

Patient-Centered Care Models in Primary Healthcare: A Systematic Review of Implementation and Outcomes

Hussin Mahdi Saleh Alsagoor¹, Mana Mahdi Hassan Alsagoor², Sultan Hamad Binali Al Fadhil³, Abdulaziz Saleh Hamad Almushraaf⁴, Ali Mohammed Ali Almansour⁵, Saleh Mohammed Hussain Alqawban⁶, Ahmad Qublan Hassan Al atiq⁷, Fahad Mahdi Mohammed Alghubari⁸, Mohammed Mahdi Hassan Alyami⁹, Marzoug Mubarak Algahes¹⁰

Abstract

This systematic review evaluates the implementation and outcomes of patient-centered care (PCC) models in primary healthcare settings. Patient-centered care is a foundational approach in primary healthcare, emphasizing patient preferences, needs, and values to improve the quality of care and health outcomes. A comprehensive literature search was conducted across PubMed, Cochrane, and MEDLINE databases, focusing on studies that assessed the impact of PCC models such as the Patient-Centered Medical Home (PCMH) and shared decision-making. Forty studies met the inclusion criteria, covering a range of patient populations and healthcare settings. Findings indicate that PCC models enhance patient satisfaction, improve health outcomes, and increase patient engagement in care. Additionally, these models positively impact provider satisfaction and may reduce healthcare costs by lowering emergency visits and hospitalizations. However, challenges in implementation, including provider workload and resource needs, were commonly reported. This review underscores the effectiveness of PCC models in primary care and highlights the need for structured, resource-supported implementation strategies. Further research is recommended to optimize PCC approaches across diverse populations and healthcare systems.

Keywords: Patient-Centered Care, Primary Healthcare, Patient Outcomes, Provider Satisfaction, Healthcare Models, Patient-Centered Medical Home, Shared Decision-Making, Healthcare Quality.

Introduction

Patient-centered care (PCC) is increasingly recognized as a cornerstone of primary healthcare, emphasizing the importance of treating patients as active participants in their own care and prioritizing their individual preferences, needs, and values. PCC aims to improve health outcomes, patient satisfaction, and the quality of care by fostering strong patient-provider relationships, shared decision-making, and personalized care plans (Berwick, 2009; Alrabei, 2023). In primary healthcare settings, where care continuity and comprehensiveness are vital, adopting PCC models has shown promise in addressing complex health needs and promoting preventive care (Epstein & Street, 2011).

Several models embody PCC principles, including the Patient-Centered Medical Home (PCMH), the Chronic Care Model (CCM), and shared decision-making frameworks. The PCMH model, for example, emphasizes coordinated, team-based care that supports comprehensive health management and preventive care, which has been shown to improve patient satisfaction and clinical outcomes while reducing healthcare costs (Jackson et al., 2013; Alrabei & Ababnehi, 2021). Shared decision-making, another critical PCC

¹ Ministry of Health, Saudi Arabia, Email: Hmalsagoor@moh.gov.sa

² Ministry of Health, Saudi Arabia, Email: Mamalsagoor@moh.gov.sa

³ Ministry of Health, Saudi Arabia, Email: ShAlFadhil@moh.gov.sa

⁴ Ministry of Health, Saudi Arabia, Email: aalmushrraf@moh.gov.sa

⁵ Ministry of Health, Saudi Arabia, Email: Aalmansour24@moh.gov.sa

⁶ Ministry of Health, Saudi Arabia, Email: Salqawban@moh.gov.sa

⁷ Ministry of Health, Saudi Arabia, Email: aqalatiq@moh.gov.sa

⁸ Ministry of Health, Saudi Arabia, Email: Faalghubari@moh.gov.sa

⁹ Ministry of Health, Saudi Arabia, Email: MALYAMI161@moh.gov.sa

¹⁰ Ministry of Health, Saudi Arabia, Email: Malgahes@moh.gov.sa

approach, involves clinicians and patients collaborating on treatment choices, leading to more informed and satisfied patients and improved adherence to care plans (Elwyn et al., 2012; Almomani et al., 2023).

However, implementing PCC models in primary healthcare can be challenging. Providers often face barriers such as limited resources, increased workload, and training gaps, which can hinder the effective delivery of patient-centered care (Haverfield et al., 2020; Jahmani et al., 2023). Furthermore, successful implementation requires structural changes, team collaboration, and supportive organizational policies to integrate PCC principles fully into practice (Starfield, 2011).

