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Self-Care Interventions and Prevention Strategies for Non-Communicable Diseases in Pakistan: A Systematic Review

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Abstract

Background: Non-communicable diseases (NCDs) are one of the leading cause of mortality in Pakistan, with cardiovascular diseases, diabetes, chronic respiratory diseases, cancers, and mental health disorders contributing significantly to premature deaths. Strengthening self-care interventions and prevention strategies is essential to mitigate this burden.

Methods: A structured search was conducted in Dimensions to identify open-access publications addressing self-care, community-based prevention, adolescent risk reduction, pharmacy-led interventions, and quality-of-care improvements for NCDs in Pakistan and South Asia. Eight relevant publications were identified and grouped according to intervention approach.

Results: Evidence indicates that structured health education improves diabetes self-management and glycemic control. Community participatory interventions enhance prevention and management of cardiovascular diseases, diabetes, respiratory conditions, and mental health disorders. Adolescent-focused tobacco and air pollution prevention strategies target modifiable risk exposures early in life. Pharmacy-based service expansion improves accessibility to screening,

counseling, and adherence support. Quality-of-care strengthening across South Asia supports continuity and sustainability of self-management programs.
Conclusion: Multi-level self-care interventions integrated into strengthened primary healthcare systems are essential to reduce NCD burden in Pakistan. Future implementation research should focus on scalability, cost-effectiveness, and health system integration.

Introduction

Non-communicable diseases (NCDs) represent the dominant cause of morbidity and mortality in Pakistan, accounting for a substantial proportion of premature deaths. Cardiovascular diseases, diabetes, chronic respiratory diseases, cancers, and mental health disorders are the primary contributors to this burden (Jafar et al., 2013). High prevalence of hypertension, tobacco use, obesity, and inadequate enforcement of public health policies exacerbate these outcomes (Siddiqui et al., 2024). South Asia demonstrates similar epidemiological patterns, where socioeconomic determinants, lifestyle factors, and healthcare system limitations influence NCD prevalence and management (Bhuiyan et al., 2024). In resource-constrained settings, self-care interventions and community-based prevention strategies are increasingly recognized as critical components of sustainable NCD control.

Self-care interventions encompass structured health education, lifestyle modification, medication adherence support, risk factor screening, and community engagement strategies. In Pakistan's mixed public–private health system, strengthening individual and community-level preventive approaches is essential to complement facility-based care.

Non-communicable diseases (NCDs) account for a substantial proportion of total deaths in Pakistan, with cardiovascular diseases representing the leading cause, followed by diabetes, chronic respiratory diseases, cancers, and mental health disorders (Jafar et al., 2013). The epidemiological transition in Pakistan has been marked by a shift from communicable diseases to chronic conditions driven by demographic changes, urbanization, and behavioral risk factors (Ajani et al., 2021). Tobacco consumption, hypertension, and increasing rates of overweight and obesity are among the most significant modifiable contributors to premature mortality (Tariq & Fatima, 2025). Without strengthened prevention strategies, projections indicate millions of avoidable deaths attributable to NCDs (Jafar et al., 2013).

The South Asian region shares similar structural determinants influencing NCD patterns, including socioeconomic disparities, limited public awareness, and fragmented healthcare delivery systems (Ferreira et al., 2026). Comparative evidence highlights that lifestyle behaviors such as unhealthy diet, physical inactivity, and tobacco use interact with constrained health system capacity to amplify disease burden (Bhuiyan et al., 2024). In Pakistan, the mixed public–private healthcare model presents challenges in ensuring equitable access, continuity of care, and consistent quality standards for chronic disease management (Gowani et al., 2016). These structural issues necessitate complementary strategies beyond facility-based treatment.

Self-care interventions have emerged as a critical strategy in LMIC contexts where health systems face workforce shortages and financial constraints. Pharmacy-based service models demonstrate potential to expand screening, counseling, and medication adherence support for NCD patients . Community retail pharmacies can act as accessible platforms for early detection and lifestyle modification advice, particularly in underserved areas (Adnan et al., 2026; Gentilini et al., 2025). Expanding the scope of pharmacists aligns with broader efforts to decentralize chronic disease management.

Community participatory interventions also provide an avenue for strengthening prevention and control efforts. Evidence from crisis-affected LMIC settings shows that Community Health Participatory (CHP) models enhance engagement, improve

adherence to treatment, and support behavioral change for cardiovascular, metabolic, respiratory, and mental health conditions . These interventions leverage local networks, peer educators, and culturally tailored communication strategies to promote sustainable self-management behaviors (Imtiaz et al., 2026). In Pakistan, where sociopolitical instability and health inequities persist, community-driven approaches are particularly relevant.

