



ORIGINAL

Improving the health outcomes of individuals with chronic illness through the delivery of healthcare services

Mejora de la calidad de vida de las personas con enfermedades crónicas a través de la prestación de servicios de atención médica

Libin Joseph¹  , Devanshu Patel J²  , Sandeep Kumar C³  

¹College of Nursing, Teerthanker Mahaveer University. Moradabad, Uttar Pradesh, India.

²Department of Pharmacology, Parul University. PO Limda, Gujarat, India.

³Department of Genetics, School of Sciences, JAIN (Deemed-to-be University). Karnataka, India.

Cite as: Joseph L, Patel J D, Kumar C S. Improving the health outcomes of individuals with chronic illness through the delivery of healthcare services. Salud, Ciencia y Tecnología. 2023;3(S1):444. <https://doi.org/10.56294/saludcyt2023444>


Submitted: 17-05-2023

Revised: 10-06-2023

Accepted: 01-08-2023

Published: 02-08-2023

Editor: Dr. William Castillo-González 

Associate Editor: Fasi Ahamad Shaik 

ABSTRACT

The move in the healthcare system toward an emphasis on chronic care may be easier to manage if the Wagner model serves as a guide. We define the health demands of patients with chronic disease and compare them to services that should ideally be supplied by a patient-centered health system, drawing on components of this framework and health policies linked to patient-centered care. This article helps readers better understand the unique problems patients face using chronic circumstances with their family carer while interacting with the healthcare scheme and a service provider. To understand more about the challenge faced by the populace utilizing complex diabetes, Chronic Heart Failure (CHF), or chronic obstructive pulmonary disease (COPD), we conducted interviews with patients, carers, and healthcare professionals (HCPs). Patients indicated a variety of demands and objectives about the caliber of their interactions with HCPs, and these needs and wishes were conveyed as worries. There was a need for 1) better HCP communication and information delivery; 2) more organized health services with shorter stages to see HCPs; 3) support for self-care; 4) a better professional understanding of the requirements for holistic as well as ongoing care; and 5) patient as well as caregiver involvement in Decision-Making Processes (DMP). Health policy is more closely linked than it now is to accommodate the needs and preferences of persons with chronic conditions and solve their issues.

Keywords: Chronic Heart Failure (CHF); Health Care Professionals (Hcps); Chronic Disease (CD); Patient; Chronic Obstructive Pulmonary Disease (COPD).

RESUMEN

La evolución del sistema sanitario hacia un énfasis en la atención crónica puede ser más fácil de gestionar si el modelo de Wagner sirve de guía. Definimos las demandas sanitarias de los pacientes con enfermedades crónicas y las comparamos con los servicios que idealmente debería prestar un sistema sanitario centrado en el paciente, basándonos en componentes de este marco y en políticas sanitarias vinculadas a la atención centrada en el paciente. Este artículo ayuda a los lectores a comprender mejor los problemas singulares a los que se enfrentan los pacientes en circunstancias crónicas con su cuidador familiar mientras interactúan con el sistema sanitario y un proveedor de servicios. Para comprender mejor el reto al que se enfrenta la población que utiliza diabetes compleja, insuficiencia cardíaca crónica (ICC) o enfermedad pulmonar obstructiva crónica (EPOC), realizamos entrevistas con pacientes, cuidadores y profesionales sanitarios (HCP). Los pacientes indicaron una serie de demandas y objetivos sobre el calibre de sus interacciones con los profesionales sanitarios, y estas necesidades y deseos se transmitieron como preocupaciones. Existía la necesidad de: 1) una mejor comunicación e información por parte de los profesionales sanitarios; 2) unos

servicios sanitarios más organizados con etapas más cortas para ver a los profesionales sanitarios; 3) apoyo para el autocuidado; 4) una mejor comprensión por parte de los profesionales de los requisitos para una atención holística y continuada; y 5) la participación del paciente y de los cuidadores en los Procesos de Toma de Decisiones (PDD). La política sanitaria está más estrechamente vinculada de lo que lo está ahora para dar cabida a las necesidades y preferencias de las personas con enfermedades crónicas y resolver sus problemas.

Palabras Clave: Insuficiencia Cardíaca Crónica (ICC); Profesionales Sanitarios (PS); Enfermedad Crónica (EC); Paciente; Enfermedad Pulmonar Obstructiva Crónica (EPOC).