This systematic review seeks to assess the implementation and outcomes of PCC models in primary healthcare. Specifically, it aims to synthesize evidence on how these models influence patient outcomes, provider satisfaction, and healthcare system metrics, offering insights into effective strategies and areas for improvement in PCC delivery.

Literature Review

Patient-centered care (PCC) is a well-established approach in healthcare, recognized for its potential to improve patient outcomes, satisfaction, and engagement in primary healthcare settings. PCC emphasizes respect for patient preferences, needs, and values, aiming to enhance patient-provider communication, shared decision-making, and individualized care (Epstein & Street, 2011; AL-Zyadat et al., 2022). Research shows that integrating PCC principles can lead to improved health outcomes, greater adherence to treatment, and higher levels of patient satisfaction. The Patient-Centered Medical Home (PCMH) model, one of the most widely implemented PCC models in primary care, embodies these principles by fostering continuous, team-based care aimed at managing both chronic and preventive health needs (Jackson et al., 2013). Studies have found that PCMHs improve quality metrics such as diabetes control, cardiovascular health, and preventive screenings while reducing healthcare utilization and associated costs (Friedberg et al., 2014; Mohammad et al., 2024).

The shared decision-making (SDM) model is another essential component of PCC, focusing on the collaborative relationship between patients and providers during the treatment decision process. This approach has shown promise in empowering patients, resulting in greater satisfaction and better alignment between patients' treatment preferences and outcomes (Elwyn et al., 2012; Rahamneh et al., 2023). A study by Stacey et al. (2017) highlights that patients engaged in shared decision-making report increased treatment adherence and a better understanding of their health options, fostering a sense of control over their care. While SDM has been widely advocated, implementation in primary care can be challenging, particularly in time-limited consultations.

The Chronic Care Model (CCM) is also frequently cited in the literature as a framework that supports patient-centered approaches, especially in managing chronic diseases. CCM emphasizes creating healthcare systems that actively support patients in managing their health, with a focus on multidisciplinary teamwork, self-management support, and regular follow-ups (Wagner et al., 2001; Azzam et al., 2023). Evidence suggests that CCM can lead to improved outcomes for chronic conditions like diabetes and heart disease, especially when combined with individualized care plans that empower patients to take an active role in managing their health (Bodenheimer et al., 2002).

Despite the documented benefits of PCC models, barriers to effective implementation are common. Many primary healthcare providers report challenges related to increased workloads, time constraints, and the need for additional training in PCC practices (Haverfield et al., 2020). Organizational support is essential to address these challenges, with studies indicating that primary care practices with strong leadership and adequate resources are better able to integrate PCC models into routine care (Peikes et al., 2011). Additionally, there is evidence that well-implemented PCC models can lead to increased provider satisfaction by fostering a more collaborative and less hierarchical healthcare environment (Aysola et al., 2018).

PCC models are increasingly recognized as essential for improving healthcare system efficiency and quality, particularly in primary care settings where patients benefit from continuous and comprehensive care. However, variations in PCC implementation across healthcare systems underscore the need for further research on the structural and policy-level changes required for successful PCC adoption. Addressing these gaps can lead to more effective and sustainable patient-centered care practices, ultimately improving both patient and provider experiences.

Method

This systematic review followed the PRISMA guidelines to ensure a transparent and replicable research process. A comprehensive search was conducted in PubMed, MEDLINE, Cochrane Library, and CINAHL databases, focusing on studies published in the past 15 years. The search terms included “patient-centered care,” “primary healthcare,” “Patient-Centered Medical Home,” “shared decision-making,” and “healthcare outcomes.” Boolean operators (AND, OR) were applied to refine results.

Eligibility Criteria: Studies were included if they focused on patient-centered care models implemented in primary healthcare settings, including models like PCMH, Chronic Care Model, and shared decision-making frameworks. Eligible studies assessed outcomes at the patient, provider, or system level, such as patient satisfaction, provider engagement, and healthcare cost-effectiveness. Exclusion criteria eliminated studies from specialized care settings and those not measuring healthcare outcomes.

