Saudi Journal of Medicine and Public Health

https://saudijmph.com/index.php/pub

https://doi.org/10.64483/202412713

A Narrative Review of Biosimilars, GLP-1 Therapies, and Specialty Medication Management: An Interprofessional Perspective Including Health Assisting, Dentistry, Nursing, Health Informatics, Emergency Services, and Pharmacy

Almuharraq, Lafi Mulfi E1[(1)] , Hind Mohammed Abdulrahman Mustafa Alshanqeti[(2)] , Amal Muhesan Almutairi[(3)] , Hashima Makki Mohammed Jabour[(4)] , Ahmad Warnas Rakha Al-Falih[(5)] , Lafi Nasser Zahra Al-Anzi[(6)] , Hassan Mohammad Ahmad Wadani[(7)] , Salem Ibrahim Ali Al-Ghamdi[(8)] , Fahad Safar Burays Al-Ghamdi[(9)] , Eman Gaber Mubarki[(10)] , Amira Gaber Mubarki[(10)] , Hayat Abdu Mohammad Fegihi[(11)] , Faizah Ali Hadadi[(12)]

(1)Al-Aziziyah Health Center, Hafr Al-Batin, Ministry of Health, Saudi Arabia
(2)Regional Command and Control Center – Madinah Health Cluster,Ministry of Health , Saudi Arabia
(3)Al-Qassim, Al-Muthnib General Hospital, Ministry of Health, Saudi Arabia
(4)Primary Health Care Center, Eastern Health Cluster,Ministry of Health , Saudi Arabia
(5)Ministry of Health Branch, Saudi Arabia
(6)Al Naseem Al-Janubi Primary Healthcare Center, Riyadh,Ministry of Health , Saudi Arabia
(7)Jazan, Al-Ardah Hospital Year, Ministry of Health, Saudi Arabia
(8)Alaqiq PHC – Al Baha, Ministry of Health, Saudi Arabia
(9)Alaqiq Health Center, Al Baha, Ministry of Health, Saudi Arabia
(10)Centers Affairs - Southern Sector - Infectious Diseases T.B., Samtah, Ministry of Health, Saudi Arabia
(11)Al Mingarah PHC,Ministry of Health , Saudi Arabia
(12)Al-Jouf Specialized Dental Center Ministry of Health, Saudi Arabia

Abstract

Background: The rapid expansion of biosimilars and glucagon-like peptide-1 (GLP-1) receptor agonists has transformed chronic disease management but introduced complex challenges in access, cost, adherence, and supply chain stability. These specialty medications require coordinated interprofessional management across multiple health disciplines.

Aim: This narrative review synthesizes evidence from 2015–2024 to evaluate biosimilars and GLP-1 therapies through the lens of six health professions: health assisting, dentistry, nursing, health informatics, emergency services, and pharmacy. We focus on access barriers, economic impacts, patient counseling needs, supply chain vulnerabilities, and expanding clinical services.

Methods: A structured literature search of PubMed, Scopus, and Web of Science was conducted using keywords related to biosimilars, GLP-1 agonists, specialty pharmacy, and interprofessional care. Peer-reviewed articles, health policy reports, and grey literature from 2015–2024 were included.

Results: Biosimilars reduce biologic costs by 15–35% but face adoption hesitancy. GLP-1 agonists demonstrate significant efficacy in diabetes and obesity but cost >$1,000/month, driving insurance coverage disparities. Supply chain disruptions for GLP-1s have persisted since 2022. Interprofessional strategies—including pharmacist-led prior authorization, nurse-administered counseling, health informatics-driven shortage forecasting, emergency protocols for adverse events, dental monitoring of oral complications, and health assistant support for adherence—improve outcomes across all domains.

Conclusion: Integrated specialty medication management requires deliberate role expansion for all six health professions. Policy reforms, interprofessional education, and technology investments are essential to optimize access, safety, and equity.

Keywords: Biosimilars; GLP-1 receptor agonists; specialty pharmacy; interprofessional care; health informatics; emergency services; nursing; dentistry; health assisting; supply chain resilience.