INTRODUCTION

Smoking, eating poorly, and engaging in sedentary behavior are some examples of unhealthy lifestyle choices that contribute to Chronic Health Disorders (CHD), which include “Cardio-Vascular Disease (CVD)” and “Chronic Obstructive Pulmonary Disease (COPD)”. Patients who suffer from these prevalent Chronic Disorders (CD) often use medical services, have a worse quality of life regarding their health, have functional restrictions, and are at an increased risk of passing away before their time.⁽¹⁾ Most health systems now combine phone and video visits; in particular, video communication is more effective at fostering patient comprehension and satisfaction than telephone communication. These are particularly crucial to take into account in primary care, where enduring relationships and open communication are necessary for the efficient management of CD as well as among populations with poor digital literacy or little access to the internet, which reduces the likelihood that they will use digital health tools.⁽²⁾

The COVID-19 coronavirus illness is presently the focus of most healthcare efforts worldwide. This resource reallocation may obstruct CD patients' access to ongoing treatment. Our main objective was to assess the global impact of COVID-19 on conventional CD care.⁽³⁾ According to recent estimates, one billion people, or 15 % of the world's population, are now considered to be handicapped, with non-communicable diseases carrying most of the burden, with 80 % of the global disability burden. The world's average life expectancy is expected to rise by 4,4 years by 2040, which will cause an aging population and an increase in chronic illnesses, including diabetes, cardiovascular disease, and mental illness brought on by sedentary lifestyles.⁽⁴⁾

According to the most current studies, people with underlying CD are more prone to infection when their immunity is down. For example, meta-analysis shows that those with diabetes have a 1,9-period superior risk of becoming ill.⁽⁵⁾ Non-communicable chronic illnesses (NCDs) are becoming more common, putting more strain on the healthcare system, especially primary healthcare. Over 80 % of all NCD fatalities occur worldwide, with diabetes, respiratory illness, cardiovascular disease, and cancer being the leading causes.⁽⁶⁾

The global spread of COVID-19 has strained and hampered Healthcare Systems (HS), halting non-communicable disease prevention and treatment initiatives. Lockdowns and social exclusion make it difficult for those with chronic illnesses to receive regular treatment and medication management from medical professionals. A higher risk of fatal consequences from COVID-19, including severe sickness, exists in those with certain chronic illnesses.⁽⁷⁾ A CD diagnosis poses a serious mortality danger for those who inflict pain. Despite the limitations, access to care for chronic diseases remained severely constrained. People with chronic conditions must undergo regular hospital stays with specialized medical teams, follow drug titration schedules, have prompt consultations, and be examined for any reported signs of worsening. Self-care is essential in the treatment of CD.⁽⁸⁾

Chronic Disorders Management (CDM), which manages treating disorders including cancer, diabetes, and hypertension, has often been entirely or partially halted by this priority. Similar CDM interruptions have been reported in primary care settings in Australia. Information of decreased time spent on CDM activities as well as preventative treatment, especially for elements of care needing in-person examination or testing, as well as delays in investigation, evaluation, referred appointments, and elective procedures, all of which cause patients to experience prolonged discomfort, nervousness, and deteriorating of their condition, are all indicative of the adverse effects that these disruptions have on the delivery of healthcare.⁽⁹⁾ Figure 1 represents the schematic diagram of chronic diseases.

13 PHC services served as the cases of attention in a mixed method case study to examine how non-communicable disease (NCD) care is provided.⁽¹⁰⁾ Mahmud et al.⁽¹¹⁾ looked at the relationships between characteristics associated with healthcare service choices and chronic comorbid conditions using multinomial logistic regression. The Lombardy area of Italy's two regional health authorities, ATS Brianza and ATS Bergamo, have computerized health databases that we used to identify all people with chronic conditions who are less than 65 years old.⁽¹²⁾ In Lignou et al.⁽¹³⁾ are summed the facts about how the UK's health services and policies have responded to the Covid-19 epidemic. To identify standard care components, service delivery strategies,