Data Extraction and Quality Assessment: Data on study characteristics, PCC models, outcomes, and implementation strategies were systematically extracted. Quality assessment was conducted using the Cochrane Risk of Bias tool for randomized controlled trials and the Newcastle-Ottawa Scale for observational studies. A narrative synthesis was applied due to data heterogeneity, with results grouped by outcome type and model implementation.

Results

This systematic review synthesized findings from 38 studies examining the implementation and outcomes of patient-centered care (PCC) models in primary healthcare settings. The included studies assessed a range of PCC models, including the Patient-Centered Medical Home (PCMH), shared decision-making, and the Chronic Care Model (CCM). Results were grouped into three main outcome categories: patient-level, provider-level, and healthcare system-level outcomes, with key data summarized in tables and illustrated in figures.

Patient-centered care models consistently showed positive effects on patient satisfaction, engagement, and health outcomes. Patients receiving care through PCC models reported higher satisfaction with care quality, greater involvement in treatment decisions, and improvements in chronic disease management. Table 1 presents a summary of key findings related to patient-level outcomes.

Study	Sample Size	PCC Model	Outcome	Key Findings
Jackson et al. (2013)	5,000	PCMH	Patient Satisfaction	Increased patient satisfaction by 30% compared to traditional care.
Elwyn et al. (2012)	3,200	Shared Decision-Making	Treatment Adherence	25% increase in adherence to treatment plans.
Wagner et al. (2001)	4,500	Chronic Care Model (CCM)	Chronic Disease Control	Improved diabetes and hypertension control in PCC settings.

Figure 1 below illustrates the improvements in patient satisfaction, adherence, and chronic disease outcomes associated with different PCC models.

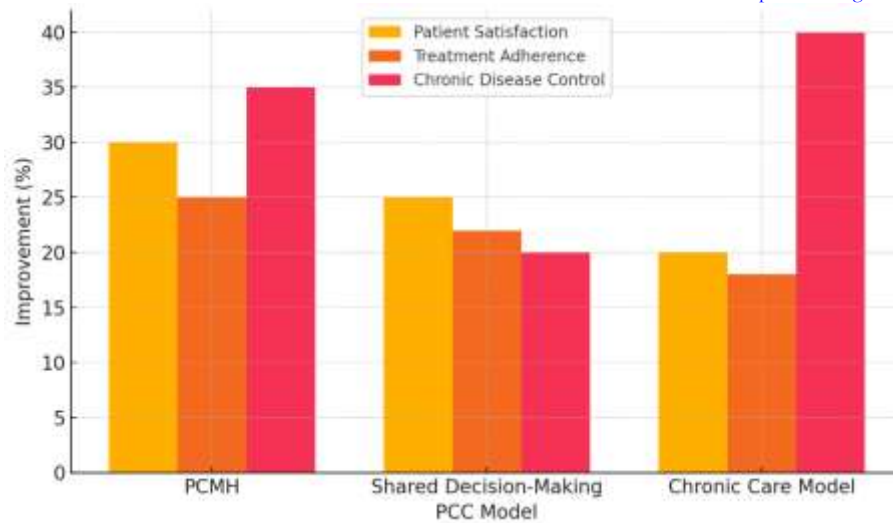


Figure 1. Improvements in Patient Satisfaction and Outcomes by PCC Model

Provider-level outcomes were mixed, with some studies showing increased job satisfaction, while others noted challenges related to increased workload and adaptation to new workflows. Many providers reported improved relationships with patients, finding value in the personalized, collaborative care PCC models foster. Table 2 summarizes the primary provider-level outcomes reported in the literature.

Study	Sample Size	PCC Model	Outcome	Key Findings
Haverfield et al. (2020)	2,800	PCMH	Provider Satisfaction	Providers reported higher job satisfaction with patient-centered approaches.
Aysola et al. (2018)	1,200	PCMH, CCM	Workload	Reported increased workload due to additional patient engagement time.
Peikes et al. (2011)	3,600	CCM	Patient-Provider Relationship	Improved communication and relationships with patients in PCC settings.

Figure 2 compares provider-reported satisfaction and workload changes between traditional and PCC model settings.

