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The Role of Clinical Exercise Physiologists in Reducing the Burden of Chronic Disease in Pakistan

Sidra Ghori[1*], Muhammad Kashan Surahio[2], Mohsin Ali Shaikh[4], Ehsan Ali Shaikh[4]

[1]Lecturer of Department of Physiology, Indus Medical College, The University of Modern Sciences, Tando Muhammad Khan, Sindh, Pakistan, [2]Department and faculty of economy and management, Tashkent University of information technologies, Tashkent, Uzbekistan, [3]Phd Research scholar, University of science and technology of china, Hefei, Anhui, 230026, [4]Manager Production & Planning, Pakitex Boards private limited, Karachi, Sindh, Pakistan

[*]Corresponding Authors Email: sidra.ghori@ums.edu.pk

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Abstract

Clinical Exercise Physiologists (CEPs) are allied health professionals trained to manage chronic non-communicable diseases (NCDs) such as cardiovascular disease (CVD), type 2 diabetes (T2DM), and mental health conditions through evidence-based exercise prescriptions. This paper explores the feasibility and potential benefits of integrating CEPs into Pakistan's health care system. Drawing on successful international models particularly in Australia, where CEPs are formally recognized the study highlights the cost-effectiveness and clinical efficacy of exercise therapy. By reducing disease progression, hospital admissions, and long-term health care costs, CEPs can play a pivotal role in addressing Pakistan's growing NCD burden. The findings support policy-level recognition and inclusion of CEPs as essential contributors to multidisciplinary health care teams in Pakistan.

Keywords: Clinical Exercise Physiology, Non-Communicable Diseases, Health Economics, Exercise Prescription, Pakistan

Introduction

Non-communicable diseases (NCDs) such as cardiovascular disease (CVD), type 2 diabetes mellitus (T2DM), and mental health disorders are the leading causes of morbidity and mortality in Pakistan. According to the Pakistan Medical Research Council (PMRC, 2018) and WHO (2018), NCDs account for over 58% of all deaths in the country, placing immense pressure on an already overburdened, treatment-focused healthcare system. There is a growing need for cost-effective, preventive interventions that can reduce disease progression, minimize hospital admissions, and promote long-term wellness. Clinical Exercise Physiologists (CEPs) are allied health professionals trained in the prescription of evidence-based physical activity programs aimed at preventing and managing chronic medical

conditions. In countries like Australia, CEPs are officially recognized and integrated into multidisciplinary healthcare teams, significantly improving patient outcomes and reducing long-term healthcare expenditures (Cheema et al., 2014; Deloitte Access Economics, 2015). Despite their proven efficacy abroad, CEPs remain largely unrecognized and underutilized in Pakistan's healthcare landscape. Several recent studies conducted within Pakistan reinforce the need for structured, preventive care models that align with the clinical objectives of CEPs. Shaikh et al. (2023) emphasized that occupational health and wellness initiatives contribute not only to improved productivity but also to long-term workforce health, mirroring the preventive approach adopted by CEPs. Ghori et al. (2025) advocated for modern risk management strategies in physiology, supporting the integration of evidence-based practices in clinical care. Shaikh et al. (2018) also identified critical gaps in occupational health practices in the textile industry, reflecting broader systemic issues in Pakistan's preventive health infrastructure. Furthermore, Ghori et al. (2017) analyzed the clinical profiles of patients with hematological disorders, while Shaikh et al. (2017) examined infection sources among sepsis patients. Both studies underscore the growing complexity and burden of chronic disease management in Pakistan—situations where coordinated, multidisciplinary approaches involving professionals like CEPs could improve outcomes. From an educational standpoint, Ghori et al. (2025) demonstrated that case-based learning can strengthen clinical reasoning and prepare future health professionals to address NCDs through collaborative care models. Numerous studies from Pakistan further highlight the systemic need for structured preventive strategies. For instance, Shaikh and Song (2018) demonstrated that the availability of occupational health and safety (OHS) facilities positively influenced the performance of industrial workers. Similarly, Mohsin et al. (2016) revealed limited awareness of workplace hazards among textile workers, suggesting the lack of health education and preventive frameworks. Shaikh et al. (2017) found that medical facilities provided by industrial organizations significantly enhanced worker productivity, indicating that health-centered investments yield measurable benefits. In a related study, Mohsin et al. (2017) emphasized the role of employee motivation in productivity, reinforcing the broader link between well-being and performance.