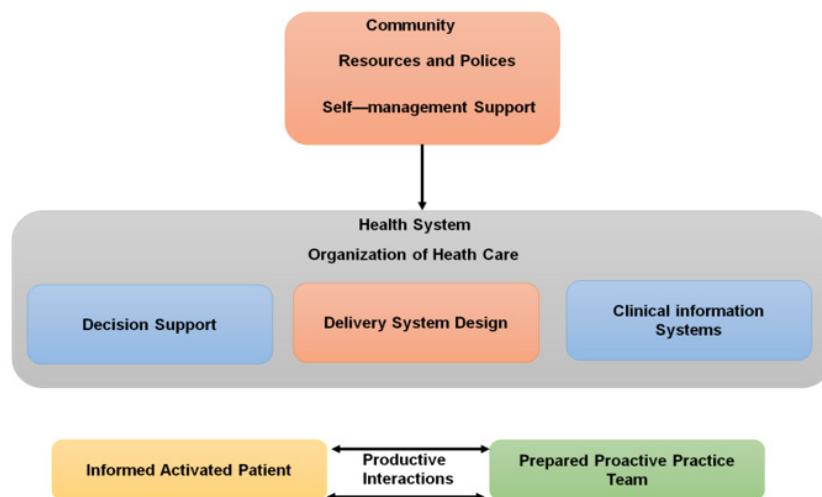


Figure 1. Schematic Representation of Chronic Disease

resource requirements, and health outcomes for children and teenagers with diverse chronic diseases and NCDs in low- and middle-income countries, we reviewed models of regular lifetime care for these populations.⁽¹⁴⁾ Jiang et al.⁽¹⁵⁾ studied how elderly individuals and medical professionals felt about using telehealth and Internet health services to treat chronic obstructive PD. Longhini et al.⁽¹⁶⁾ analyzed the approaches, strategies, and findings of the past ten years of research on the efficiency of organizational models for chronic care in primary care settings. Lewinski et al.⁽¹⁷⁾ performed a comprehensive analysis to evaluate the effect of synchronous telehealth on crucial illness-specific clinical outcomes and healthcare use for the long-term treatment of adult patients with T2DM, CHF, and chronic obstructive PD. Real-time Communication through phone, phone, and video, or phone alone (if synchronous video care is provided) is called synchronous telehealth. Several nations have created national primary healthcare reform initiatives in response to the growing impact of CD on the population globally. Assessments of the use of these advances have been published by several nations with high and extremely high human development indices.⁽¹⁸⁾ Cohen et al.⁽¹⁹⁾ found several variables affecting the availability of evidence-based chronic illness therapy in primary care that meets guidelines.

Mattison et al.⁽²⁰⁾ investigated the effect of wearables on healthcare outcomes for patients with CD using a systematic literature review. Establishment goals included gathering peer support intervention components, compiling peer support outcome domains, combining efficacy data, and identifying the mechanisms of action for persons with CD.⁽²¹⁾ Through a methodical meta-synthesis, this research seeks to uncover the frequent obstacles that users of assistive technology suffering from CD have in obtaining and utilizing it.⁽²²⁾ Ethiopian researchers translated the "Chronic Illness Anticipated Stigma Scale (CIASS)" into Amharic as well as assessed its psychometric properties.⁽²³⁾ Joo et al.⁽²⁴⁾ revealed three disadvantages and four benefits to telehealth-assisted case management. The drawbacks were patients' negative attitudes about telemedicine, challenges using telehealth technology, and increased case managers' workload. The benefits were quicker and more effective treatment, accessible access to medical services, promotion of patients' enjoyment, and cost savings. To conduct this study, 143 survey samples from doctors and nurses were collected. A principal component analysis was used to identify the three crucial elements of the CDM service delivery system, including the service management organization, the management information system, and the medical care service.⁽²⁵⁾

METHODS

To conduct focus groups and in-depth interviews among patients (N = 52), their caregivers (N = 14), along with healthcare professionals (N = 63), participants for this research were selected via purposeful sampling. Table 1 lists the distinctiveness of patients with caregivers, whereas table 2 lists the individuals of HCPs. Participants were gathered within "Sydney West (SW), New South Wales (NSW), and the Australian Capital Territory (ACT)" at the two different sites.