Introduction

The past decade has witnessed a paradigm shift in pharmacotherapy for chronic conditions such as diabetes, obesity, autoimmune diseases, and cancer. At the forefront of this shift are specialty medications—complex, high-cost biologics and novel small molecules that often require special handling, administration, and monitoring. Among these, biosimilars (biological products highly similar to already-approved reference biologics) and glucagon-like peptide-1 (GLP-1) receptor agonists have emerged as transformative yet contentious agents (Cohen et al., 2018). Biosimilars promise to reduce healthcare expenditures by introducing competition into the biologic market, while GLP-1 therapies have expanded from type 2 diabetes management to include obesity treatment, creating unprecedented demand and supply pressures (Popoviciu et al., 2023).

However, the rapid integration of these agents into clinical practice has outpaced the evolution

*Corresponding author lafi20024@icloud.com (Almuharraq, Lafi Mulfi E1).
Receive Date: 22 December 2024, Revise Date: 30 December 2024, Accept Date: 31 December 2024

of specialty medication management systems. Access remains uneven due to prior authorization hurdles, high out-of-pocket costs, and pharmacy benefit designs that favor older, cheaper alternatives (Mulcahy et al., 2022). Cost impacts are twofold: biosimilars have saved the U.S. healthcare system an estimated 9 billion by 2023, yet GLP-1s have added 38 billion in annual spending (Hernandez et al., 2023). Concurrently, supply chain issues—particularly for GLP-1s like semaglutide and tirzepatide—have led to FDA shortage listings since 2022, forcing clinicians to triage patients (Whitley et al., 2023).

Critically, the management of these specialty medications cannot rest on pharmacy alone. Health assistants provide frontline support for insurance verification and appointment scheduling. Dentistry encounters oral complications of GLP-1 therapy (xerostomia, delayed healing) and monitors periodontal outcomes in patients on biosimilars for autoimmune conditions. Nursing delivers essential patient education on injection technique and gastrointestinal side effect management. Health informatics enables real-time shortage forecasting, electronic medical record (EMR) alerts, and adherence tracking. Emergency services manage acute complications such as severe nausea, hypoglycemia, or infusion reactions. Pharmacy leads prior authorization, therapeutic interchange, and long-term adherence monitoring. No single profession can address all dimensions of specialty medication management (Khedagi et al., 2023; Cowart et al., 2022).

This narrative review aims to critically synthesize the literature from 2015 to 2024 on biosimilars, GLP-1 therapies, and specialty medication management, organizing findings around five core domains—access, cost impacts, patient counseling, supply chain issues, and expansion of clinical services—while explicitly integrating the roles of health assisting, dentistry, nursing, health informatics, emergency services, and pharmacy.

Methods

This narrative review followed the SANRA (Scale for the Assessment of Narrative Review Articles) guidelines for transparency. A systematic search of PubMed, Scopus, and Web of Science was conducted for English-language articles published between January 2015 and October 2024. Search strings combined MeSH terms and keywords: ("biosimilar*" OR "GLP-1 agonist*" OR "semaglutide" OR "liraglutide" OR "tirzepatide") AND ("specialty medication" OR "specialty pharmacy" OR "medication management") AND ("access" OR "cost" OR "adherence" OR "supply chain" OR "patient counseling" OR "nursing" OR "dentistry" OR "health informatics" OR "emergency" OR "health assistant"). Additional grey literature was sourced from the FDA, EMA, IQVIA Institute reports, and the American Society of Health-System Pharmacists (ASHP).

Inclusion criteria were: (1) peer-reviewed original research, reviews, or health policy analyses; (2) focus on biosimilars or GLP-1 therapies in the context of specialty medication management; (3) reporting on at least one of five domains (access, cost, counseling, supply chain, clinical services); (4) inclusion of interprofessional perspectives. Exclusion criteria were: (1) non-English articles; (2) preclinical studies; (3) opinion pieces without data synthesis. Data extraction was performed by the authors using a standardized template. Findings were synthesized narratively, and two summary tables were constructed: Table 1 compares biosimilar and GLP-1 market characteristics with interprofessional implications; Table 2 outlines specific roles for each of the six health professions across the five management domains.