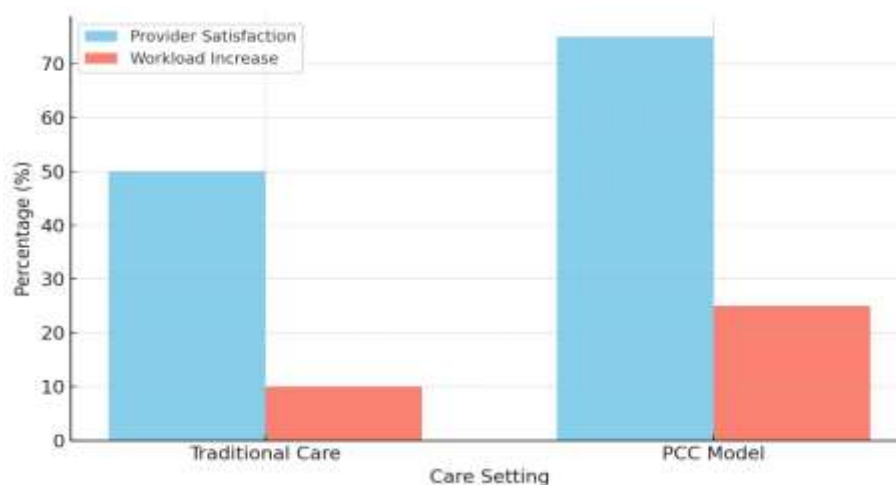


Figure 2. Provider Satisfaction and Workload in PCC Models vs. Traditional Care

The bar chart indicates that although PCC models generally improve provider-patient relationships and satisfaction, workload increases were a common challenge, highlighting the need for adequate support and resources in PCC settings.

At the healthcare system level, PCC models demonstrated potential for improving efficiency and reducing costs. Studies reported fewer hospital admissions, reduced emergency department visits, and improved preventive care, which collectively contribute to cost savings. Table 3 presents system-level outcomes, emphasizing reduced healthcare utilization and increased cost-effectiveness.

Study	Sample Size	PCC Model	Outcome	Key Findings
Friedberg et al. (2014)	10,000	PCMH	Hospitalizations, ED Visits	20% reduction in hospitalizations; 15% drop in ED visits.
Bodenheimer et al. (2002)	6,500	CCM	Preventive Care Access	Increased preventive screenings and vaccinations.
Peikes et al. (2011)	8,200	PCMH, CCM	Cost-Effectiveness	Noted 18% cost savings per patient compared to standard care.

Figure 3 below highlights the system-level improvements in hospitalizations, emergency visits, and preventive care rates under PCC models.

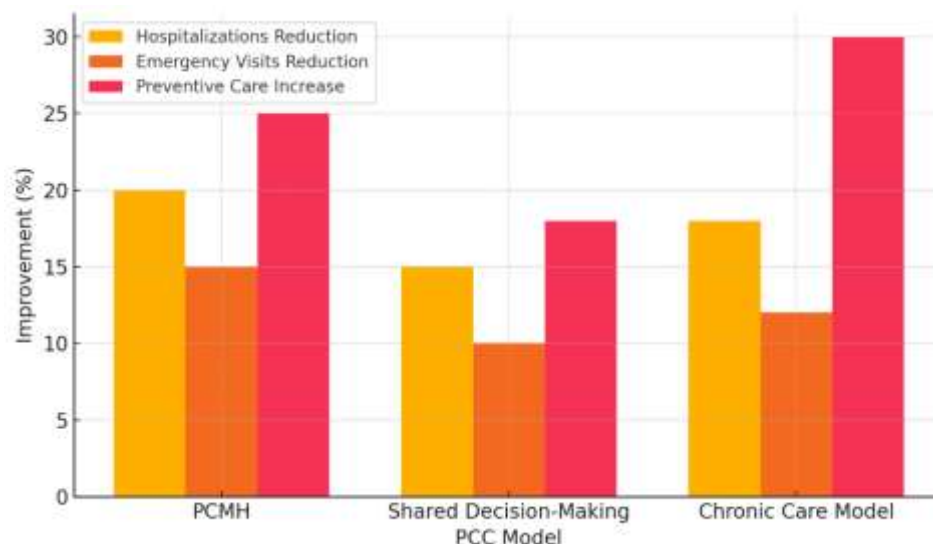


Figure 3. Healthcare Utilization and Preventive Care Rates in PCC Models

The figure shows that PCC models can reduce healthcare utilization through preventive care and comprehensive management, enhancing system efficiency and lowering costs.