Table 1. Patients' and caregivers' traits			
Sub-categories	Categories	Patient (N = 52)	^s Carer (N = 14)
ACT	Residence	26	6
SW		26	8
Male (M)	Gender	28	1
Female (F)		24	13

> 45 yrs	Age	^1	2
45-64 yrs		16	5
65-85 yrs		35	7
CALD background	Culturally and linguistically diverse (CALD)	11	5
Type 2 diabetes	Diagnosis	16	^4

According to a beginning review of the patient, in addition to caregiver interviews, the most significant challenges are connected to the provision of healthcare services (HCS) and problems with medical staff members. HCPs were to participate in eight Focus Group Discussions (FGDs). Patients and caregivers utilizing vital HCS were asked to list their most significant challenges and facilitators in these FGDs. Although the study's focus on patient experiences, including many HCPs was essential to capture the full range of CD-related events. FGDs were considered more suitable for interviewing HCPs since they permitted lively conversation. Individual interviews were deemed the most beneficial for patients and caregivers since they allowed for a more honest discussion of personal issues.

Table 2. Traits of those in the medical field		
Categories	Sub-categories	HCP (N = 63)
Work setting	Hospital	22
Time in this employment	>5 year	18
	5 to10 years	18
	< 10 years	27
Employment status	Full-time (FT)	55
	Part-time (PT)	8
Residence	ACT	26
	SW	37
Gender	Male (M)	19
	Female (F)	44
Work setting	Hospital	22

Participants were provided to researchers from general practitioners, neighborhood hospitals, community health centers, specialty clinics, healthcare consumer advocacy organizations, and Aboriginal Medical Services in SW and the ACT. HCPs with experience treating patients with index illnesses and family carers were also eligible. Participants must fall under one or more index conditions between 45 and 85. The age range was chosen since chronic disease is much more common in this age group. To illustrate the range of HCPs who treat CD, HCPs from neighborhood hospitals, community health centers, consumer advocacy organizations, and Aboriginal medical services were selected. A sample grid was employed to guarantee that people of diverse ages, ethnicities, races, disease intensity, and healthcare settings were represented. FGDs included general practitioners, allied health professionals, community and hospital nurses, and employees.

The ACT Health Human Research Ethics Committee (HREC), the Sydney West Area Health Service Human Research Ethics Committee (SWAHSHREC), the Australian National University Human Research Ethics Committee (ANUHREC), and the University of Sydney Human Research Ethics Committee (USHREC) approved the study's ethical practices. Everyone who consented to take part in the survey or interview did so with the understanding that they may later alter their views. The research team conducted in-depth, semi-structured interviews. Each interview lasted 45 to 90 minutes, after which the interviewee helped the participants complete a 10- to 15-minute survey. Demographic, medical, clinical, and pharmacological data were collected from participants. SPSS Inc. (Illinois, USA) descriptively analyzed survey data. GPs, groups of people, hospital nurses, associated physical condition professionals, and hospital staff, along with GDs, participated.

The data were gathered and evaluated by the same research team. They often compared data from surveys and interviews to ensure that the transcripts were accurate and that qualitative and quantitative data were consistent. The interviewers regularly met to verify that the consultation, data entry, coding, and data interpretation processes were carried out similarly. Additionally, field notes and memoranda were used to promote reflection. Analysis revealed a close relationship between the primary ideas in this essay and the notion of patient-centered care.

RESULTS

Most of the patients and careers were jobless and older than 65. Most patients (Table 1) said they had standard calls using their general practitioners (GPs) and had at least one chronic illness for at least ten years. The same research team collected and assessed the data. They often compared the information from the questionnaires and interviews to the information from the interviews to verify the integrity of the transcripts and the coherence of the qualitative and quantitative information. The interviewers met regularly to ensure that the consultation, data entry, coding, and data interpretation procedures were carried out consistently.

Ineffective informational practices and Communication

The appropriateness and application of the medical advice that HCPs provided to patients and carers, particularly as it related to their condition(s), was questioned by almost 50 % of patients and caregivers. Due to their inability to comprehend the information and guidance provided to them, participants often failed to follow directions. Participants offered solutions to this issue. Many people said that they preferred participatory delivery of the information, such as shopping or culinary excursions, and that the materials be presented in plain English. They wanted to participate actively in their care by helping to develop their care strategy. One alternative was the ability to ask questions regarding their condition and acute episodes whenever they required answers. Another was having access to training programs or other facilities. HCPs believed that information delivery to patients needed to be better planned and structured than is now the case in many health facilities.

Long wait times to visit HCPs and inefficient service delivery

Multiple visits required to treat chronic conditions, rigorous eligibility requirements for medical services, and little latitude for changing or arranging appointments often caused patient confusion and a shortage of follow-up by HCPs. Eighteen respondents said they struggled to remember all the charges linked to their chronic illness. When patients required immediate attention, caregivers often called an ambulance to take them to the hospital; alternatively, they might postpone seeking help until significant episodes occurred. Five individuals (10 %) said that being admitted to the hospital was the most accessible and affordable option to get treatment (see Table 3).