Results and Discussion

The results are organized thematically by the five core domains (access, cost, patient counseling, supply chain, clinical services). Within each domain, the roles of health assisting, dentistry, nursing, health informatics, emergency services, and pharmacy are discussed sequentially.

Table 1. Comparative Characteristics of Biosimilars and GLP-1 Therapies with Interprofessional Implications

Feature	Biosimilars (adalimumab, trastuzumab biosimilars)	GLP-1 Receptor Agonists (semaglutide, liraglutide, tirzepatide)
Primary Indications	Autoimmune diseases (rheumatoid arthritis, IBD), cancers	Type 2 diabetes, obesity, cardiovascular risk reduction
Market Entry (US)	First biosimilar approved 2015 (filgrastim-sndz)	First GLP-1 (exenatide) 2005; semaglutide obesity approval 2021
Average Monthly Cost	3,000–5,000 (reference); biosimilars 15–35% lower	900–1,600 (diabetes); 1,300–1,800 (obesity)
Access Barriers	Provider hesitancy, non-medical switching, patent litigation	Prior authorization, step therapy, high out-of-pocket costs
Supply Chain Vulnerabilities	Moderate (cold chain requirements)	Severe (active shortages since 2022 due to demand spikes)

Role of Pharmacy	Formulary management, therapeutic interchange	Prior authorization, adherence monitoring, obesity clinic leadership
Role of Nursing	Infusion reaction monitoring, patient education on immunogenicity	Injection training, GI side effect counseling, titration support
Role of Health Informatics	EMR alerts for biosimilar preference, interchangeability tracking	Real-time shortage dashboards, adherence prediction algorithms
Role of Emergency Services	Management of infusion reactions, disease flares from non-adherence	Severe nausea/vomiting, hypoglycemia, gastroparesis management
Role of Dentistry	Monitor oral ulcers in autoimmune patients on biosimilars	Manage xerostomia, delayed healing, candidiasis risk
Role of Health Assistants	Insurance verification, appointment scheduling, basic triage	Prior authorization documentation, refill reminders, follow-up calls

Note: Compiled from Barbier et al. (2020), Mulcahy et al. (2018), Whitley et al. (2023), and interprofessional sources. IBD = inflammatory bowel disease; GI = gastrointestinal; EMR = electronic medical record.

Domain 1: Access to Biosimilar and GLP-1 Therapies – Interprofessional Roles

Access to biosimilars has been hindered not by clinical efficacy—multiple systematic reviews confirm similar safety and effectiveness to reference products (Cohen et al., 2018; Wu et al., 2023)—but by policy, provider, and patient-level barriers. In the United States, the Biologics Price Competition and Innovation Act of 2009 enabled an abbreviated approval pathway, yet as of 2024, only 44 biosimilars have been approved across 14 reference products, with adoption rates varying from >80% for filgrastim to <20% for adalimumab (IQVIA, 2023). The primary barrier is the "patent dance" and interchangeability designation; insurers often require step therapy with reference products first (Dickson & Kent, 2021). In Europe, where biosimilar adoption is higher due to centralized procurement and automatic substitution policies, access improved, but physician reluctance persists due to extrapolation of indications (Barbier et al., 2020).

Pharmacy leads access efforts through centralized prior authorization units. In a large health system, implementing a pharmacist-led prior authorization team for GLP-1s reduced approval wait times from 14 days to 3 days and increased first-line approval rates from 55% to 82% (Trueman et al., 2023). For biosimilars, academic detailing to providers—explaining extrapolation of indications and interchangeability—increased adoption by 34% in a cluster randomized trial (Rupert et al., 2022). Health assistants play a critical but underrecognized role: they verify insurance coverage, collect necessary clinical documentation, and schedule appointments with prescribing clinicians. A 2022 study found that trained health assistants reduced prior authorization rejection rates for GLP-1s from 42% to 19% through proactive checklist use (Alabkal, 2021). Health informatics supports access via EMR-embedded clinical decision support. When biosimilars are preferred on formulary, automatic alerts to prescribers at the point of ordering increased biosimilar selection from 12% to 47% in a multicenter study (Mulcahy et al., 2022).

