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Optimizing the Healthcare Team: A Systematic Review of Role Delegation and Task Sharing Between Nurses and Secretarial Staff in General Medicine Practices

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Abstract

Background: General medicine practices are facing rising clinical complexity, administrative tasks, and patient demand, which require the establishment of innovative team-based care models to optimize efficiency and staff well-being.

Aim: The systematic review uses 2015-2025 literature to report on models, outcomes, facilitators, and barriers to role delegation and task sharing between secretarial and nursing staff in general medicine.

Methods: Systematic database searching was used through databases like PubMed, CINAHL, and Scopus. Eligible studies were those that evaluated interventions of task delegation or role sharing between administrative and nursing staff in primary care settings and reported relevant outcomes.

Results: Examples of prominent models mentioned are the Chronic Care Model (CCM), teamlets, and protocol-based task redistribution. There is evidence that effective delegation significantly improves physician and staff burnout, team satisfaction, and functional effectiveness (e.g., reduced wait times, better panel management). Appropriately delegated work can maintain or even improve quality measures for chronic disease and preventive care. Significant obstacles include preservation of professional role, regulatory constraints, and inadequate training, while effective leadership, co-designed workflows, and effective communication are key facilitators.

Conclusion: Intentional redesign of nurse-secretarial staff positions is a crucial strategy for creating a high-performing, sustainable primary care system, but success depends on surmounting implementation issues.

Keywords: Task Shifting, Primary Care, Health Workforce, Efficiency, Organizational, Interprofessional Relations, Burnout

1. Introduction

The environment of primary care is constantly evolving, with more chronic illnesses, an aging population, greater documentation requirements, and heightened patients' expectations for access and communication (Edwards et al., 2018; Eid, 2024). General medicine practices are typically the point of entry of patients within the healthcare system and bear the brunt of these pressures. Physicians have high levels of burnout, a large percentage of which may be attributed to an overabundance of administrative work that detracts from patient care (Shanafelt et al., 2022). The condition, known as "scope of creep" in administrative tasks, has necessitated a severe redefinition of traditional role boundaries among the practice team (Zhang et al., 2025).

Within such a staff, registered nurses (RNs) and medical secretaries (also administrative assistants, medical receptionists, or patient service coordinators) are two key positions. Historically, the division of labor is neatly demarcated: nurses do the clinical work (e.g., medication administration, patient education, triage), while secretarial staff handle administrative duties (e.g., scheduling, billing, correspondence). This rigid demarcation, however, is today well established as wasteful and unviable (Sinsky et al., 2022). A great deal of the work that takes up physician and nurse time could safely and properly be done by appropriately trained administrative staff, and vice versa, some of

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the administrative work requiring clinical context could be streamlined by the nurses (Beshbishy, 2024).

Role delegation and task sharing are the underlying principles of this revolution. Delegation has traditionally been defined as the delegation of duty to have work done by one individual to another, but with responsibility for the outcome (Abdu Asiri et al., 2025). Within the present review scenario, it is commonly a nurse delegating a specific, protocol-driven clinical task to a member of secretarial staff. Task sharing, another but not unrelated term, is the redistribution of work among team members based on skills and working efficiency, which does not necessarily involve a formal delegation of responsibility but is a shifting of tasks (Robertson et al., 2020). The impetus for this review stems from the recent and mounting literature of the last decade describing the real-world application, efficacy, and implementation barriers of these strategies in real general medicine practice.

This systematic review will critically assess and synthesize the evidence between 2015 and 2025 regarding the delegation of work and role sharing between nurses and secretarial staff in general medical practices. Specifically, it will determine the following:

1. What are the most prevalent task delegation and role-sharing models and frameworks between the two?
2. What is the evidence that these models affect key outcomes, including (a) staff and clinician burnout and job satisfaction, (b) practice efficiency and access to healthcare, and (c) patient safety and quality of care?
3. What are the key facilitators and barriers to the successful implementation of these models?
4. What are the policy, education, and future research implications?

Through answering these questions, this review is intended to be an evidence-based practice guide for practice managers, clinical leaders, and policymakers seeking to build more robust and effective primary care teams.

Methodology

Systematically, this review was conducted to identify, select, and critically appraise relevant research. A systematic search of electronic databases was conducted, including PubMed, CINAHL, Scopus, and Web of Science. The search strategy utilized a combination of keywords and Medical Subject Headings (MeSH) in relation to the key concepts: ("primary care" OR "general practice" OR "family medicine") AND ("nurse*" OR "RN") AND ("secretarial staff" OR "administrative personnel" OR "medical assistant" OR "clerk") AND ("delegation" OR "task sharing" OR "role expansion" OR "workflow redesign" OR "teamlet"). The search was limited to English-language articles between January 2015 and December 2025.