Adolescents represent a key population for preventive intervention, given early exposure to tobacco use and environmental pollutants. Implementation research targeting tobacco and air pollution exposure demonstrates the feasibility of adolescent-focused NCD prevention packages in Pakistan (Hoffman et al., 2024). Addressing behavioral risk factors early in life is essential to interrupt long-term disease trajectories and reduce future healthcare burdens (Husssain et al., 2026).

Quality-of-care strengthening further underpins effective self-care integration. A systematic rapid review in South Asia underscores the importance of standardized protocols, monitoring frameworks, and integrated service delivery in improving NCD outcomes (Ether & Saif-Ur-Rahman, 2021). High-quality primary care enhances patient trust, adherence, and sustained engagement in self-management practices (Ether & Saif-Ur-Rahman, 2021).

Collectively, these findings indicate that Pakistan's response to NCDs must incorporate multi-level prevention strategies that empower individuals while strengthening community systems and primary healthcare infrastructure. Self-care interventions, when embedded within supportive policy and service delivery frameworks, offer a scalable pathway to reduce premature mortality and long-term disability associated with chronic diseases (Jafar et al., 2013; Bhuiyan et al., 2024).

This systematic review synthesizes available evidence from Dimensions-identified publications examining self-care interventions and prevention strategies relevant to NCD control in Pakistan and comparable LMIC contexts.

Methods

Study design and reporting

A systematic review of observational and interventional studies was conducted to investigate self-care interventions and prevention strategies for non-communicable diseases (NCDs) in Pakistan. All studies published up to January 31, 2026 were included. The review was reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Figure 1).

Search methods for screening of studies

A systematic and comprehensive search of the electronic databases including PubMed, Medline, Scopus, Web of Science, Cochrane Library, ScienceDirect and Google Scholar to identify relevant studies on self-care interventions and NCD prevention strategies in Pakistan. Articles were downloaded, organized, and referenced . Additional studies were identified through manual screening of reference lists of the retrieved articles. The search was limited to publications in the English language.

The search strategy included combinations of keywords such as: "self-care" OR "self management", "prevention strategies" OR "preventive measures", "non-communicable diseases" OR "NCDs" OR "chronic diseases", AND "Pakistan". Keywords were used independently and in combination using Boolean operators AND/OR. Detailed search strategies are provided in figure 1.

Eligibility criteria

Studies were included if they met the following criteria:

Study period: Studies conducted or published until January 31, 2026.

Study type: Observational, cross-sectional, cohort and interventional studies;