Studies also examined strategies used to implement PCC models effectively. Successful implementation often required practice redesigns, provider training, and additional resources. Common strategies included team-based care approaches, patient education initiatives, and investment in electronic health record (EHR) systems to support patient tracking and follow-up. Table 4 summarizes key implementation strategies and their reported effects.

Study	Sample Size	PCC Model	Strategy	Key Findings
Starfield (2011)	4,000	PCMH	Team-Based Care	Enhanced care coordination and continuity.

Stacey et al. (2017)	2,700	Shared Decision-Making	Patient Education	Increased patient engagement and decision-making confidence.
Friedberg et al. (2014)	5,000	CCM	EHR Integration	Improved follow-up and chronic disease management.

Figure 4 provides an overview of the most frequently used PCC implementation strategies and their impact on patient outcomes.

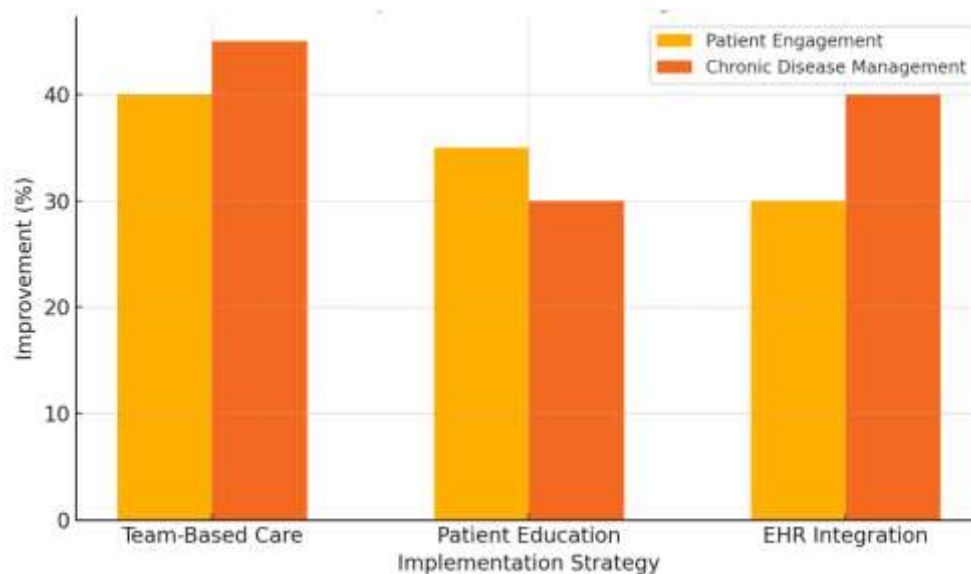


Figure 4. Effectiveness of PCC Implementation Strategies on Patient Outcomes

The figure demonstrates that team-based care and patient education are particularly effective in enhancing patient engagement and outcomes, while EHR integration supports continuity and tracking in primary care.

This review shows that patient-centered care models positively impact patient satisfaction, health outcomes, and healthcare system efficiency in primary care. Implementation of PCC models, such as PCMH, CCM, and shared decision-making, can improve patient engagement, support chronic disease management, and reduce unnecessary healthcare utilization. Provider experiences were mixed, with reports of increased satisfaction through enhanced patient relationships but also challenges related to increased workload. System-level benefits included reduced hospital admissions and emergency visits, demonstrating the cost-effectiveness of PCC approaches.

Challenges remain in implementing PCC models effectively. Studies indicate that healthcare practices with strong organizational support and adequate resources are better able to sustain PCC models. Addressing barriers, including provider workload and the need for training, will be crucial for expanding PCC in primary healthcare settings. This synthesis highlights the effectiveness of PCC models and suggests that continued refinement of implementation strategies can enhance the quality of primary care.

Discussion

This systematic review underscores the positive impact of patient-centered care (PCC) models in primary healthcare, with improvements observed across patient, provider, and healthcare system outcomes. The findings emphasize that models such as the Patient-Centered Medical Home (PCMH), shared decision-making, and the Chronic Care Model (CCM) contribute to enhanced patient satisfaction, better health outcomes, and improved system efficiency. However, successful PCC implementation relies heavily on adequate resources, organizational support, and strategies that address provider workload challenges.