First-hand queries yielded over 1,200 records. After the removal of duplicates, titles and abstracts were screened for relevance based on a priori inclusion criteria: (1) a study conducted in a general medicine, family practice, or primary care outpatient department; (2) a study of an intervention or natural experiment that involved the delegation or sharing of responsibility between a nurse (or similar clinical staff) and a secretarial/administrative staff member; (3) reporting of at least one outcome measure related to efficiency, workforce, or quality of care; and (4) original research (quantitative, qualitative, or mixed-methods), systematic reviews, or meta-analyses. Physician-nurse delegation alone or in hospital or specialty clinic settings was excluded from studies.

The complete text of 145 papers was screened for inclusion, which resulted in 68 studies that formed the basis for this narrative synthesis. Data were extracted from each study on a pro forma, documenting data on study design, setting, participant information, intervention description, main findings, and facilitators/barriers reported. Because of the heterogeneity of interventions and outcomes, a meta-analysis was not feasible; hence, a thematic narrative synthesis was employed to identify general themes and patterns across the literature.

Models and Models of Delegation and Task Sharing

The literature evidences a variety of methods for reconfiguring work between secretarial staff and nurses from informal task shifting up to highly structured, model-driven changes in care (Table 1 & Figure 1). Arguably, the most heavily documented model is the "pod" or "teamlet" model. In this model, a physician works on a regular basis with a small core team, typically a nurse (or medical assistant) and a secretarial staff member, each of whom is responsible for a specific panel of patients (Hazazi, 2025). The model is designed to control care up-front through pre-visit planning, coordinated post-visit follow-up, and enhanced communication. Under this model, secretarial jobs are expanded beyond traditional scheduling. They are authorized to perform activities such as performing pre-visit chart reviews to ensure that all records that are needed are prepared in advance, processing additional patient electronic messaging (i.e., deflecting non-clinical inquiries, sending routine lab results per protocol), and facilitating referrals and outside records (Willard-Grace et al., 2014). This allows the nurse to be free to perform more complex clinical tasks like chronic disease management visits, reconciliation of medications, and patient education that might otherwise fall to the physician.

Another common practice is the creation of standardized protocols for assigning specific, discrete clinical tasks to administrative staff. One example is the management of the electronic health record (EHR) inbox. Studies have shown that a large proportion of

messages received in the inbox (e.g., refill requests for prescriptions, normal result notifications, appointment scheduling inquiries) do not require a clinician's clinical judgment (Notifications, 2012). Protocols may be instituted through which secretariat staff are authorized to authorize refill orders for stable chronic conditions on an approved list, report routine laboratory and imaging results through templated messages, and schedule appointments directly for given conditions (Madkhali et al., 2024). This model requires clear guidelines, "red flag" symptom training to escalate, and a robust audit system, but has been proven to reduce physician inbox burden significantly (Akbar et al., 2021).

Task sharing is also a secret of successful population health management. Secretarial staff can be permitted to implement registry reports to identify patients who are due for preventive care (e.g., mammograms, colon cancer screening, flu vaccines). Secretaries can then initiate outreach by letter, computerized calls, or telephone contact (Alnaji & Alkhaldi, 2024). They are, in some sophisticated forms, trained to conduct structured pre-appointment social determinants of health (SDOH) screening, which is then evaluated by the physician or nurse to refer patients to appropriate resources (Pratt et al., 2023). This common, proactive approach leverages the organizational administrative expertise to systemically address preventive care, work that usually falls by the wayside in a reactive, visit-oriented system.

Table 1: General Models of Task Delegation and Sharing Between Nurses and Secretarial Staff

Model/Framework	Core Principle	Example Tasks for Secretarial Staff	Example Tasks for Nurses (Freed-Up Capacity)
Teamlet/Pod Model	A consistent small team (MD, RN, Secretary) co-manages a patient panel.	Pre-visit chart preparation, managing routine patient messages, scheduling complex referrals, and post-visit follow-up calls for non-clinical issues.	Conducting chronic disease follow-up visits, providing comprehensive patient education, and performing complex care coordination.
Protocol-Driven Inbox Management	Use of standardized protocols to handle EHR-based messages and requests.	Processing routine medication refills, sending normal lab results, responding to administrative queries, and routing clinical messages appropriately.	Focusing on complex medication management, reviewing abnormal results, and addressing urgent clinical concerns.
Preventive Care & Outreach	Proactive, systemized management of population health lists.	Running registry reports, mailing/Faxing screening orders, making reminder calls for overdue preventive services, and administering SDOH screening questionnaires.	Interpreting positive SDOH screens, providing counseling for abnormal results, and managing patients with complex risk factors.
Integrated Chronic Care Management	(CCM) Applied with shared roles for managing patients with long-term conditions.	Mailing educational materials, scheduling recurring telehealth check-ins, and tracking patient-reported outcomes.	Providing telehealth coaching, titrating medications under protocol, and managing exacerbations.