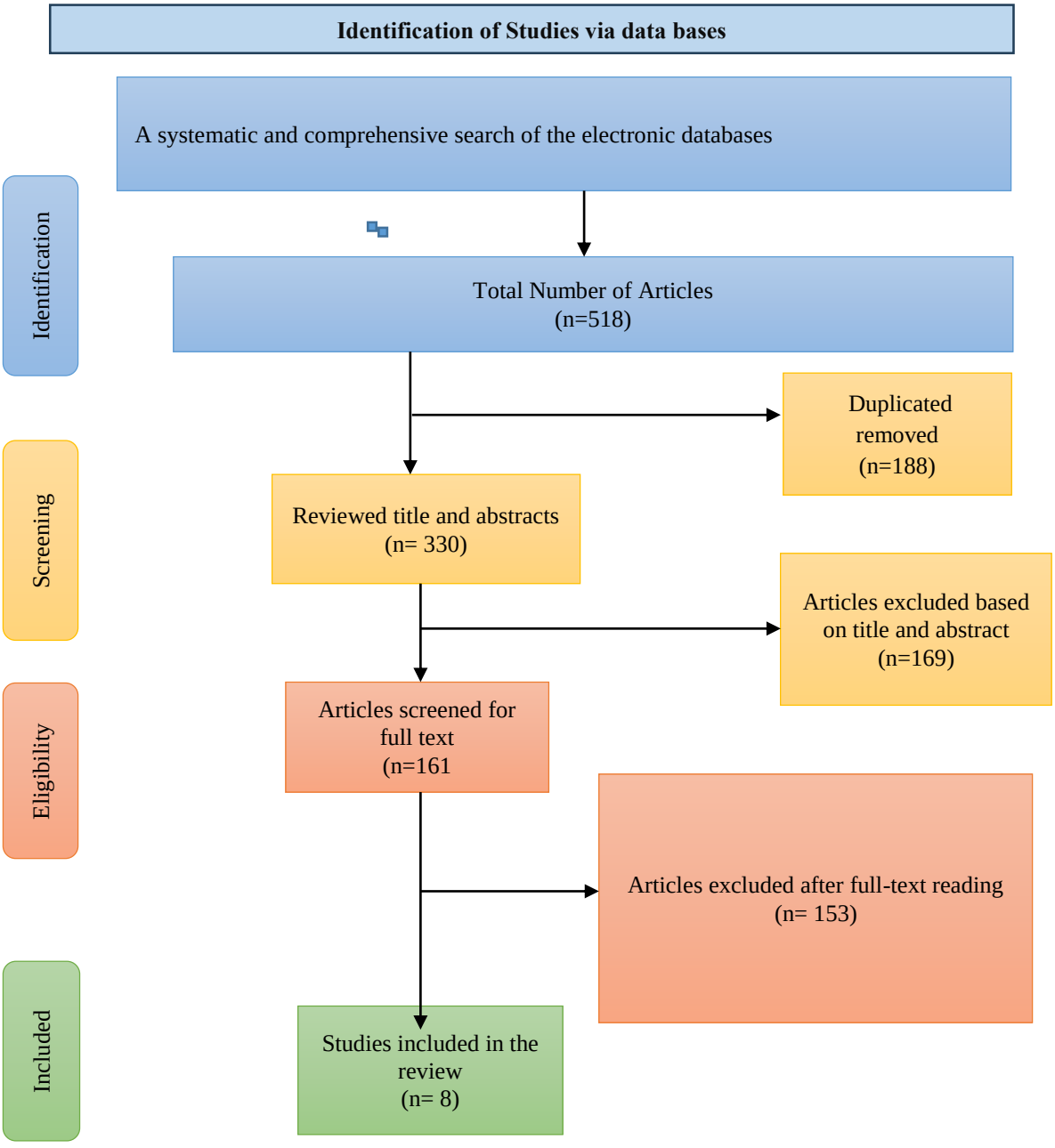
Population: Adults or healthcare populations in Pakistan;

Outcome: Self-care interventions, preventive strategies, or behavior changes related to NCDs.
Language: Published in English.
Review articles, case reports, case series, editorials, and letters to the editor were excluded.

Study selection and data extraction
Retrieved studies were carefully read to remove duplicates. The authors screened all titles and abstracts for eligibility, followed by full-text screening. Data were extracted independently by authors into a standardized Microsoft Excel template. Extracted variables included: author, publication year, region, study design, population, sample size, type of self-care intervention, outcomes, and quality score .

Quality assessment
The methodological quality of included studies was assessed by authors independently, with disagreements resolved by discussion and consensus. Studies scoring ≥5 on the quality assessment were considered low risk and included in the systematic review .