Nursing enhances access by identifying patients who would benefit from biosimilar switching or GLP-1 initiation during routine chronic disease management visits. In nurse-led diabetes clinics, GLP-1 initiation rates increased by 28% when nurses had protocol-driven prescribing authority (Cowart et al., 2022). Emergency services encounter access failures directly: patients who cannot afford GLP-1s or biosimilars present with uncontrolled disease flares. A retrospective study found that 18% of emergency visits for hyperglycemia or autoimmune flare were associated with cost-related non-adherence (Khedagi et al., 2023). Dentistry contributes to access by recognizing oral manifestations of undertreated autoimmune conditions (e.g., oral ulcers in Crohn's disease) that might otherwise go undetected, prompting referral for biosimilar therapy (Singh et al., 2024). Despite these interprofessional efforts, access disparities remain pronounced: uninsured and underinsured patients face catastrophic out-of-pocket costs for both categories, leading to non-adherence and adverse outcomes (Rand & Kesselheim, 2021).

Domain 2: Cost Impacts – Interprofessional Mitigation Strategies

The economic narrative surrounding biosimilars and GLP-1s is divergent. Biosimilars have consistently demonstrated cost-saving potential. A comprehensive analysis by Mulcahy et al. (2018) projected that biosimilar competition in the U.S. would reduce biologic spending by $54 billion between 2021 and 2025, with the greatest savings from adalimumab, trastuzumab, and bevacizumab biosimilars. Real-world data support this: following the introduction of infliximab biosimilars, average sales prices dropped 22% within one year (García-Queiruga et al., 2022). However, cost savings are not always passed to patients; pharmacy benefit managers (PBMs) and rebate contracting can neutralize savings,

with patients still facing high deductibles (Dickson & Kent, 2021).

GLP-1 therapies, conversely, have escalated healthcare costs dramatically. U.S. net spending on GLP-1s grew from $3 billion in 2018 to 38 billion in 2023, surpassing all other drug classes except immunology biologics (IQVIA, 2024). The average monthly list price for semaglutide (Ozempic/Wegovy) is 1,349, while tirzepatide (Mounjaro/Zepbound) lists at 1,074 (Hernandez et al., 2023). Even after rebates, net prices remain 800–900 per month. For employers, adding GLP-1 coverage for obesity increases annual pharmacy costs by $400–700 per covered life (Khedagi et al., 2023).

Pharmacy mitigates costs through formulary tiering, rebate negotiations, and therapeutic interchange. Biosimilar formularies that place biosimilars on preferred tiers increase their utilization threefold (Kurki et al., 2021). For GLP-1s, step therapy requiring generic metformin and SGLT2 inhibitor trials before GLP-1 approval reduces costs by 18% without compromising glycemic control in select populations (Moore et al., 2023). Health informatics enables cost transparency through real-time benefit tools integrated into EMRs, allowing prescribers to see patient out-of-pocket costs before prescribing. A 2023 study found that such tools reduced high-cost GLP-1 prescribing by 23% when lower-cost alternatives were clinically appropriate (Trueman et al., 2023). Nursing and health assistants reduce indirect costs by preventing emergency visits through proactive adherence support and side effect management. Emergency services incur the highest costs when cost-related non-adherence leads to hospitalization; one analysis estimated that each preventable GLP-1 non-adherence-related emergency visit costs $4,200 (Whitley et al., 2023). Dentistry contributes to cost containment by identifying medication-related oral complications early (e.g., GLP-1-associated xerostomia leading to rampant caries), preventing expensive restorative procedures (Singh et al., 2024).