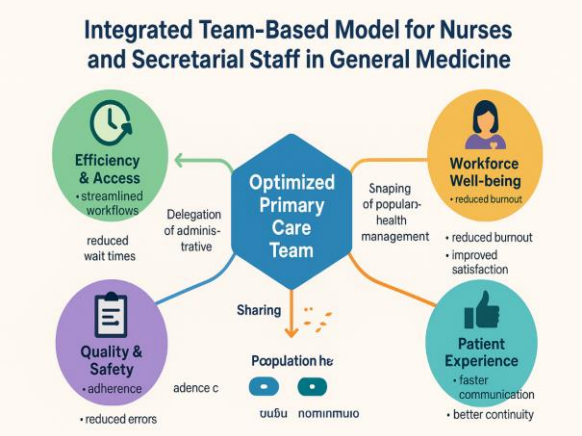

Figure 1: Integrated team-based model for nurses and secretarial in general medicine.

Impact on Workforce Outcomes: Burnout, Satisfaction, and Role Clarity

One key reason for the implementation of task-sharing models is the prevention of burnout among health practitioners, particularly doctors and nurses. The evidence of the past decade firmly leads us to the inference that successful delegation can be helpful. Various studies have linked task delegation to reductions in burnout indicators. As more secretarial activity is offloaded to performing an increased percentage of administrative and protocol-driven duties, it directly alleviates the "work after work" burden on clinicians, particularly the stifling amount of EHR inbox messages (Sinsky et al., 2022). A large-scale cluster-randomized trial found that practices with an increasing team-based model and more role delegation saw a significant decrease in physician

burnout scores compared to control practices, primarily because of a decrease in perceived chaos and greater work control (Weltermann et al., 2020). Similarly, nurses felt less exhausted emotionally when they were able to delegate administrative coordination activities and dedicate themselves to the clinical activities for which they were educated (Poghosyan et al., 2020; Germack et al., 2023).

Efficient task sharing can create a stronger feeling of team and shared mission. When the whole team strives to the extent of their license and training, it could lead to increased job satisfaction. Secretarial staff generally feel more valued and engaged when their work is expanded away from day-to-day, transactional tasks (Alkhraishi & Yesiltas, 2024). They achieve a deeper understanding of patient care and become more fully engaged members of the team. Qualitative evidence has indicated that this "upskilling" can lead to reduced turnover among administrative staff, even in itself a driver of practice stability and effectiveness (Grant et al., 2024). But this positive outcome lies heavily with appropriate support and training; otherwise, role expansion can take the shape of more work for less pay or appreciation.

Instead of the advantages, the blurring of boundary distinctions also incites tension. Some studies cite initial resistance from nurses and secretarial staff. Nurses may be protective of their clinical role or concerned about the ability of administrative staff to perform responsibilities, even where policies are in place (Norful et al., 2018). This could be a case of "professional tribalism" that acts as a barrier to change. Alternatively, secretaries may be reluctant to take on new roles, particularly those that have a seeming clinical focus, for fear they will do it wrong or be blamed (Szafran et al., 2018). Communication, voluntariness, and a no-blame culture are essential if this transition is going to be smoothly navigated.

Impact on Practice Efficiency and Access to Care

Task rearrangement on the basis of licensure and skill set is naturally a work of process efficiency. The literature demonstrates measurable gains in a number of key areas. By delegating tasks to less expensive team members, practices can actually increase their capacity to provide care to a larger patient panel without decreasing quality. For instance, where refills and result notification are managed by secretarial personnel, physicians and nurses can treat more patients or handle complex cases (Hung et al., 2021). The teamlet model, in particular, has proven to increase continuity of workflow, reducing the time clinicians spend looking for information or coordinating care because such roles are integrated into the work of their usual team members (Khatri et al., 2023).

Delegation models can render patient access to care and practice responsiveness highly improved. With secretarial staff empowered to handle an increased variety of requests, the time to answer such routine issues can be sped up. Studies have shown that cutting down the time to fill a prescription or respond to a patient message when done by a single administrative staff member working under a protocol, rather than sitting in a physician's crowded inbox (Murphy et al., 2019; Arndt et al., 2017). Furthermore, systematized preventive care outreach by secretarial staff improves the rate of completion of screening and vaccination, improving access to such essential services (Alnaji & Alkhaldi, 2024).