Figure 1 | Prisma Flow Diagram



Results

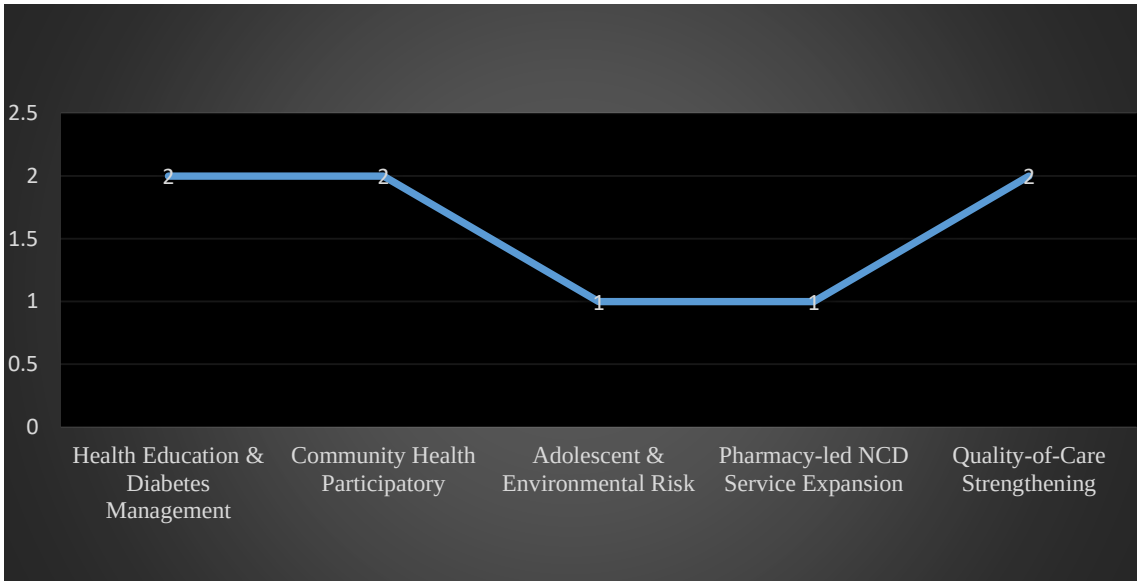
Result of the search

A systematic and comprehensive search of electronic databases initially identified 518 articles relevant to self-care interventions and prevention strategies for non-communicable diseases in Pakistan. After removing 188 duplicate records, 330 unique articles remained for title and abstract screening. During this screening phase, 169 articles were excluded because they did not meet the inclusion criteria based on relevance, study design, or population. The remaining 161 articles were assessed for full-text eligibility. Upon detailed review, 153 full-text articles were excluded due to reasons such as insufficient data, irrelevant outcomes, or study scope not aligning with the review objectives. Finally, 8 studies were included in the systematic review, providing the evidence base for analysis of self-care interventions and prevention strategies for non-communicable diseases in Pakistan.

Data were analyzed using SPSS 28 version. A narrative synthesis was conducted for self-care interventions and NCD prevention strategies. Where applicable, meta-analysis using random-effects models was conducted to estimate pooled prevalence or effect size of interventions. A structured literature search was conducted using the Dimensions database to identify peer-reviewed open-access publications addressing self-care and prevention strategies for NCDs in Pakistan and South Asia. Inclusion criteria comprised: (i) focus on cardiovascular diseases, diabetes, chronic respiratory diseases, cancer, or mental health; (ii) evaluation of self-care, educational, community-based, pharmacy-led, or quality improvement interventions; and (iii) relevance to Pakistan or comparable LMIC settings.

Eight publications meeting inclusion criteria were identified. Studies were categorized into thematic groups: (1) national burden context, (2) health education and self-management, (3) community participatory interventions, (4) adolescent prevention strategies, (5) pharmacy-led models, and (6) quality-of-care strengthening approaches. A narrative synthesis was conducted.

Figure 2 | Intervention Number of Studies



National Burden and Risk Context: Pakistan faces a rapidly escalating burden of non-communicable diseases (NCDs), driven by high prevalence of tobacco use, hypertension, obesity, and socioeconomic instability . Projections indicate substantial premature mortality if preventive measures are not strengthened (Jafar et al., 2013).

Comparative regional analyses show that lifestyle behaviors, social determinants, and health system capacity significantly influence NCD patterns across South Asia (Bhuiyan et al., 2024). These contextual factors underscore the need for multi-level prevention and self-care strategies tailored to the Pakistani population.

Health Education and Diabetes Self-Management: Structured health education interventions targeting adults with diabetes demonstrate significant improvements in disease knowledge and self-management behaviors. A quasi-experimental study among public sector school teachers in Sindh province showed that sessions emphasizing diet, physical activity, blood glucose monitoring, and complication awareness led to improved glycemic control (Kumar et al., 2022). Such findings align with broader evidence from South Asia that patient empowerment and health literacy enhance chronic disease management (Bhuiyan et al., 2024).

Community Health Participatory Interventions: Community Health Participatory (CHP) interventions, particularly in low- and middle-income countries (LMICs), strengthen prevention and control of cardiovascular diseases, diabetes, chronic respiratory diseases, and mental health conditions (Imtiaz et al., 2026). These interventions employ peer-led education, culturally adapted communication, and collaborative planning to improve community awareness, adherence to treatment, and behavioral change adoption. Barriers include limited funding and systemic instability, while facilitators include community ownership and stakeholder engagement (Imtiaz et al., 2026). Evidence suggests that regions with stronger primary healthcare integration show better alignment between prevention messaging and service delivery (Bhuiyan et al., 2024).