Table 3. Provocative queries answered during caregiver and patient interviews as well as health care professional focus groups	
Interviews	
Questions	Provocative queries
What were your most considerable patient or caregiver challenges?	Can you describe what happened?
How have health professionals managed your diabetes/COPD/CHF/caregiving?	Can you think of any health professional encounters that may be improved?
Key questions	Probing questions
As a health practitioner treating diabetes, COPD, and CHF, what challenges do you face?	What's the leading cause of the issues?
What challenges do patients and caregivers experience managing their condition?	What challenges do you believe patients and their caregivers face in controlling their disease?

Insufficient facilitation of self-care

To appropriately manage their CD, 15 patients and caregivers reported having trouble caring for themselves. They indicated that the health and aged care systems should provide them with more significant support than now. On the other hand, patients with private health insurance appreciated the allied health services and treatment programs their insurers supported. Patients understood the benefit of having their primary care doctor periodically check on their health. HCPs agreed that their duty was to assist patients in caring for themselves. While recognizing the significance of discharge planners in promoting self-management, others expressed concern that they had evolved into hospital bed supervisors. According to the first account of the "National Health and Hospitals Reform Commission (NHHRC)," HCPs were aware of the advantages of self-management techniques that had been effectively used in Australia.

A lack of comprehensive and ongoing treatment

Lack of time for GP and specialist consultations was among the most frequent problems faced by participants. Talks tended to focus on the present issue, leaving little opportunity to explore early indicators of difficulties related to the CD that was beginning to emerge. In response to these restrictions, several patients and

caregivers expressed a desire for their HCPs to be more informed about and understand their diseases and for the consultation to be sensitive to their context and beyond the present symptoms.

Insufficient patient and caregiver participation in decision-making

Whether they felt included in making choices regarding their illness was a question posed to patients and their caregivers. Seven patients and family members assessed their symptoms, beliefs, and sickness signals and concluded that HCPs did not provide timely care. Patients and caregivers were less likely to participate in their treatment because they believed that HCPs were dismissive and did not consider their viewpoints.

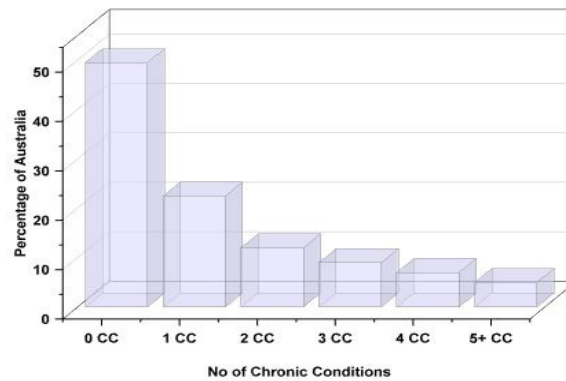


Figure 2. Percentage of All Australians with Chronic Conditions, by Number of Chronic Conditions - 2022

Multiple chronic illnesses were reported by women more often than by males (34,7 % vs. 28,2 % for women) (figure 2).⁽³⁰⁾

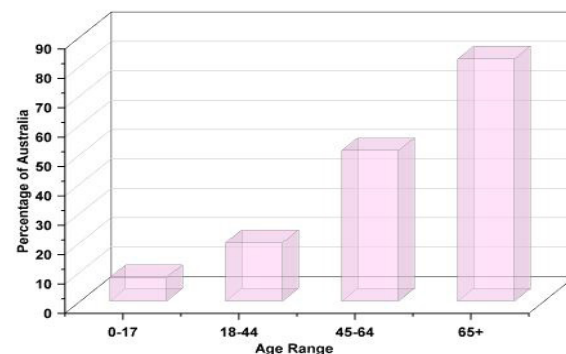


Figure 3. Percentage of All Australians, by Age Group, with Multiple Chronic Conditions, 2010

With age, the likelihood of developing several chronic illnesses drastically rises. 80 % of those 65 and older, and over half of those aged 45 to 64, have numerous chronic diseases (figure 3).⁽³⁰⁾