While not necessarily the focus of studies, increasing evidence suggests that task sharing is cost-effective. Although this will require up-front investment in education and possibly higher compensation for upskilled secretarial staff, these costs can be returned through increased physician productivity (seeing more complex patients or larger panel) and increased billing for chronic care management and other non-face-to-face services that can be outsourced (Beshbishy, 2024). One big primary care network was discovered to have a financial analysis through a two-year net positive return on investment by utilizing a team-based model of delegation, primarily because of reduced physician turnover and enhanced clinical revenue (Needleman, 2017).

Impact on Quality of Care and Patient Safety

Of most concern in delegating tasks, particularly those that are clinically related, is the potential impact on the quality and safety of care to patients (Table 2 & Figure 2). The evidence to date is overall reassuring that with proper controls, quality can be maintained or even improved. For patients with chronic conditions like diabetes, hypertension, and hypertension, task-sharing models have worked. Protocols that allow the nursing staff to titrate medications, provide self-management education, and schedule follow-up visits have been associated with improvements in clinical outcomes of HbA1c, blood pressure, and LDL cholesterol control (Yang et al., 2025; Zhang et al., 2024). Secretarial personnel are important in assisting continuity in this practice by scheduling follow-up as necessary, reminders, and ensuring that data is easily flowing to the physician and nurse.

As mentioned above, the organized, delegation-based preventive care model consistently generates higher screening completion rates. Studies demonstrate staggering increases in rates of cancer screening, vaccination, and cardiovascular risk assessment when administrative staff conduct proactive outreach and coordination compared to opportunistic screening during patient visits (May et al., 2024). This is a clear quality improvement in the care delivered by the practice.

Reactions from patients to receiving care from a team, as opposed to being treated by a physician alone, are largely positive. According to

studies, if tasks are explained well and care is coordinated, patients have high levels of satisfaction with team-based care (Misra-Hebert et al., 2018). They appreciate the increased responsiveness and access, say, receiving a timely response to a routine laboratory report from one of their familiar administrative staff. However, other research indicates that some patients may, in the beginning, prefer to interact directly with their physician, and so educating patients clearly on the new model is essential (Alruqi et al., 2024).

The key safety risk in delegation is omission or failure to escalate appropriately. The literature emphasizes that safety relies on robust systems: clear procedures with clear escalation channels, detailed training including "red flag" identification, and ongoing supervision and audit (Madkhali et al., 2024). Where studies have followed safety outcomes in specific instances, there was no increase in adverse events or drug error in practices that employed protocol-based delegation to administrative staff (Spooner et al., 2022). In fact, it is argued by some that an organized, protocol-based system is safer than an ad-hoc system under which tasks are carried out unpredictably.

Table 2: Recorded Consequences of Successful Role Delegation and Task Allocation

Outcome Category	Specific Metrics	Supporting Evidence Summary
Workforce & Well-being	- Physician burnout (e.g., via Maslach Burnout Inventory) - Nurse job satisfaction - Secretarial staff engagement - Staff turnover rates	Significant reductions in physician burnout scores; increased nurse satisfaction from working at the top of their license; higher engagement and lower turnover for upskilled secretarial staff (Weltermann et al., 2020; Poghosyan et al., 2020; Grant et al., 2024).
Practice Efficiency & Access	- Physician inbox burden - Time to complete routine requests (e.g., refills) - Patient panel size capacity - Rates of completed preventive services	Dramatic reduction in physician inbox messages; faster response times for patients; increased practice capacity; higher rates of cancer screening and immunizations (Sinsky et al., 2022; Arndt et al., 2017; Alnaji & Alkhaldi, 2024).
Quality & Safety	- Chronic disease control (e.g., HbA1c, BP) - Adherence to clinical guidelines - Patient satisfaction scores - Reported adverse events	Improved clinical outcomes for diabetes and hypertension; high patient satisfaction with team-based care; no increase in adverse events when protocols are followed (Yang et al., 2022; Misra-Hebert et al., 2018; Spooner et al., 2022).

Figure 2: Measured outcomes of role delegation and task sharing in general medicine.

Obstacles and Drivers to Implementation

Smooth implementation of a new care model is not guaranteed and relies on successful passage through a complex interplay of human, structural, and regulatory factors. The literature is consistent in identifying a common set of barriers to implementation and, on the flip side, also identifying the main enablers that support successful adoption and sustainability. An integral understanding of these factors is essential to any practice that embarks on this redemptive change.

