults with one chronic disease will increase by 99.5%, and , around 64.6% of non-Hispanic whites, 61.47% of non-Hispanic blacks, and 64.5% of Hispanics and other races will likely have one or more chronic conditions. These projections emphasize the need for policymakers to strategize interventions and ensure an adequate health workforce to cater to the increasing number of individuals with chronic diseases [15]

Status of Chronic Diseases in Saudi Arabia:

A Study conducted in Saudi Arabia by Majed S. Alzahrani and colleagues aimed to determine the rates of chronic diseases and overall mortality in Saudi Arabia for the year 2018. Using data from the 2018 household health survey, which included 24,012 households, the study focused on doctor-diagnosed chronic conditions such as diabetes mellitus, hypertension, cardiovascular diseases, and cancer. The findings revealed that regions like Makkah and Al-Medina had higher rates of these conditions for the total population, while Al-Baha and Ha'il showed elevated rates for the Saudi population. The age-adjusted mortality rate was 286 per 100,000 population-year, with those aged 65 and above experiencing a rate of 3428 per 100,000. Men exhibited a slightly higher mortality rate than women. Specific regions like Ha'il had the highest number of citizens with diabetes, Al-Baha had the most with hypertension and cardiovascular diseases, and Al-Qassim had the most cancer cases. The elderly population (65 and older) recorded the highest mortality rate in 2018. [16]
Another study led by Ebtihag O Alenzi and colleagues aimed to review existing literature on the prevalence of chronic diseases among residents of the Northern Borders Province (NBP) in Saudi Arabia. Using various scientific databases and search engines, the research team identified relevant studies up to September 2021. After assessing 63 observational studies for their relevance and quality, 21 were selected for analysis. The majority of these studies focused on the city of Arar, with a few on Turaif, Rafha, and some national studies that included NBP as a region. The most commonly researched diseases were diabetes, psychological disorders, and obesity. Notably, gastroesophageal reflux disease (GERD) was found to be the most prevalent condition, with an estimated 61% of adults in Arar city affected. The study concluded that while there is some research on chronic diseases in specific areas of NBP, more comprehensive studies are needed to represent the entire NBP population.
Women, in particular, face unique challenges when it comes to chronic diseases. The World Health Organization notes that women are more likely than men to experience certain non-communicable diseases, such as obesity and depression [18]. Additionally, women often face barriers to accessing healthcare, which can exacerbate the impact of these conditions.
Environmental factors also play a crucial role in the prevalence of chronic diseases. Exposure to pollutants, poor air quality, and lack of access to clean water can contribute to respiratory diseases, cancers, and other conditions [19]. As urbanization continues to grow, addressing environmental health becomes even more critical.
The status of chronic diseases is a pressing global issue that requires concerted efforts from policymakers, healthcare professionals, and communities. Addressing the root causes, improving access to care, and promoting preventive measures are essential steps in combating the rise of chronic diseases.

Family medicine role in Chronic Diseases management:

One of the core tenets of family medicine is its holistic approach to patient care. Rather than focusing solely on a specific disease or organ system, family physicians consider the entire individual, including their physical, emotional, and social well-being. This comprehensive approach is particularly beneficial for patients with chronic diseases, as these conditions often have multifaceted causes and can impact various aspects of a patient's life [20].
The Chronic Care Model (CCM) was introduced in the 1990s as a structure to enhance the quality of care for chronic diseases, especially in primary care. This model consists of six elements that function within the individual, community, health care system, and provider organization. It serves as a blueprint for refining systems to offer superior chronic disease management. Following the CCM's introduction, other strategies emerged to boost the quality and scope of primary care, especially for managing chronic diseases. Examples include the Patient-Centered Medical Home and The Ten Building Blocks of High-Performing Primary Care. While managing chronic diseases in primary care is crucial for both prevention and treatment, it's essential to determine the most effective interventions and their applicable contexts. Research on improving chronic disease management in primary care, whether based on the CCM or other models, is expansive and continues to grow. An earlier systematic review categorized interventions using the CCM's elements, a method later adopted by other researchers. This article offers an updated review, focusing on the outcomes of interventions for physical health issues in primary care, aiming to guide intervention development, policy, practice, and future studies. [21]

The Chronic Care Model (CCM): is a globally recognized approach that addresses the challenges of chronic disease management. It defines chronic care as the entire process from preventing and diagnosing to managing

and alleviating chronic diseases. The CCM emphasizes the need to restructure healthcare to offer consistent, coordinated, and comprehensive services. Key components of the CCM, as according to studies, encompass: [5]

- Proactive care strategies, including organized care and coordination, and systematic scheduling of appointments and follow-ups.
- Decision-making tools for healthcare providers, such as guidelines and protocols for managing diseases.
- Efficient information systems providing timely and pertinent data.
- Encouraging patient independence and self-care.
- Utilizing community resources to educate and assist patients.
- Ensuring that care for chronic illnesses is integrated and supported across healthcare networks.