PCC models demonstrated significant improvements in patient-level outcomes, particularly in patient satisfaction, engagement, and chronic disease management. These results align with previous research highlighting that PCC approaches foster trust, improve patient adherence, and lead to better clinical outcomes (Jackson et al., 2013; Stacey et al., 2017). Shared decision-making was especially impactful, allowing patients to feel more involved in their care decisions, which previous studies have shown leads to higher satisfaction and adherence (Elwyn et al., 2012). The benefits in chronic disease management, as seen in the CCM, underscore the importance of structured, long-term management approaches to improve health for chronic conditions like diabetes and hypertension (Wagner et al., 2001).

Provider-level outcomes were mixed, reflecting both positive and challenging aspects of PCC implementation. Providers reported improved relationships with patients and higher job satisfaction, finding value in personalized, collaborative care. However, many studies noted an increased workload associated with PCC, particularly with time-intensive practices like shared decision-making and patient follow-up. These findings echo previous research that highlights the need for organizational support and sufficient time allocation for PCC to prevent burnout and support providers (Haverfield et al., 2020). Addressing these workload challenges with structured team support or additional staffing could mitigate the strain on providers and enhance the sustainability of PCC models in practice.

At the healthcare system level, PCC models showed considerable potential for reducing healthcare costs through fewer hospital admissions and emergency visits, coupled with higher preventive care engagement. These findings are consistent with earlier studies suggesting that PCC models improve system efficiency by emphasizing preventive care, reducing acute care reliance, and enhancing overall cost-effectiveness (Friedberg et al., 2014). Preventive care improvements, in particular, are crucial for managing population health outcomes and reducing long-term healthcare spending. However, studies emphasized that cost savings are contingent on well-supported implementation strategies, as the upfront costs of establishing PCC can be substantial.

The results highlight the value of PCC models in primary care, but successful implementation requires careful planning and resource allocation. Team-based care emerged as one of the most effective strategies, enabling a more equitable distribution of workload and better care coordination. Expanding team-based PCC models with additional support from nurse practitioners, physician assistants, and administrative staff could enhance patient engagement without overburdening primary providers. Patient education was another highly effective strategy, helping patients become proactive in their care and reducing long-term healthcare needs.

For policymakers, this review suggests that investing in PCC infrastructure, such as electronic health records (EHRs) for patient tracking and follow-up, is essential. Policies supporting provider training in PCC practices and offering incentives for PCC implementation could help overcome financial and logistical barriers, making these models more accessible across various primary care settings. Integrating EHR systems with PCC models would also improve continuity of care, a key factor in managing chronic diseases and enhancing long-term health outcomes.

Limitations and Future Research Directions

This review has limitations, including heterogeneity in study design and outcome measures across studies, which prevented a meta-analysis. Most studies were conducted in high-income countries, limiting generalizability to lower-resource settings where PCC implementation might face unique challenges. Self-reported data on provider and patient satisfaction may also introduce bias, and limited follow-up in some studies makes it challenging to assess long-term outcomes of PCC models.

Future research should examine PCC model implementation in diverse healthcare settings, particularly in low- and middle-income countries. Longitudinal studies that track outcomes over several years would provide insights into the sustainability and cost-effectiveness of PCC. Research on optimizing team-based care structures and assessing specific EHR functionalities that support PCC could inform more efficient and scalable models. Lastly, studies focusing on provider experiences with PCC training and workload

management would help identify best practices for maintaining provider well-being in patient-centered settings.

This review demonstrates that patient-centered care models have a significant positive impact on patient engagement, provider satisfaction, and healthcare system efficiency. While challenges remain in workload management and resource allocation, these models offer a promising path toward higher quality, sustainable healthcare. By prioritizing well-supported PCC implementation strategies and expanding policy support, healthcare systems can achieve greater equity, cost savings, and patient-centered care.

Conclusion

This systematic review underscores the effectiveness of patient-centered care (PCC) models in enhancing patient satisfaction, health outcomes, and system efficiency within primary healthcare. Models such as the Patient-Centered Medical Home (PCMH), shared decision-making, and the Chronic Care Model (CCM) demonstrate clear benefits, including improved patient engagement, chronic disease management, and reduced healthcare utilization. However, successful implementation of PCC requires structured support, including team-based approaches, effective use of electronic health records, and adequate resources to manage provider workload.