Significant barriers tend to result from habitual, well-rooted professional cultures and identities. One of the primary barriers is professional resistance, as nurses will fear the downgrading of their clinical expertise or worry about being held

accountable for what they delegate to others, and physicians will find it hard to let go, adopting a mode of "only I can do it right" (Norful et al., 2018). This resistance is also frequently compounded by liability and regulatory concerns, as scope-of-practice laws for nurses and regulations for unlicensed personnel vary by state or province, creating confusion and unwillingness on the part of staff (Harper et al., 2023). Even with a clear direction under regulation, implementation can fail from insufficient training and support. Simply delegating new work without prolonged, hands-on training on the delegator (nurse) and the delegatee (secretary) side is bound to fail; this has to involve not only the "how" but also the "why," with communication skills and situation awareness integrated (Alghamdi et al., 2025).

Furthermore, technological constraints often create a major structural barrier because many Electronic Health Record (EHR) systems are not team-based care. The lack of shared mailboxes, failed messaging systems, and the lack of clarity in assigning and tracking tasks can stifle even the best-intentioned workflow redesigning (Alruwaytie, 2025). In the end, the most severe and most oft-overlooked hurdle is one of compensation and reward. Secretarial support staff who take on additional responsibilities tend to do so without a corresponding increase in salary or official change in title, which can lead to resentment, de-motivation, and eventual staff attrition (Baghdadi et al., 2020).

Despite such challenges, a good team of facilitators has been put in place that can actually facilitate effective implementation. The most critical element overall is clear leadership and a shared vision for change. Successful change is always initiated by a committed practice leader or physician champion who is not only capable of articulating a definite vision but can themselves actively guide the transition process (Zhang et al., 2025). Such leadership must be the flagship of an inclusive strategy, i.e., the co-design of workflow with frontline workers, like both nurses and secretarial staff. Involving the implementers themselves ensures practicability, identifies potential risks in the bud, and generates a vital sense of ownership and acceptance (Graham et al., 2021). To manage the inherent complexity of change, phased implementation and piloting are highly recommended. Rolling out changes in stages, beginning with a single pilot team or a limited number of tasks, allows actual-world debugging and creates momentum from initial, concrete gains (Bodenheimer & Willard-Grace, 2016). At the base of all this needs to be robust communication systems. The use of standard, formal team huddles, such as brief morning meetings, is a cornerstone of designs such as the teamlet because they encourage daily planning, enhance understanding of responsibilities, and prevent miscommunication (Willard-Grace et al., 2014).

Finally, it requires constant observation and feedback to sustain the new design. Having ongoing feedback mechanisms from employees and regular checking on process and outcome metric information allows the team to adjust its strategy in real-time and celebrate successes, thereby maintaining motivation and commitment in the long term (Lokman & Chahine, 2021).

Discussion

This review summarizes a decade of evidence to prove that purposeful task allocation and role sharing between nurses and secretarial staff within general medicine practices is a feasible and efficient strategy to address some of the most intractable problems in modern primary care. The findings indicate that moving away from locked-down professional silos toward more highly integrated team-based models has rewards in all three of the Triple Aim: improving the experience of care for patients and clinicians, increasing population health, and reducing per capita cost (or at least improving value).

One of the overarching themes is the transformation of the secretarial role from being a purely administrative function to being a fully integrated member of the clinical team. The proof is that with appropriate protocols and training, administrative personnel can safely and efficiently process much of the workload currently swamping doctors and distracting them from clinical duties. It is not an issue of substituting clinical judgment but of constructing systems so that all members of the team can perform at his or her best. The impact on burnout among physicians and nurses cannot be overstated; by removing non-skilled tasks from their hands, they can restore their love for practice, and their likelihood of leaving the profession is minimized.

But success with these models is highly contextual. They are not so much a question of simple "plug-and-play." The barriers noted—cultural, regulatory, technological, and financial—are genuine, and they require deliberate, multi-dimensional work to overcome. The most critical element appears to be the human: leadership that fosters trust, a culture that values all contributions, and a process that engages frontline staff as change partners. Absent this assumption, even the prettiest workflow is likely to struggle.

There are various gaps in the literature. First, while short-term effects on productivity and burnout are well established, longer-term research is necessary to ascertain whether such models persist over decades as opposed to years. Second, the economic evidence, as good as it now is, is still a bit limited; more complete cost-benefit analysis from a range of practice settings would be needed to convince recalcitrant practice administrators. Third, the bulk of this work has been conducted in large, integrated health systems; the generalizability and translatability of these models

to small independent practices, which by definition have fewer resources, must be examined.

Conclusion and Future Directions

The evidence from 2015 to 2025 heavily makes the case for the strategic reorganization of nurses' and secretarial staff's roles within general medicine. Hierarchical, traditional care models are unsustainable. The future of high-performing primary care lies in cohesive, interprofessional teams where duties are allocated on the basis of competency and protocol, rather than on professional title. To policymakers, this review underlines the need to revise scope-of-practice statutes and reimbursement models to encourage and facilitate team-based care. Payment models must reward and appreciate the work of the entire team, not just the face-to-face physician visit.