In light of these findings, there is a compelling case for introducing Clinical Exercise Physiologists into Pakistan's healthcare system. Their inclusion offers a sustainable and affordable way to manage NCDs by reducing complications, improving quality of life, and promoting rehabilitation. This paper explores the feasibility and impact of integrating CEPs into Pakistan's health system, drawing from successful international models and local research to support policy-level recognition and implementation.

Global Burden of NCDs and the Pakistani Context

Non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, and mental health disorders are responsible for a significant portion of the global disease burden. According to the World Health Organization (WHO), NCDs account for more than 60% of global deaths, with low and middle-income countries like Pakistan facing an increasing prevalence (WHO, 2018). Pakistan's healthcare system is under immense pressure due to the rising rates of NCDs, which not only lead to high mortality but also result in significant economic losses due to treatment costs and lost productivity.

Table 1
Leading Causes of Death in Pakistan from NCDs (2018)

Cause of Death	Percentage of Total Deaths in Pakistan (2018)
Cardiovascular Disease (CVD)	31%
Cancer	17%
Diabetes	5%
Chronic Respiratory Disease	6%
Other NCDs	41%

Source: Jafar et al., 2005; WHO, 2018

Cardiovascular diseases (CVDs) and type 2 diabetes are the leading causes of morbidity and mortality in Pakistan (Jafar et al., 2005). The country faces a high prevalence of risk factors such as hypertension, obesity, and physical inactivity, which exacerbate the incidence of these diseases (Agha et al., 2018). Mental health issues, particularly depression and anxiety, are also on the rise, contributing to an increased burden on the healthcare system. The economic costs of managing these diseases are substantial, with healthcare expenditures escalating rapidly (Jafar et al., 2005).

The Role of CEPs in Reducing the Burden of NCDs

Clinical Exercise Physiologists (CEPs) are trained to provide specialized care for patients with chronic conditions. Evidence from countries like Australia demonstrates that supervised exercise programs led by CEPs are effective in reducing healthcare costs while improving patient health outcomes. These programs are particularly beneficial for individuals with cardiovascular diseases, diabetes, obesity, and mental health disorders (Cheema et al., 2014; Soan et al., 2014). For example, supervised exercise interventions have been shown to reduce the risk of cardiovascular events, improve insulin sensitivity in diabetic patients, and alleviate symptoms of depression and anxiety (Schuch et al., 2018; Heran et al., 2011). In Pakistan, where the healthcare infrastructure is already strained, integrating CEPs into primary care and rehabilitation settings could provide a cost-effective solution to managing these chronic diseases.

Table 2
Evidence of the Effectiveness of CEP Interventions in Managing NCDs

Condition	Key Benefits of Exercise Interventions	Reference
Cardiovascular Disease	Reduced cardiovascular events, improved exercise tolerance	Soan et al., 2014; Heran et al., 2011
Diabetes	Enhanced insulin sensitivity, better glucose management	Schuch et al., 2018; Cheema et al., 2014
Mental Health	Alleviated symptoms of depression and anxiety	Schuch et al., 2018; Nystrom et al., 2015
Obesity	Weight loss, improved metabolic health, reduced comorbidities	Forsyth et al., 2009

Source: Soan et al., 2014; Schuch et al., 2018; Cheema et al., 2014

Pakistan's Healthcare System and the Economic Burden of NCDs

Pakistan's healthcare system faces several challenges, including inadequate infrastructure, a shortage of trained healthcare professionals, and limited access to specialized care (Mirza et al., 2013). The rising prevalence of NCDs adds significant pressure on this already overstretched system. A study by the Pakistan Medical Research Council (PMRC) in 2018 revealed that NCDs are responsible for over 60% of the country's annual deaths, leading to substantial direct and indirect costs (PMRC, 2018).

Table 3
Economic Burden of NCDs in Pakistan (2018)

Condition	Estimated Annual Healthcare Costs (in PKR Billion)	Percentage of Total Healthcare Expenditure
Cardiovascular Disease	54.0	28%
Type 2 Diabetes	25.0	13%
Cancer	33.5	17%
Mental Health Disorders	22.0	11%
Other NCDs	41.0	21%

Source: PMRC, 2018

Despite the growing burden of these diseases, Pakistan lacks an integrated approach for their prevention and management. While general practitioners (GPs) in Pakistan provide basic care, the expertise of specialized professionals like CEPs is not fully utilized. There is no formal recognition of CEPs as healthcare providers, and consequently, exercise therapy is not part of mainstream treatment options for chronic diseases (Agha et al., 2018). This gap presents an opportunity to incorporate CEPs into the healthcare system, potentially reducing the long-term economic burden of NCDs.