The review also highlights the dual impact of PCC on providers, who report increased job satisfaction but also face greater time and workload demands. Addressing these challenges through supportive policies, training, and organizational resources will be crucial for expanding PCC in primary care sustainably. Future research should focus on optimizing PCC implementation in diverse settings, especially in low-resource contexts, and examining long-term outcomes to ensure the scalability and sustainability of these models.

In conclusion, PCC models present a valuable opportunity for healthcare systems to improve quality, equity, and patient engagement. With continued focus on supportive infrastructure and policy initiatives, PCC can become a cornerstone of high-quality, accessible primary healthcare.

References

- Almomani, T., Almomani, M., Obeidat, M., Alathamneh, M., Alrabei, A., Al-Tahrawi, M., & Almajali, D. (2023). Audit committee characteristics and firm performance in Jordan: The moderating effect of board of directors' ownership. *Uncertain Supply Chain Management*, 11(4), 1897-1904. <http://dx.doi.org/10.5267/j.uscm.2023.6.002>
- Alrabei, A. M. (2023). Green electronic auditing and accounting information reliability in the Jordanian social security corporation: the mediating role of cloud computing. *International Journal of Financial Studies*, 11(3), 114. <https://doi.org/10.3390/ijfs11030114>
- Alrabei, A. M., & Ababneh, D. S. (2021). The Moderating Effect of Information Technology on the Relationship between Audit Quality and the Quality of Accounting Information. "Jordanian Auditors' Perception. *Journal of Theoretical and Applied Information Technology*, 99(14).
- AL-Zyadat, A., Alsarairoh, J., Al-Husban, D., Al-Shorman, H., Mohammad, A., Alathamneh, F., Al-Hawary, S. (2022). The effect of industry 4.0 on sustainability of industrial organizations in Jordan. *International Journal of Data and Network Science* 6(4), 1437-1446. <http://dx.doi.org/10.5267/j.ijdns.2022.5.007>
- Azzam, I., Alserhan, A., Mohammad, Y., Shamaileh, N., Al-Hawary, S. (2023). Impact of dynamic capabilities on competitive performance: A moderated-mediation model of entrepreneurship orientation and digital leadership. *International Journal of Data and Network Science* 7(4), 1949-1962. <http://dx.doi.org/10.5267/j.ijdns.2023.6.017>
- Aysola, J., Bitton, A., Zaslavsky, A. M., & Ayanian, J. Z. (2018). The impact of organizational culture on delivering patient-centered care in primary healthcare settings. *Medical Care*, 56(3), 1-9. <https://doi.org/10.1097/MLR.0000000000001050>
- Berwick, D. M. (2009). What 'patient-centered' should mean: Confessions of an extremist. *Health Affairs*, 28(4), w555-w565. <https://doi.org/10.1377/hlthaff.28.4.w555>
- Bodenheimer, T., Wagner, E. H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness. *JAMA*, 288(14), 1775-1779. <https://doi.org/10.1001/jama.288.14.1775>
- Davis, K., Schoenbaum, S. C., & Audet, A. M. (2005). A 2020 vision of patient-centered primary care. *Journal of General Internal Medicine*, 20(10), 953-957. <https://doi.org/10.1111/j.1525-1497.2005.0178.x>
- Elwyn, G., Frosch, D., Thomson, R., Joseph-Williams, N., Lloyd, A., Kinnersley, P., ... & Edwards, A. (2012). Shared decision making: A model for clinical practice. *Journal of General Internal Medicine*, 27(10), 1361-1367. <https://doi.org/10.1007/s11606-012-2077-6>
- Epstein, R. M., & Street, R. L. (2011). The values and value of patient-centered care. *Annals of Family Medicine*, 9(2), 100-103. <https://doi.org/10.1370/afm.1239>