To practice leaders and managers practice, the message is to initiate the process of workflow analysis and team engagement. Begin small, involve the frontline, invest in training, and choose a model that can be adapted for the local environment. The ride may be grueling, but the dividend on offer—a more resilient workforce, a more effective practice, and happier, healthier patients—is enormous. For researchers, research in the future will have to tackle longitudinal outcomes, economic studies, and implementation science studies to identify the most effective ways of fragmenting barriers and creating more sophisticated health information technology aids specifically tailored to maximize task delegation and team communication.

Overall, the delegation and task division between nurses and secretarial staff is not an edge efficiency strategy but a core facilitation of building a primary care system capable of serving the 21st century. In implementing this team-based approach, general medicine practices can create a forum where all professionals are able to thrive and provide the high-quality, accessible care every patient deserves.

References

1. Abdu Asiri, B. A., Almutairi, R. M., Alfadhel, R. M., hawsawi, N. N. A., Faqeehi, S. M., & Alshammari, E. M. (2025). Technology-Driven Nursing Interventions to Support Telehealth in Cardiac Primary Care. *Saudi Journal of Medicine and Public Health*, *2*(2), 137–146. https://doi.org/10.64483/jmph-67
2. Akbar, F., Mark, G., Prausnitz, S., Warton, E. M., East, J. A., Moeller, M. F., ... & Lieu, T. A. (2021). Physician stress during electronic health record inbox work: in situ measurement with wearable sensors. *JMIR Medical Informatics*, *9*(4), e24014. https://doi.org/10.2196/24014
3. Alghamdi, A. Saleh Ahmad, Alshrif, F.N.A., SHARAHILI, M. Y., Wasili, F. M., Wasili, S. M. J., Namazi,Munirah A.Ibrahim, … ALDHAFEERI, T. H. (2025). Comprehensive Multidisciplinary Management and Long-Term Care Approaches for Newborns with Birth Asphyxia: Clinical Guidelines for Healthcare Professionals. Saudi Journal of Medicine and Public Health, *2*(2), 69–84. https://doi.org/10.64483/jmph-71
4. Alkhraishi, M. Y., & Yesiltas, M. (2024). The impact of job crafting dimensions on work engagement among nurses: the mediating role of psychological capital. *Asia Pacific Journal of Health Management*, *19*(2), 75-90. https://doi.org/10.24083/apjhm.v19i2.3313
5. Alnaji, I. A. J., & Alkhaldi, A. S. M. (2024). The Integral Role of Nursing Informatics in Enhancing Patient Outcomes through the Integration of Health Information Systems in Clinical Practice: Review. Saudi Journal of Medicine and Public Health, *1*(1), 8–15. https://doi.org/10.64483/jmph-15
6. Alruqi, A. F., Qaisi, H. M., Alosaimi, N. F., Alotibi, J. D., shabi, fatimah ahmed yahya, Majrashi, S. A. A., … Mobarki, S. A. I. (2024). Tele-ICU and Critical Care Patient Nursing Care through Remote Monitoring. Saudi Journal of Medicine and Public Health, *1*(1), 85–93. https://doi.org/10.64483/jmph-50
7. Alruwaytie, B. M. (2025). The Incorporation of Social Prescribing in General Practice: A Review of Models, Outcomes, and Scalability. Saudi Journal of Medicine and Public Health, *2*(1), 38–44. https://doi.org/10.64483/jmph-28
8. Arndt, B. G., Beasley, J. W., Watkinson, M. D., Temte, J. L., Tuan, W. J., Sinsky, C. A., & Gilchrist, V. J. (2017). Tethered to the EHR: primary care physician workload assessment using EHR event log data and time-motion observations. *The Annals of Family Medicine*, *15*(5), 419-426. https://doi.org/10.1370/afm.2121
9. Baghdadi, N. A., Farghaly Abd-EL Aliem, S. M., & Alsayed, S. K. (2021). The relationship between nurses' job crafting behaviours and their work engagement. *Journal of nursing management*, *29*(2), 214-219. https://doi.org/10.1111/jonm.13141
10. Beshbishy, A. M. (2024). Advancements in Vaccination Tracking and Delivery Systems through Health Informatics: A Review of Digital Innovations and COVID-19 Impact. Saudi Journal of Medicine and Public Health, *1*(1), 16 – 26 . https://doi.org/10.64483/jmph-16
11. Bodenheimer, T., & Willard-Grace, R. (2016). Teamlets in primary care: enhancing the patient and clinician experience. *The Journal of the American Board of Family*