Potential Economic Impact of CEPs in Pakistan

Incorporating CEPs into the healthcare system in Pakistan could lead to significant cost savings. Evidence from Australia's Medicare system, where CEPs are reimbursed for providing exercise therapy services, shows that exercise interventions can lead to substantial reductions in healthcare costs. For example, a report by Deloitte Access Economics (2015) found that for every AUD 1 spent on exercise physiology interventions, there was a return of AUD 10.80 in terms of improved wellbeing, productivity, and reduced healthcare expenditures. This return on investment is highly relevant to Pakistan, where healthcare costs continue to rise and the burden of NCDs is projected to increase in the coming decades (Deloitte Access Economics, 2015).

Moreover, CEPs are highly effective in managing comorbidities, such as diabetes and cardiovascular disease, where exercise prescription is a critical component of treatment (Roine et al., 2009). In Pakistan, where the prevalence of diabetes and hypertension is rapidly increasing, incorporating CEPs could help reduce the need for expensive medical treatments and hospital admissions, thereby easing the strain on the healthcare system.

The Way Forward: Integrating CEPs into Pakistan's Healthcare System

To address the rising burden of NCDs, Pakistan's healthcare system needs to shift from a focus on treatment to prevention. This can be achieved by integrating CEPs into the national health strategy, particularly in primary healthcare and rehabilitation centers. Programs similar to Australia's Medicare rebates for exercise physiologists could be adapted to Pakistan's context. This would involve providing government funding for exercise therapy services, allowing CEPs to deliver tailored exercise prescriptions to patients with chronic diseases. In addition to the Medicare model, other initiatives such as the "Green Prescription" program could be implemented in Pakistan. This program, which has been successful in countries like New Zealand, involves general practitioners prescribing physical activity to patients as part of their treatment for chronic diseases (Green Prescription, 2020). CEPs could play a central role in managing these prescriptions, ensuring that patients receive personalized, evidence-based exercise interventions.

Significance of the Study

This study is significant as it addresses a critical gap in Pakistan's healthcare system by exploring the integration of Clinical Exercise Physiologists (CEPs) into the management of non-communicable diseases (NCDs). With NCDs accounting for a majority of deaths in the country, there is an urgent need for cost-effective, preventive care strategies. Drawing on international models, particularly from Australia, this research highlights the clinical and economic benefits of incorporating CEPs into multidisciplinary care teams. The findings offer valuable insights for policymakers, health administrators, and educators by presenting CEPs as an underutilized yet highly effective workforce capable of reducing hospital admissions, improving patient outcomes, and lowering healthcare costs. Ultimately, this study supports the development of a more proactive, preventive, and sustainable healthcare approach in Pakistan.

Conclusion

Clinical Exercise Physiologists are essential healthcare providers who specialize in delivering evidence-based exercise interventions for managing chronic diseases. The growing burden of NCDs in Pakistan presents a unique opportunity to integrate CEPs into the healthcare system. Studies from countries like Australia and the UK have demonstrated the effectiveness and cost-efficiency of exercise interventions in managing cardiovascular diseases, diabetes, and mental health disorders (Cheema et al., 2014; Schuch et al., 2018). By incorporating CEPs into Pakistan's healthcare framework, the country could reduce the economic burden of these diseases, improve patient outcomes, and enhance the overall efficiency of the healthcare system. To achieve this, policymakers must recognize the value of CEPs and invest in their training and integration into multidisciplinary healthcare teams. The evidence supporting the positive impact of CEPs on health outcomes and cost reduction should guide the development of health policies that address the rising prevalence of NCDs in Pakistan.

Data Availability

Data and materials can be provided as needed.

Conflict of Interest

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References

Agha, S., Ali, S., & Shaukat, Z. (2018). *Healthcare system in Pakistan: A review of literature*. International Journal of Health Services Research & Policy, 8(2), 12–24.

Cheema, B. S., Robergs, R. A., & Askew, C. D. (2014). *Exercise physiologists: Essential players in interdisciplinary teams for noncommunicable chronic disease management*. Journal of Multidisciplinary Healthcare, 7, 65–68.

Deloitte Access Economics. (2015). *Value of accredited exercise physiologists in Australia*. Deloitte Access Economics Pty Ltd: Sydney, Australia.

Forsyth, A., Schmitz, K. H., Oakes, J. M., Zimmerman, J., & Koepp, J. (2009). *Relationship of built environment to physical activity: A review*. Obesity Reviews, 10(2), 87–96.