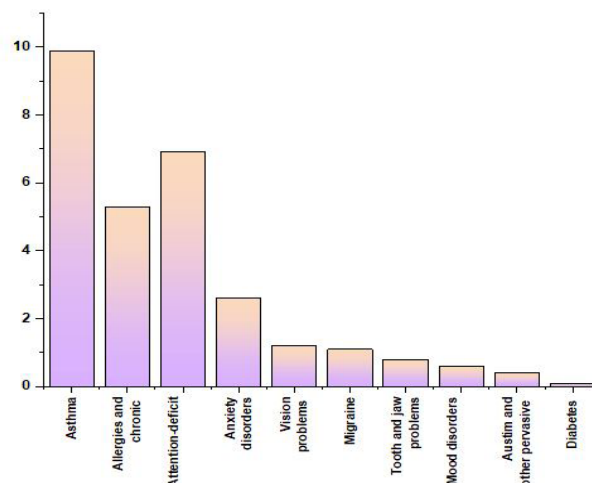


Figure 4. Adults (18 and older) with the Most Common Chronic Conditions in 2022

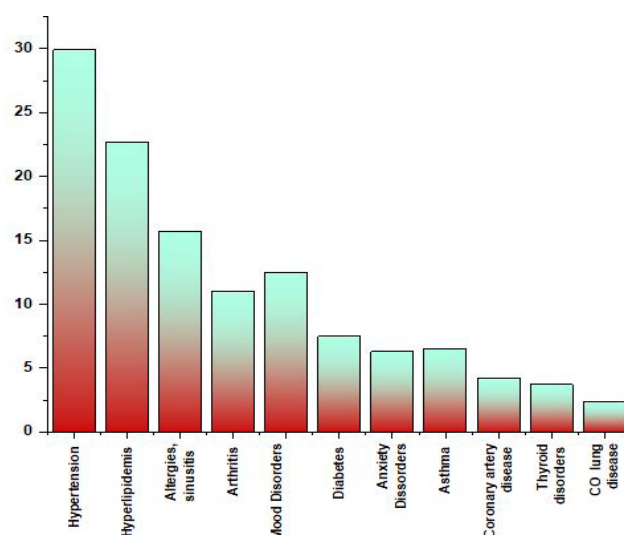


Figure 5. CD Most Common in Children (17 and Under) by 2022

Adults older than 65 have more restrictions on their daily activities and cognitive health. Diabetes, chronic obstructive PD, Hearing Loss (HL), cataracts ©, Refractive Errors (RE), front and back neck pain, hopelessness, and dementia are all common among the elderly. Since the populace turns older, they can also know many diseases on one occasion.⁽³⁰⁾

DISCUSSION

This research demonstrates that CD patients seeking treatment from various healthcare providers encountered several issues and expressed significant concerns about their unmet needs and ambitions within the healthcare system.⁽²⁶⁾ Additionally, patients and caregivers are excluded from decision-making, inadequate holistic and continuing care is provided, and poor self-care is encouraged. The NSW Severe CDM Program,⁽²⁷⁾ which has accepted most of them, is closely related to the core idea of patient-centered care. The study's survey of 7505 participants, which had a response rate of 60 %, demonstrated how much consideration general practices in Australia gave to their patients' requirements and preferences. In their study, participants reported that their treatment was excellent or very good and that their needs and ambitions had been addressed. However, the current qualitative analysis found that it was only sometimes simple for people with chronic conditions and those who care for them to access the services provided by the health system.⁽²⁸⁾ They voiced severe worries that their wants and desires would also go unfulfilled. This aligns with findings from qualitative research conducted by NSW Health.⁽²⁹⁾ This research solely used interviews undertaken in two particular Australian cities, so its conclusions may need to be more generalizable to other locations. It could not link comments to specific people or identify their organization since the transcriber could not identify particular HCPs.

CONCLUSIONS

The central tenet of the national, ACT, and NSW chronic care systems is patient-centeredness. The definition of this idea is not offered, however. None of these countries had a subsequent business or strategic strategy that would translate this idea into actions that could be rapidly implemented. Additionally, no specific mechanisms are in place to promote patient-centeredness. The term "patient-centeredness" has to be defined explicitly before it can be utilized in policies for treating chronic diseases. A detailed investigation of patient-centeredness qualities for various patient scenarios is required to provide meaningful and beneficial activities. Finally, this approach will help us better understand how we may overcome CD's challenges by looking at those actions in the context of institutional and community-based clinical practice, accountability, money, and management. Patients are involved in their care, therapies are adapted to their needs and preferences, and patients are given the tools to control their health according to a patient-centered approach to care. Creating and using patient-centered care models for people with chronic illnesses should be the main emphasis of future efforts.