Early detection and intervention are crucial in the management of chronic diseases. Family physicians, through regular check-ups and screenings, can identify risk factors and early signs of chronic conditions, allowing for timely interventions that can prevent disease progression and complications. For instance, regular blood pressure and cholesterol checks can identify individuals at risk for cardiovascular diseases, enabling early lifestyle modifications and medical interventions [22].
Moreover, family physicians often coordinate care among various specialists and healthcare providers. For patients with chronic diseases, this coordination is essential to ensure that all aspects of their condition are addressed, and there is no duplication or gaps in care. By serving as the central hub of a patient's healthcare team, family physicians can ensure that care is seamless, efficient, and patient-centered [23].

Patient-Centered Medical Home (PCMH): The definition of the Patient-Centered Medical Home (PCMH) has evolved over time while staying true to its original concept. The Agency for Healthcare Research and Quality (AHRQ) defines the PCMH as a model aimed at improving healthcare in the United States by transforming the organization and delivery of primary care, emphasizing five key functions and attributes: comprehensive care, patient-centeredness, care coordination, accessibility, and quality and safety. Insurers began recognizing the PCMH model as a reliable means to identify practices and clinicians offering enhanced services likely to result in improved quality and care coordination. Accreditation bodies In U.S, notably the National Committee for Quality Assurance (NCQA) and the Joint Commission, started granting certifications and recognitions for achieving PCMH status. While the there are support various evidence-based practice transformation models, the fundamental principles of the PCMH are evident. [7]

Self-Management: Patient education and empowerment are also central to family medicine. Family physicians often spend time educating patients about their conditions, treatment options, and self-management strategies. This education is crucial for chronic disease management, as patients who understand their conditions and treatment plans are more likely to adhere to medications and lifestyle recommendations [24].
Goal setting is a crucial aspect of self-management. It can significantly enhance the relationship between family doctors and their patients. By engaging in collaborative decision-making, patients can take charge of their choices, validate their health objectives, and actively engage in their healthcare. Leveraging secure online messaging, texts, and digital communication can foster this connection while minimizing the necessity for patients to commute. However, it's essential to address issues related to privacy and security. [6]
Reynolds, R., et al. 2018. [25] Conducted study aimed to assess the outcomes of chronic disease management interventions for adults with physical health problems in primary or community care settings. The researchers conducted a systematic review of articles published from 2006 to 2014 and classified interventions based on the Chronic Care Model elements.

Self-Management Support interventions were found to be the most common and were associated with significant improvements in patient-level outcomes, particularly for diabetes and hypertension. Delivery System Design interventions showed benefits in both professional and patient-level outcomes for specific conditions, while Decision Support interventions had an impact primarily on professional-level outcomes related to medication use. Clinical Information System interventions had benefits for both professional and patient-level outcomes, but there were fewer studies in this category. Overall, the study revealed that Self-Management Support interventions were most frequently associated with statistically significant improvements in patient outcomes.

Conclusion:

Family medicine models that implement holistic approach including, early detection capabilities, care coordination, and emphasis on patient education, self-management, and shared-decision making models have proven to be more effective as in improving health outcomes and reducing chronic diseases burden on the healthcare system.

References:

1. World Health Organization. Noncommunicable diseases. Retrieved from WHO website.
2. Starfield, B., Shi, L., & Macinko, J. (2005). Contribution of primary care to health systems and health. The Milbank Quarterly, 83(3), 457-502.
3. Mold, J. W., & Peterson, K. A. (2005). Primary care practice-based research networks: working at the interface between research and quality improvement. Annals of Family Medicine, 3(suppl 1), S12-S20.
4. Green, L. W., & Glasgow, R. E. (2006). Evaluating the relevance, generalization, and applicability of research: issues in external validation and translation methodology. Evaluation & the Health Professions, 29(1), 126-153.
5. Martin C. M. (2007). Chronic disease and illness care: adding principles of family medicine to address ongoing health system redesign. Canadian family physician Medecin de famille canadien, 53(12), 2086–2091.
6. Lemire F. (2016). Best advice on chronic disease management. Canadian family physician Medecin de famille canadien, 62(8), 688.
7. Savoy, M., FAAFP, FABC, CPE, CMQ, FAAPL, Hazlett-O'Brien, C., & Rapacciuolo, J. (2017). The Role of Primary Care Physicians in Managing Chronic Disease. Delaware journal of public health, 3(1), 86–93. https://doi.org/10.32481/djph.2017.03.012
8. Statistics, C. C. (2017, Feb 19). Percent of U.S. Adults 55 and Over with Chronic Conditions. Retrieved from https://www.cdc.gov/nchs/health_policy/adult_chronic_conditions.htm
9. Ward, B. W., Schiller, J. S., & Goodman, R. A. (2014, April 17). Multiple chronic conditions among US adults: A 2012 update. Preventing Chronic Disease, 11, E62. 10.5888/pcd11.130389 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
10. Green, S. W. (2000). Projection of Chronic Illness Prevalence and Cost Inflation. Santa Monica, Calif.: RAND. [Google Scholar]
11. Bodenheimer, T., Chen, E., & Bennett, H. D. (2009, January-February). Confronting the growing burden of chronic disease: Can the U.S. health care workforce do the job? Health Affairs (Project Hope), 28(1), 64–74. 10.1377/hlthaff.28.1.64
12. Reynolds, R., Dennis, S., Hasan, I., Slewa, J., Chen, W., Tian, D., Bobba, S., & Zwar, N. (2018). A systematic review of chronic disease management interventions in primary care. BMC family practice, 19(1), 11. https://doi.org/10.1186/s12875-017-0692-3
13. Boersma, P., Black, L. I., & Ward, B. W. (2020). Prevalence of Multiple Chronic Conditions Among US Adults, 2018. Prev Chronic Dis, 17, 200130. http://dx.doi.org/10.5888/pcd17.200130
14. Dieleman, J. L., Baral, R., Birger, M., Bui, A. L., Bulchis, A., Chapin, A., ... & Hamavid, H. (2016). US spending on personal health care and public health, 1996-2013. JAMA, 316(24), 2627-2646.
15. Ansah, J. P., & Chiu, C. T. (2023). Projecting the chronic disease burden among the adult population in the United States using a multi-state population model. Frontiers in public health, 10, 1082183. https://doi.org/10.3389/fpubh.2022.1082183
16. Alzahrani, M. S., Alharthi, Y. S., Aljamal, J. K., Alarfaj, A. A., Vennu, V., & Noweir, M. D. (2023). National and Regional Rates of Chronic Diseases and All-Cause Mortality in Saudi Arabia-Analysis of the 2018 Household Health Survey Data. International journal of environmental research and public health, 20(7), 5254. https://doi.org/10.3390/ijerph20075254
17. Alenzi EO, Fatima W, Amara A, Imran M, Shah SSH, Elbilgahy AA, Fawzy MS, Abu-Negm LM, Mujtaba MA, Jacinto-Caspillo I, Al-Hazimi AM. A Systematic Review of Chronic Diseases and Their Prevalence Among the Population of Northern Borders Province (NBP) in Saudi Arabia. J Multidiscip Healthc. 2023;16:1047-1056 https://doi.org/10.2147/JMDH.S401001
18. World Health Organization. Women and health: today's evidence tomorrow's agenda. World Health Organization; 2009.
19. Landrigan, P. J., Fuller, R., Acosta, N. J. R., Adeyi, O., Arnold, R., Basu, N. N., ... & Chiles, T. (2018). The Lancet Commission on pollution and health. The Lancet, 391(10119), 462-512.

20. Phillips, R. L., & Bazemore, A. W. (2010). Primary care and why it matters for U.S. health system reform. Health Affairs, 29(5), 806-810.
21. Reynolds, R., Dennis, S., Hasan, I., Slewa, J., Chen, W., Tian, D., Bobba, S., & Zwar, N. (2018). A systematic review of chronic disease management interventions in primary care. BMC family practice, 19(1), 11. https://doi.org/10.1186/s12875-017-0692-3
22. Bodenheimer, T., & Pham, H. H. (2010). Primary care: current problems and proposed solutions. Health Affairs, 29(5), 799-805.
23. Wagner, E. H. (2000). The role of patient care teams in chronic disease management. BMJ, 320(7234), 569-572.
24. Coulter, A., & Ellins, J. (2007). Effectiveness of strategies for informing, educating, and involving patients. BMJ, 335(7609), 24-27.
25. Reynolds, R., Dennis, S., Hasan, I., Slewa, J., Chen, W., Tian, D., Bobba, S., & Zwar, N. (2018). A systematic review of chronic disease management interventions in primary care. BMC family practice, 19(1), 11. https://doi.org/10.1186/s12875-017-0692-3