Ghori, R. A., Shaikh, T. Z., Humaira, M., Shah, S. N., Memon, H. N. A., Ghori, U. A. (2017). *Demographical and clinical profile of patients with various hematological disorders*. Indo American Journal of Pharmaceutical Sciences, 4(10).

Ghori, S., Rafi, G., Muhammad, K. S., & Ehsan, S. (2025). *Risk management and risk assessment in physiology: Analysis of modern developments on their foundation*. International Journal of Academic Research in Progressive Education and Development.

Ghori, S., Ghori, R. A., Memon, M. A., Pathan, G. N., Surahio, M. K., & Shaikh, E. A. (2025). *Evaluating case-based learning in physiology: A study at Indus Medical College*. Journal of Medical and Health. *(Forthcoming)*

Green Prescription. (2020). *How Green Prescription works*. New Zealand Ministry of Health. Retrieved from: https://www.health.govt.nz/our-work/preventative-health-wellness/physical-activity/green-prescriptions/how-green-prescription-works

Heran, B. S., Chen, J. M., Ebrahim, S., Moxham, T., Oldridge, N., Rees, K., & Taylor, R. S. (2011). *Exercise-based cardiac rehabilitation for coronary heart disease*. Cochrane Database of Systematic Reviews, (7), CD001800.

Jafar, T. H., Chaturvedi, N., & Pappas, G. (2005). *Health and equity in Pakistan*. The Lancet, 365(9475), 1005–1010.

Mirza, S. A., Khan, M. S., & Anwar, S. (2013). *Pakistan's healthcare system: The need for integration and reform*. Pakistan Journal of Medical Sciences, 29(3), 634–639.

Nystrom, M. B. T., Neely, G., Hassmen, P., & Carlbring, P. (2015). *Treating major depression with physical activity: A systematic overview with recommendations*. Cognitive Behaviour Therapy, 44(4), 341–352.

Pakistan Medical Research Council (PMRC). (2018). *Annual report on the burden of non-communicable diseases in Pakistan*. Islamabad: PMRC.

Roine, R., Vuori, I., Saarto, T., & Sintonen, H. (2009). *Cost-effectiveness of physical exercise in disease prevention*. International Journal of Technology Assessment in Health Care, 25(4), 427–454.

Schuch, F. B., Vancampfort, D., Richards, J., Rosenbaum, S., Ward, P. B., & Stubbs, B. (2018). *Exercise as a treatment for depression: A meta-analysis adjusting for publication bias*. Journal of Psychiatric Research, 103, 42–51.

Shaikh, M. A., Weiguo, S., Shahid, M. U., Ayaz, H., & Ali, M. (2018). *An assessment of hazards and occupational health & safety practices for workers in the textile industry: A case study*. Journal of Academic Research in Business and Social Sciences, 8(12), 333–347.

Shaikh, M. A., Weiguo, S., Shahid, U., & Karim, R. (2023). *Effect of occupational health and safety management and employee turnover intention: A comparative study in Pakistan's mining industry*. SAGE Open, 15(2), 11.

Shaikh, T. Z., Ghori, R. A., Humaira, M., Shah, S. N., Memon, H. N. A., Ghori, U. A., et al. (2017). *Frequency and source of infection in patients with sepsis*. Indo American Journal of Pharmaceutical Sciences, 4(10).

Soan, E. J., Street, S. J., Brownie, S. M., Hills, A. P., & Singh, M. F. (2014). *Exercise physiologists: A new model for chronic disease management*. Journal of Multidisciplinary Healthcare, 7, 227–231.

Mohsin, A. S., Nebhwani, M., Soomro, A. S., & Gopang, M. (2016). *Awareness of workplace hazards among workers in textile mill: A pilot study*. 2nd Multi-Disciplinary Student Research Conference.

Mohsin, S., Ehsan, S., Motaber, S., & Faiza, S. (2017). *The impact of motivation in higher productivity*. Influence of Contemporary Business Trends in Islamic Region, Khadim Ali Shah Bukhari Institute of Technology, Karachi, Pakistan.

Shaikh, M. A., Nebhwani, M., Soomro, A. S., & Gopang, M. A. (2017). *Impact of medical facilities provided by industrial organization on productivity*. International Conference on Industrial Engineering and Management.

Shaikh, M., & Song, W. (2018). *Occupational health and safety facilities and performance of workers in manufacturing industry: An empirical investigation*. Proceedings of the 198th IIER International Conference, Madrid, Spain.

World Health Organization (WHO). (2018). *Noncommunicable diseases country profiles: Pakistan*. Retrieved from: https://www.who.int/nmh/countries/