BIBLIOGRAPHIC REFERENCES

1. Richardson CR, Franklin B, Moy ML, Jackson EA. Advances in rehabilitation for chronic diseases: improving health outcomes and function. *BMJ*. 2019;365.
2. Nouri S, Khoong EC, Lyles CR, Karliner L. Addressing equity in telemedicine for chronic disease management

during the Covid-19 pandemic. *NEJM Catalyst Innovations in Care Delivery*. 2020;1(3).

3. Chudasama YV, Gillies CL, Zaccardi F, Coles B, Davies MJ, Seidu S, Khunti K. Impact of COVID-19 on routine care for chronic diseases: a global survey of views from healthcare professionals. *Diabetes Metab Syndr Clin Res Rev*. 2020;14(5):965-967.

4. Howard J, Fisher Z, Kemp AH, Lindsay S, Tasker LH, Tree JJ. Exploring the barriers to using assistive technology for individuals with chronic conditions: a meta-synthesis review. *Disabil Rehabil Assist Technol*. 2022;17(4):390-408.

5. Yoon S, Goh H, Chan A, Malhotra R, Visaria A, Matchar D, Lum E, Seng B, Ramakrishnan C, Quah S, Koh MS. Spillover effects of COVID-19 on essential chronic care and ways to foster health system resilience to support vulnerable non-COVID patients: a multistakeholder study. *J Am Med Dir Assoc*. 2022;23(1):7-14.

6. Hazazi A, Wilson A. Improving management of non-communicable chronic diseases in primary healthcare centers in the Saudi healthcare system. *Health Serv Insights*. 2022;15:11786329221088694.

7. Lucca JM, Kurdi S, Albaqshi B, Joseph R. Patient satisfaction with pharmaceutical care services for chronic diseases and medication adherence during COVID-19 in Saudi Arabia. *Int J Pharm Pract*. 2022;30(2):136-142.

8. Ryder M, Guerin S, Forde R, Lowe G, Jaarsma T, O'Neill M, Halley C, Connolly M. The perceived effects of COVID-19 while living with a chronic illness. *J Nurs Scholarsh*. 2023;55(1):154-162.

9. Parkinson A, Matenge S, Desborough J, Dykgraaf SH, Ball L, Wright M, Sturgiss EA, Kidd M. The impact of COVID-19 on chronic disease management in primary care: lessons for Australia from the international experience. *Med J Aust*. 2022;216(9):445.

10. Ajisegiri WS, Abimbola S, Tesema AG, Odusanya OO, Peiris D, Joshi R. The organization of primary health care service delivery for non-communicable diseases in Nigeria: a case study analysis. *PLOS Global Public Health*. 2022;2(7):e0000566.

11. Mahmud RA, Sultana M, Kundu S, Rahman MA, Mistry SK, Kamara JK, Kamal M, Ali MA, Hossain MG, Brooks C, Khan A. The burden of chronic diseases and patients' preference for healthcare services among adult patients suffering from chronic diseases in Bangladesh. *Health Expect*. 2022;25(6):3259-3273.

12. Bosetti C, Rognoni M, Ciampichini R, Paroni L, Scala M, d'Oro LC, Zucchi A, Amerio A, Iacoviello L, Ghislandi S, Odone A. A real-world analysis of COVID-19 impact on hospitalizations in older adults with chronic conditions from an Italian region. *Sci Rep*. 2022;12(1):13704.

13. Lignou S, Greenwood J, Sheehan M, Wolfe I. Changes in healthcare provision during covid-19 and their impact on children with chronic illness: A scoping review. *INQUIRY J Health Care Organ Provision Financ*. 2022;59:00469580221081445.

14. Reif LK, van Olmen J, McNairy ML, Ahmed S, Putta N, Bermejo R, Nugent R, Paintsil E, Daelmans B, Varghese C, Sugandhi N. Models of lifelong care for children and adolescents with chronic conditions in low-income and middle-income countries: a scoping review. *BMJ Global Health*. 2022;7(7):e007863.