Medicine, *29*(1), 135-138. https://doi.org/10.3122/jabfm.2016.01.150176

12. Edwards, S. T., Marino, M., Balasubramanian, B. A., Solberg, L. I., Valenzuela, S., Springer, R., ... & Cohen, D. J. (2018). Burnout among physicians, advanced practice clinicians and staff in smaller primary care practices. *Journal of general internal medicine*, *33*(12), 2138-2146. https://doi.org/10.1007/s11606-018-4679-0
13. Eid, M. F. (2024). Using artificial intelligence in electronic health record systems to mitigate physician burnout: a roadmap. *Journal of Healthcare Management*, *69*(4), 244-254. *DOI:* 10.1097/JHM-D-24-00094
14. Germack, H. D., Harrison, J., Poghosyan, L., & Martsolf, G. R. (2022). Practice patterns, work environments, and job outcomes of rural and urban primary care nurse practitioners. *Medical Care Research and Review*, *79*(1), 161-170. https://doi.org/10.1177/1077558720974537
15. Graham, F., Tang, M. Y., Jackson, K., Martin, H., O'Donnell, A., Ogunbayo, O., ... & Kaner, E. (2021). Barriers and facilitators to implementation of shared medical appointments in primary care for the management of long-term conditions: a systematic review and synthesis of qualitative studies. *BMJ open*, *11*(8), e046842. https://doi.org/10.1136/bmjopen-2020-046842
16. Grant, A., Kontak, J., Jeffers, E., Lawson, B., MacKenzie, A., Burge, F., ... & Martin-Misener, R. (2024). Barriers and enablers to implementing interprofessional primary care teams: a narrative review of the literature using the consolidated framework for implementation research. *BMC Primary Care*, *25*(1), 25. https://doi.org/10.1186/s12875-023-02240-0
17. Harper, P. G., Van Riper, K., Ramer, T., Slattengren, A., Adam, P., Smithson, A., ... & Fallert, C. (2023). Team-based care: an expanded medical assistant role–enhanced rooming and visit assistance. *Journal of interprofessional care*. https://doi.org/10.1080/13561820.2018.1538107
18. Hazazi, Y. O. (2025). Strengthening Postpartum Depression Screening and Treatment within Primary Healthcare Centers in Riyadh 1st Cluster. Saudi Journal of Medicine and Public Health, *2*(2), 105–113. https://doi.org/10.64483/jmph-56
19. Hung, D. Y., Truong, Q. A., & Liang, S. Y. (2021). Implementing lean quality improvement in primary care: impact on efficiency in performing common clinical tasks. *Journal of general internal medicine*, *36*(2), 274-279. https://doi.org/10.1007/s11606-020-06317-9
20. Khatri, R., Endalamaw, A., Erku, D., Wolka, E., Nigatu, F., Zewdie, A., & Assefa, Y. (2023). Continuity and care coordination of primary health care: a scoping review. *BMC Health Services Research*, *23*(1), 750. https://doi.org/10.1186/s12913-023-09718-8
21. Lokman, L., & Chahine, T. (2021). Business models for primary health care delivery in low-and middle-income countries: a scoping study of nine social entrepreneurs. *BMC Health Services Research*, *21*(1), 211. https://doi.org/10.1186/s12913-021-06225-6
22. Madkhali, A. M., Bouri, H. A., Alotaibi, F. O. E., ALMUTAIRI, A. M. M., Albalawi, T. suliman, Alotaibi, G. S., … Alotaibi, A. S. (2024). Potential Health Implications of Fifth Generation (5G) Wireless Communication Technology: A Review of Emerging Biological and Epidemiological Concerns. Saudi Journal of Medicine and Public Health, *1*(1), 94–105. https://doi.org/10.64483/jmph-53
23. May, F. P., Brodney, S., Tuan, J. J., Syngal, S., Chan, A. T., Glenn, B., ... & Haas, J. S. (2024). Community collaboration to advance racial/ethnic equity in colorectal Cancer screening: Protocol for a multilevel intervention to improve screening and follow-up in community Health centers. *Contemporary Clinical Trials*, *145*, 107639. https://doi.org/10.1016/j.cct.2024.107639
24. Misra-Hebert, A. D., Perzynski, A., Rothberg, M. B., Fox, J., Mercer, M. B., Liu, X., ... & Stange, K. C. (2018). Implementing team-based primary care models: a mixed-methods comparative case study in a large, integrated health care system. *Journal of general internal medicine*, *33*(11), 1928-1936. https://doi.org/10.1007/s11606-018-4611-7
25. Murphy, D. R., Satterly, T., Giardina, T. D., Sittig, D. F., & Singh, H. (2019). Practicing clinicians' recommendations to reduce burden from the electronic health record inbox: a mixed-methods study. *Journal of general internal medicine*, *34*(9), 1825-1832. https://doi.org/10.1007/s11606-019-05112-5
26. Needleman, J. (2017). Expanding the role of registered nurses in primary care: A business case analysis. *The Journal of Medical Practice Management*, *32*(5), 343-351.