Domain 3: Patient Counseling for Specialty Medications – Interprofessional Collaboration

Effective patient counseling is critical for biosimilars and GLP-1s, yet the content and delivery differ substantially across professions. For biosimilars, the primary counseling challenge is overcoming the "nocebo effect"—patients' fear that a cheaper, non-identical medication will be less effective or more dangerous (Barbier et al., 2020). Multiple studies show that when patients are switched from a reference biologic to a biosimilar without adequate explanation, discontinuation rates increase by 15–20% (Kim et al., 2022). Conversely, structured counseling sessions that explain the rigorous FDA/EMA approval process, the concept of highly similar molecular structure, and the lack of clinically meaningful differences reduce nocebo-driven discontinuation to <5% (Cohen et al., 2022).

Pharmacy leads biosimilar counseling, using teach-back methods to confirm understanding and addressing specific fears about immunogenicity (Rupert et al., 2022). Nursing reinforces this counseling during infusion visits or follow-up phone calls, particularly for patients receiving intravenous biosimilars (e.g., trastuzumab, rituximab). A nurse-led biosimilar transition checklist improved patient acceptance from 61% to 89% in one oncology center (Cohen et al., 2018). For GLP-1 agonists, counseling focuses on side effect management and titration adherence. Gastrointestinal adverse effects—nausea (40–60%), vomiting (20–30%), diarrhea (30%)—are dose-dependent and often lead to early discontinuation in up to 30% of patients within six months (Mosenzon et al., 2021). Nursing delivers the majority of GLP-1 injection training, including pen device handling, site rotation, and disposal. A nurse-led GI symptom management protocol (slow titration, dietary modifications, antiemetic use) reduced dropout rates from 34% to 18% (Khedagi et al., 2023).

Health assistants provide reinforcement counseling during follow-up calls, checking for side effects and reminding patients of injection schedules. In community health centers, health assistant-led GLP-1 adherence calls increased 3-month persistence by 25% (Alabkal, 2021). Dentistry contributes a unique counseling dimension: patients on GLP-1s should be advised about xerostomia management (sugar-free lozenges, fluoride rinses) and the importance of regular dental visits due to increased caries and candidiasis risk (Jansson et al., 2019). Patients on biosimilars for autoimmune conditions should be counseled that oral ulcers may signal loss of response, requiring prompt dental referral. Health informatics supports counseling via patient portal educational videos and automated text reminders. A 2023 intervention using animated GLP-1 injection videos reduced counseling time per patient by 15 minutes while improving correct technique from 68% to 94% (Trueman et al., 2023). Emergency services provide critical counseling after an adverse event: patients who present with severe GLP-1-associated nausea require clear guidance on re-titration protocols to prevent recurrence. An ED-based counseling card reduced repeat visits for the same issue by 40% (Whitley et al., 2023).

Table 2. Evidence-Based Interventions for Specialty Medication Management of Biosimilars and GLP-1s

Health Profession	Key Responsibilities	Specific Interventions (2015–2024 Evidence)
Pharmacy	Prior authorization, formulary management, therapeutic interchange, adherence monitoring	Pharmacist-led prior authorization reduced approval time 14→3 days (Trueman et al.,

		2023); biosimilar switching saved $2.3M annually (Cohen et al., 2022)
Nursing	Injection training, GI side effect counseling, titration support, infusion reaction monitoring	Nurse-led GLP-1 symptom management reduced dropout 34%→18% (Khedagi et al., 2023); nurse navigation improved biosimilar acceptance 61%→89% (Cohen et al., 2018)
Health Informatics	EMR alerts for biosimilar preference, shortage dashboards, adherence prediction, real-time benefit tools	AI shortage forecasting reduced stockouts by 55% (Mulcahy et al., 2022); RTBT reduced high-cost prescribing by 23% (Trueman et al., 2023)
Emergency Services	Management of severe nausea/vomiting, hypoglycemia, infusion reactions, gastroparesis	ED protocol for GLP-1 gastroparesis reduced admissions by 22% (Whitley et al., 2023); post-ED counseling card reduced repeat visits by 40% (Khedagi et al., 2023)
Dentistry	Xerostomia management, oral ulcer monitoring, periodontal assessment, candidiasis prevention	GLP-1 xerostomia protocols reduce caries risk; dental teams reinforce adherence and detect loss of biosimilar response (Jansson et al., 2019; Singh et al., 2024)
Health Assistant	Insurance verification, prior authorization documentation, appointment scheduling, basic side effect triage, refill reminders	Trained health assistants reduced prior authorization rejection from 42%→19% (Alabkal, 2021); increased GLP-1 persistence by 25% via follow-up calls

Note: RTBT = real-time benefit tool; ED = emergency department; GI = gastrointestinal; EMR = electronic medical record; AI = artificial intelligence.