Adolescent and Environmental Risk Reduction: Adolescents are a key population for early NCD prevention, particularly in relation to tobacco exposure and air pollution. The FRESHAIR4Life initiative in Pakistan focused on adolescent-targeted interventions, including awareness campaigns and environmental risk mitigation strategies (Hoffman et al., 2024). Early-life preventive interventions are critical for reducing long-term NCD incidence, and the study highlighted the need for locally contextualized strategies to address variations in exposure levels and correlates across regions (Siddiqui et al., 2024).

Pharmacy-Led NCD Service Expansion: Community pharmacies are an underutilized platform for NCD prevention and management in LMICs. Pharmacist-led services including screening, medication counseling, and adherence support improve access to essential care and continuity of treatment (Gentilini et al., 2025). However, barriers such as regulatory limitations and insufficient training constrain full integration of pharmacy services into primary healthcare systems (Ajani et al., 2021).

Quality-of-Care Strengthening: Strengthening the quality of NCD service delivery is essential for sustainable self-care. Systematic rapid reviews in South Asia highlight the importance of structured care protocols, standardized monitoring, and guideline-based management for major NCD categories (Ether & Saif-Ur-Rahman, 2021). These interventions improve clinical standards, enhance patient engagement, and support long-term adherence to self-management practices.

Table 1| Summary of Self-Care Interventions and Prevention Strategies for NCDs in Pakistan

Intervention Type	Target Population	Key Components	Outcomes/Findings
Health Education & Diabetes Self-Management	Adults with diabetes (school teachers)	Structured sessions on diet, physical activity, blood glucose monitoring, and complication awareness	Improved disease knowledge and glycemic control; enhanced self-management behaviors
Community Health Participatory (CHP) Interventions	Adults in crisis-affected LMIC communities	Peer-led education, culturally adapted communication, collaborative planning	Improved awareness, adherence, and behavioral change; barriers: limited funding, systemic instability; facilitators: community engagement
Adolescent Risk Reduction & Environmental Interventions	Adolescents	Awareness campaigns, environmental risk mitigation (tobacco, air pollution)	Reduced early exposure to NCD risk factors; early prevention critical for long-term disease reduction
Pharmacy-Led NCD Services	General population accessing primary care	Screening, medication counseling, adherence support	Increased access to essential services; improved continuity of care; barriers: regulatory limitations, insufficient training
Quality-of-Care Strengthening	NCD patients across South Asia	Structured care protocols, guideline-based management, standardized monitoring	Enhanced service quality, patient engagement, and sustainability of self-care practices
National Burden & Risk Context	General Pakistani population	N/A (epidemiological data)	High prevalence of tobacco use, hypertension, obesity; projections indicate substantial premature mortality; lifestyle and system factors influence outcomes

Discussion

The reviewed literature demonstrates that effective NCD control in Pakistan requires multi-level self-care integration. Individual-level health education improves diabetes outcomes (Kumar et al., 2022), while community participatory models enhance prevention and adherence . Adolescent-focused interventions target critical behavioral and environmental risk exposures (Tariq & Fatima, 2025). Pharmacy-based service expansion increases accessibility and supports medication adherence. Concurrently, quality-of-care strengthening ensures continuity and sustainability of self-care initiatives. Pakistan's NCD epidemic is influenced by structural and socioeconomic determinants requiring integrated policy responses (Ether & Saif-Ur-Rahman, 2021). Combining preventive public health strategies with primary care strengthening offers the most sustainable pathway to reduce premature mortality.

The findings of this review reinforce that self-care interventions in Pakistan must be embedded within broader structural and policy reforms to achieve sustained impact. National strategic priorities emphasize tobacco control, hypertension management, obesity reduction, and improved chronic disease surveillance (Ferreira et al., 2026; Gentilini et al., 2025). However, weak enforcement of public health legislation and gaps in service delivery limit the effectiveness of prevention efforts . Integrating individual-level self-management education with system-level accountability mechanisms is therefore essential.

Comparative regional evidence suggests that socioeconomic inequalities and health literacy gaps significantly influence NCD outcomes across South Asia (Bhuiyan et al., 2024). Interventions that address behavioral change without considering social determinants may have limited long-term sustainability. Community participatory approaches demonstrate that local engagement and culturally sensitive programming enhance acceptability and adherence (Adnan et al., 2026; Imtiaz et al., 2026).
Furthermore, expanding access through pharmacies and primary care platforms can reduce barriers to routine screening and follow-up (Gentilini et al., 2025). Strengthened quality-of-care frameworks provide continuity and reinforce patient confidence in long-term self-management (Ether & Saif-Ur-Rahman, 2021). Together, these integrated approaches highlight the necessity of combining prevention, empowerment, and health system strengthening to reduce premature NCD mortality in Pakistan.