27. Notifications, R. (2012). The Burden of Inbox Notifications in Commercial Electronic Health Records. *Intern Med*, *172*(3), 283-285. doi:10.1001/jamainternmed.2016.0209
28. Norful, A. A., de Jacq, K., Carlino, R., & Poghosyan, L. (2018). Nurse practitioner–physician comanagement: a theoretical model to alleviate primary care strain. *The Annals of Family Medicine*, *16*(3), 250-256. https://doi.org/10.1370/afm.2230
29. Poghosyan, L., Ghaffari, A., Liu, J., & McHugh, M. D. (2020). Organizational support for nurse practitioners in primary care and workforce outcomes. *Nursing research*, *69*(4), 280-288. *DOI:* 10.1097/NNR.0000000000000425
30. Pratt, C., Taylor, R., & Smith, S. D. (2023). Health equity and access to health care as a social determinant of health: the role of the primary care provider. *Primary Care: Clinics in Office Practice*, *50*(4), 549-559. https://doi.org/10.1016/j.pop.2023.04.006
31. Robertson, F. C., Esene, I. N., Kolias, A. G., Khan, T., Rosseau, G., Gormley, W. B., ... & Ganau, M. (2020). Global perspectives on task shifting and task sharing in neurosurgery. *World neurosurgery: X*, *6*, 100060. https://doi.org/10.1016/j.wnsx.2019.100060
32. Shanafelt, T. D., West, C. P., Dyrbye, L. N., Trockel, M., Tutty, M., Wang, H., ... & Sinsky, C. (2022, December). Changes in burnout and satisfaction with work-life integration in physicians during the first 2 years of the COVID-19 pandemic. In *Mayo Clinic Proceedings* (Vol. 97, No. 12, pp. 2248-2258). Elsevier. https://doi.org/10.1016/j.mayocp.2022.09.002
33. Sinsky, C. A., Shanafelt, T. D., Dyrbye, L. N., Sabety, A. H., Carlasare, L. E., & West, C. P. (2022, April). Health care expenditures attributable to primary care physician overall and burnout-related turnover: a cross-sectional analysis. In *Mayo Clinic Proceedings* (Vol. 97, No. 4, pp. 693-702). Elsevier. https://doi.org/10.1016/j.mayocp.2021.09.013
34. Spooner, S., McDermott, I., Goff, M., Hodgson, D., McBride, A., & Checkland, K. (2022). Processes supporting effective skill-mix implementation in general practice: A qualitative study. *Journal of health services research & policy*, *27*(4), 269-277. https://doi.org/10.1177/13558196221091356
35. Szafran, O., Kennett, S. L., Bell, N. R., & Green, L. (2018). Patients' perceptions of team-based care in family practice: access, benefits and team roles. *Journal of Primary Health Care*, *10*(3), 248-257. https://doi.org/10.1071/HC18018
36. Weltermann, B. M., Kersting, C., Pieper, C., Seifried-Dübon, T., Dreher, A., Linden, K., ... & Kasten, S. (2020). IMPROVE job–Participatory intervention to improve job satisfaction of general practice teams: a model for structural and behavioural prevention in small and medium-sized enterprises–a study protocol of a cluster-randomised controlled trial. *Trials*, *21*(1), 532. https://doi.org/10.1186/s13063-020-04427-7
37. Willard-Grace, R., Hessler, D., Rogers, E., Dubé, K., Bodenheimer, T., & Grumbach, K. (2014). Team structure and culture are associated with lower burnout in primary care. *The Journal of the American Board of Family Medicine*, *27*(2), 229-238. https://doi.org/10.3122/jabfm.2014.02.130215
38. Yang, L., Xiang, P., Pi, G., Wen, T., Liu, L., & Liu, D. (2025). Effectiveness of nurse-led care in patients with rheumatoid arthritis: a systematic review and meta-analysis. *BMJ Open Quality*, *14*(1), e003037. https://doi.org/10.1136/bmjoq-2024-003037
39. Zhang, N., Li, Q., Chen, S., Wu, Y., Xin, B., Wan, Q., ... & Jiang, W. (2024). Effectiveness of nurse-led electronic health interventions on illness management in patients with chronic heart failure: a systematic review and meta-analysis. *International Journal of Nursing Studies*, *150*, 104630. https://doi.org/10.1016/j.ijnurstu.2023.104630
40. Zhang, P., Zhang, H., & Wang, A. (2025). Research on the impact of hospital organizational behavior on physicians' patient-centered care. *Archives of Public Health*, *83*(1), 148. https://doi.org/10.1186/s13690-025-01620-5