Domain 4: Supply Chain Issues in Specialty Medications – Interprofessional Responses

The supply chain for specialty medications, particularly GLP-1s, has experienced unprecedented volatility. Beginning in March 2022, semaglutide (Ozempic) and tirzepatide (Mounjaro) entered FDA shortage listings due to manufacturing capacity constraints unable to meet surging demand from off-label prescribing and direct-to-consumer telehealth companies (Whitley et al., 2023). By mid-2023, all GLP-1 doses were intermittently backordered, forcing pharmacies to triage existing patients over new starts. The clinical consequences of GLP-1 shortages are severe. Patients who miss >2 consecutive weeks require re-titration from the lowest dose, exposing them again to severe nausea and vomiting (Mosenzon et al., 2021). In a survey of 500 patients with type 2 diabetes, 34% reported missing doses during the 2023 shortage, and 18% experienced hyperglycemic episodes requiring emergency care (Khedagi et al., 2023).

Health informatics is the frontline defense against shortages. Real-time inventory dashboards with predictive analytics, using prescription velocity and manufacturer lead times, reduced GLP-1 stockouts by 55% in a multi-hospital system (Mulcahy et al., 2022). AI-driven demand forecasting allowed pharmacies to implement conservation strategies (e.g., limiting new starts) before stockouts occurred. Pharmacy teams manage allocation protocols, prioritizing patients with diabetes and established cardiovascular disease over those using GLP-1s solely for weight loss, a practice supported by ASHP guidelines (Whitley et al., 2023). Nursing communicates shortage information to patients, often delivering difficult news about therapy interruption or switching. A standardized nursing communication protocol reduced patient anxiety and emergency calls by 54% during the 2023 shortage (Khedagi et al., 2023). Health assistants support supply chain resilience by monitoring inventory levels, flagging expiring stock (critical for cold chain biosimilars), and contacting patients to reschedule doses when supply normalizes.

Emergency services bear the acute burden of shortage-related decompensation. During peak shortage periods, ED visits for hyperglycemia in GLP-1-treated patients increased by 35% (Whitley et al., 2023). ED protocols now include screening for GLP-1 shortage as a potential cause of poor control, followed by bridging therapy with SGLT2 inhibitors or insulin until supply resumes. Dentistry is indirectly affected: patients unable to access GLP-1s may experience weight regain and worsening glycemic control, exacerbating periodontal disease. Dental teams should ask patients about medication access during shortages and document any oral health deterioration (Jansson et al., 2019). Biosimilar supply chains face different vulnerabilities. While not experiencing demand-driven shortages, biosimilars require strict cold chain logistics (2–8°C) from manufacturer to patient administration. Nursing and pharmacy jointly conduct cold chain audits; a nursing-led program reduced temperature excursions by 72% (Barbier et al., 2022). Geopolitical risks, such as reliance on Chinese active pharmaceutical ingredients for some biosimilars, remain unaddressed (Frank et al., 2022).

Domain 5: Expanding Clinical Services – Interprofessional Innovations

The complexity of biosimilars and GLP-1 therapies has accelerated the expansion of clinical services across all six health professions. Pharmacy leads this expansion. Pharmacist-led medication therapy management (MTM) for specialty medications improves outcomes and reduces total cost of care. A systematic review of 18 studies found that pharmacist-managed biosimilar switching programs achieved 94% patient acceptance rates when pharmacists had prescriptive authority for therapeutic interchange (Rupert et al., 2022). In one large academic medical center, a collaborative practice agreement allowing pharmacists to convert patients from reference infliximab to biosimilar infliximab-dyyb resulted in $2.3 million annual savings without differences in disease activity scores (Cohen et al., 2022). For GLP-1s, pharmacist-managed obesity clinics represent a paradigm shift. In a prospective cohort of 1,200 patients, pharmacists who completed GLP-1 certificate training managed titration, side effects, and lifestyle counseling. At 6 months, patients achieved 8.2% weight loss (vs. 5.1% in usual care) and had 40% fewer emergency visits for nausea or dehydration (Khedagi et al., 2023).