15. Jiang Y, Sun P, Chen Z, Guo J, Wang S, Liu F, Li J. Patients and healthcare providers' perceptions and experiences of telehealth use and online health information use in chronic disease management for older patients with chronic obstructive pulmonary disease: a qualitative study. *BMC Geriatr*. 2022;22:1-16.

16. Longhini J, Canzan F, Mezzalana E, Saiani L, Ambrosi E. Organizational models in primary health care to manage chronic conditions: a scoping review. *Health Soc Care Community*. 2022;30(3):e565-e588.

17. Lewinski AA, Walsh C, Rushton S, Soliman D, Carlson SM, Luedke MW, Halpern DJ, Crowley MJ, Shaw RJ, Sharpe JA, Alexopoulos AS. Telehealth for the Longitudinal Management of Chronic Conditions: Systematic Review. *J Med Internet Res*. 2022;24(8):e37100.

18. Alyousef M, Naughton C, Bradley C, Savage E. Primary healthcare reform for chronic conditions in countries

with high or very high human development index: A systematic review. *Chronic Illness*. 2022;18(3):469-487.

19. Cohen DJ, Wyte-Lake T, Bonsu P, Albert SL, Kwok L, Paul MM, Nguyen AM, Berry CA, Shelley DR. Organizational factors associated with guideline concordance of chronic disease care and management practices. *J Am Board Fam Med*. 2022;35(6):1128-1142.

20. Mattison G, Canfell O, Forrester D, Dobbins C, Smith D, Töyräs J, Sullivan C. The Influence of Wearables on Health Care Outcomes in Chronic Disease: Systematic Review. *J Med Internet Res*. 2022;24(7):e36690.

21. Thompson DM, Booth L, Moore D, Mathers J. Peer support for people with chronic conditions: a systematic review of reviews. *BMC Health Serv Res*. 2022;22(1):427.

22. Howard J, Fisher Z, Kemp AH, Lindsay S, Tasker LH, Tree JJ. Exploring the barriers to using assistive technology for individuals with chronic conditions: a meta-synthesis review. *Disabil Rehabil Assist Technol*. 2022;17(4):390-408.

23. Salih MH, Wettergren L, Lindgren H, Erlandsson K, Mekonen H, Derseh L. Translation and psychometric evaluation of chronic illness anticipated stigma scale (CIASS) among patients in Ethiopia. *PLoS One*. 2022;17(1):e0262744.

24. Joo JY, Liu MF. A scoping review of telehealth-assisted case management for chronic illnesses. *West J Nurs Res*. 2022;44(6):598-611.

25. Zhao S, Du R, He Y, He X, Jiang Y, Zhang X. Elements of chronic disease management service system: an empirical study from large hospitals in China. *Sci Rep*. 2022;12(1):5693.

26. O'Connor SR, Connaghan J, Maguire R, Kotronoulas G, Flannagan C, Jain S, Brady N, McCaughan E. Healthcare professional perceived barriers and facilitators to discussing sexual well-being with patients after diagnosis of chronic illness: A mixed-methods evidence synthesis. *Patient Educ Couns*. 2019;102(5):850-863.

27. Ataie-Kachoei A, Tran J. Chronic disease management: Poly (ADP-ribose) polymerase inhibitors for treating ovarian cancer. *Aust Pharm*. 2022;41(5):44-52.

28. Livneh H. Psychosocial adaptation to chronic illness and disability: An updated and expanded conceptual framework. *Rehabil Couns Bull*. 2022;65(3):171-184.

29. Adams J, McIntyre E, Frawley J, Lauche R, Broom A, Sibbritt D. Formal and informal healthcare behaviors of women with chronic illness: A cross-sectional analysis of 1925 women. *Int J Clin Pract*. 2019;73(4):e13343.

30. Buttorff C, Ruder T, Bauman M. Multiple chronic conditions in the United States. Santa Monica, CA: Rand; 2017.

FUNDING

No financing.

CONFLICTS OF INTEREST

None.

AUTHOR CONTRIBUTIONS

Conceptualization: Libin Joseph, Devanshu Patel J, Sandeep Kumar C.

Methodology: Libin Joseph, Devanshu Patel J, Sandeep Kumar C.

Drafting - original draft: Libin Joseph, Devanshu Patel J, Sandeep Kumar C.

Writing - proofreading and editing: Libin Joseph, Devanshu Patel J, Sandeep Kumar C.