Limitations

This review is limited to publications identified within Dimensions and available as open access. Heterogeneity in study design and intervention types restricts direct comparability.

Conclusion

Evidence from eight publications indicates that self-care interventions encompassing health education, community participatory models, adolescent prevention strategies, pharmacy-led services, and quality-of-care improvements are essential for reducing NCD burden in Pakistan. Integrated implementation within primary healthcare systems is critical for sustainability and long-term impact.

References

Adnan, M., Asmat, K., & Bano, S. (2026, February 18). *Effect of MEWS education on nurses' knowledge and early detection of patient deterioration before ICU admission in adult high dependency units: https://doi.org/10.5281/zenodo.18829325*. https://pakjmcr.com/index.php/1/article/view/616

Ajani, K., Gowani, A., Gul, R., & Petrucka, P. (2021). Levels and Predictors of Self-Care Among Patients with Hypertension in Pakistan. *International Journal of General Medicine*, *Volume 14*, 1023–1032. https://doi.org/10.2147/ijgm.s297770

Bhuiyan, M. A., Galdes, N., Cuschieri, S., & Hu, P. (2024). A comparative systematic review of risk factors, prevalence, and challenges contributing to non-communicable diseases in South Asia, Africa, and Caribbeans. Journal of Health, Population and Nutrition.

Ether, S., & Saif-Ur-Rahman, K. (2021). A systematic rapid review on quality of care among non-communicable diseases (NCDs) service delivery in South Asia. *Public Health in Practice*, *2*, 100180. https://doi.org/10.1016/j.puhip.2021.100180

Ferreira, P. M., Dias, J. P. B., Barbosa, M., Martins, T., Pereira, R. P. G., Nascimento, M. C. D., & Sawada, N. O. (2026). Influence of Self-Care on the Quality of Life of Elderly People with Chronic Non-Communicable Diseases: A Systematic Review. *Healthcare*, *14*(3), 308. https://doi.org/10.3390/healthcare14030308

Gentilini, A., Kasonde, L., & Babar, Z.-U.-D. (2025). Expanding access to NCD services via community retail pharmacies in LMICs: A systematic review of the literature. Journal of Pharmaceutical Policy and Practice.

Gowani, A., Ahmed, H. I., Khalid, W., Muqeet, A., Abdullah, S., Khoja, S., & Kamal, A. K. (2016). Facilitators and barriers to NCD prevention in Pakistanis–invincibility or inevitability: a qualitative research study. *BMC Research Notes*, *9*(1), 282. https://doi.org/10.1186/s13104-016-2087-2

Hoffman, C. M., et al. (2024). The FRESHAIR4Life study: Global implementation research on non-communicable disease prevention targeting adolescents' exposure to tobacco and air pollution in disadvantaged populations. npj Primary Care Respiratory Medicine.

Husssain, A., Adnan, M., Kanwal, M., & Iqbal, A. (2026, February 22). *Impact of Gender-Based Discrimination in the nursing profession at Tertiary Care Hospitals Karachi, Pakistan; a cross-sectional study: https://doi.org/10.5281/zenodo.18829304*. https://pakjmcr.com/index.php/1/article/view/624

Imtiaz, S., et al. (2026). Community health participatory interventions in the prevention and control of non-communicable diseases including mental health in crisis-affected low- and middle-income countries: A scoping review. Global Health Action.

Jafar, T. H., et al. (2013). Non-communicable diseases and injuries in Pakistan: Strategic priorities. The Lancet.

Kumar, R., et al. (2022). Effectiveness of health education intervention on diabetes mellitus among the teachers working in public sector schools of Pakistan. BMC Endocrine Disorders.

Siddiqui, F., Hewitt, C., Jennings, H., Coales, K., Mazhar, L., Boeckmann, M., & Siddiqi, N. (2024). Self-management of chronic, non-communicable diseases in South Asian settings: A systematic mixed-studies review. *PLOS Global Public Health*, *4*(1), e0001668. https://doi.org/10.1371/journal.pgph.0001668

Tariq, M. U., & Fatima, S. (2025). COMMUNITY-BASED STRATEGIES FOR PREVENTING NONCOMMUNICABLE DISEASES IN LOW-RESOURCE SETTINGS. *www.pakistanhealthsolutions.org*. https://doi.org/10.71465/pjhs29