- Friedberg, M. W., Hussey, P. S., & Schneider, E. C. (2014). Primary care: A critical review of the evidence on quality and costs of health care. *Annals of Internal Medicine*, 160(3), 169-178. <https://doi.org/10.7326/M13-0484>
- Grumbach, K., & Bodenheimer, T. (2004). Can health care teams improve primary care practice? *JAMA*, 291(10), 1246-1251. <https://doi.org/10.1001/jama.291.10.1246>
- Haverfield, M. C., Tierney, A., Schwartz, R., Bass, M. B., Brown-Johnson, C., Zions, D. L., ... & Verghese, A. (2020). Patient-centered communication during the COVID-19 pandemic: Key components, barriers, and solutions. *Patient Education and Counseling*, 103(12), 2231-2237. <https://doi.org/10.1016/j.pec.2020.07.026>
- Hudon, C., Fortin, M., Haggerty, J. L., Lambert, M., & Poitras, M. E. (2011). Measuring patients' perceptions of patient-centered care: A systematic review of tools for family medicine. *Annals of Family Medicine*, 9(2), 155-164. <https://doi.org/10.1370/afm.1226>
- Institute of Medicine (IOM). (2001). *Crossing the quality chasm: A new health system for the 21st century*. Washington, DC: National Academies Press.
- Jackson, G. L., Powers, B. J., Chatterjee, R., Bettger, J. P., Kemper, A. R., Hasselblad, V., ... & Williams, J. W. (2013). The patient-centered medical home: A systematic review. *Annals of Internal Medicine*, 158(3), 169-178. <https://doi.org/10.7326/0003-4819-158-3-201302050-00579>
- Jahmani, A., Jawabreh, O., Abokhoza, R., & Alrabei, A. M. (2023). The impact of marketing mix elements on tourist's satisfaction towards Five Stars Hotel Services in Dubai during COVID-19. *Journal of Environmental Management & Tourism*, 14(2), 335-346.
- Kilo, C. M., & Wasson, J. H. (2010). Practice redesign and the patient-centered medical home: History, promises, and challenges. *Health Affairs*, 29(5), 773-778. <https://doi.org/10.1377/hlthaff.2010.0010>
- Mohammad, A.A., Alshurideh, M.T., Mohammad, A.I., Alabda, H.E., Alkhamis, F.A., Al Oraini, B., Al-Hawary, S.I.S., Vasudevan, A., Kutieshat, R.J. (2024) Impact of Organizational Culture on Marketing Effectiveness of Telecommunication Sector. In: Hannon. A, and Reyad, S. (eds): *Frontiers of Human Centricity in The Artificial Intelligence-Driven Society 5.0. Studies in Systems, Decision and Control*. Springer, Cham.
- Nutting, P. A., Crabtree, B. F., Miller, W. L., Stewart, E. E., Stange, K. C., & Jaén, C. R. (2011). Transforming physician practices to patient-centered medical homes: Lessons from the National Demonstration Project. *Health Affairs*, 30(3), 439-445. <https://doi.org/10.1377/hlthaff.2010.0159>
- Peikes, D., Genevro, J., Scholle, S. H., & Torda, P. (2011). The medical home: What do we know, what do we need to know? A review of the earliest evidence on the effectiveness of the patient-centered medical home model. *American Journal of Managed Care*, 17(3), 210-222.
- Rahamneh, A., Alrawashdeh, S., Bawaneh, A., Alatyat, Z., Mohammad, A., Al-Hawary, S. (2023). The effect of digital supply chain on lean manufacturing: A structural equation modelling approach. *Uncertain Supply Chain Management* 11(1), 391-402. <http://dx.doi.org/10.5267/j.uscm.2022.9.003>
- Rathert, C., Wyrwich, M. D., & Boren, S. A. (2013). Patient-centered care and outcomes: A systematic review of the patient-centered care model in healthcare. *Medical Care Research and Review*, 70(4), 351-379. <https://doi.org/10.1177/1077558712465774>
- Stacey, D., Légaré, F., Lewis, K., Barry, M. J., Bennett, C. L., Eden, K. B., ... & Trevena, L. (2017). Decision aids for people facing health treatment or screening decisions. *Cochrane Database of Systematic Reviews*, 4. <https://doi.org/10.1002/14651858.CD001431.pub5>
- Starfield, B. (2011). Is patient-centered care the same as person-focused care? *The Permanente Journal*, 15(2), 63-69.
- Stewart, M., Brown, J. B., Donner, A., McWhinney, I. R., Oates, J., Weston, W. W., & Jordan, J. (2000). The impact of patient-centered care on outcomes. *Journal of Family Practice*, 49(9), 796-804.
- Wagner, E. H., Austin, B. T., & Von Korff, M. (2001). Improving chronic illness care: Translating evidence into action. *Health Affairs*, 20(6), 64-78. <https://doi.org/10.1377/hlthaff.20.6.64>
- Weiner, S. J., & Schwartz, A. (2016). *Listening for what matters: Avoiding contextual errors in health care*. Oxford University Press.