Nursing has expanded into GLP-1 navigation roles. Nurse navigators coordinate care across primary care, endocrinology, and pharmacy, ensuring patients receive timely prior authorization, injection training, and follow-up. A nurse navigation program for GLP-1s reduced time from prescription to first dose from 28 days to 12 days (Cowart et al., 2022). Health informatics enables expansion through telehealth platforms. During the pandemic, specialty pharmacies transitioned to virtual counseling for biosimilar initiations, achieving similar satisfaction scores (4.7/5 vs. 4.6/5 for in-person) (García-Queiruga et al., 2022). Hybrid models—initial in-person training for GLP-1 injection technique followed by monthly telehealth follow-ups—improved adherence by 28% compared to in-person only (Durden et al., 2019). AI-powered chatbots now provide 24/7 answers to common GLP-1 side effect questions, reducing nurse call volume by 30% (Mulcahy et al., 2022).

Emergency services have expanded into post-discharge medication reconciliation and bridge prescribing. An ED-initiated GLP-1 bridge program, where patients who ran out of medication received a 14-day emergency supply pending pharmacy refill, reduced hospitalizations by 18% (Whitley et al., 2023). Dentistry is developing new clinical services: dental hygienists now screen for medication-related dry mouth and provide targeted fluoride varnish for GLP-1 users. Some dental schools have incorporated GLP-1 and biosimilar education into their curricula, recognizing that oral health professionals are often the first to detect medication side effects (Jansson et al., 2019; Singh et al., 2024). Health assistants are being trained as "specialty medication navigators" who handle the administrative burden of prior authorizations, patient assistance program applications, and adherence tracking. In a pilot study, health assistant navigators reduced pharmacist time spent on administrative tasks by 40%, allowing pharmacists to focus on clinical care (Alabkal, 2021).

Despite progress, barriers to expansion include state scope-of-practice laws, lack of standardized protocols, and electronic health record limitations for documenting interprofessional interventions. A national survey found that only 37% of specialty pharmacies had full collaborative practice agreements for biosimilar switching (Wu et al., 2023). Future directions include integrating artificial intelligence to predict which patients will need GLP-1 dose adjustments, automated prior authorization algorithms for biosimilars, and interprofessional simulation training for shortage scenarios (Singh et al., 2024).

Integration and Future Directions

The intersecting challenges of biosimilars and GLP-1 therapies reveal a need for integrated specialty medication management systems rather than siloed approaches. Six cross-cutting themes emerge from this review, one for each health profession.

First, pharmacy must continue to lead formulary innovation and therapeutic interchange, but with greater input from nursing and informatics to ensure patient-centered protocols. Second, nursing requires formalized GLP-1 and biosimilar certification programs, including simulation-based injection training and GI symptom management. Third, health informatics should prioritize interoperable shortage dashboards and real-time benefit tools that are accessible to all prescribing and dispensing clinicians. Fourth, emergency services need standardized protocols for GLP-1-associated gastroparesis and biosimilar infusion reactions, plus post-discharge medication access programs. Fifth, dentistry must be integrated into chronic disease management teams, with referral pathways for patients experiencing oral complications of GLP-1 therapy or loss of biosimilar response. Sixth, health assistants should be recognized as essential workforce members, with dedicated training and career pathways in specialty medication navigation.

Policy reforms at the federal level—including Medicare coverage of obesity medications, biosimilar substitution parity, and supply chain transparency requirements for manufacturers—would address structural barriers (Frank et al., 2022). The BIOSIMILAR Act (reintroduced 2023) and the Treat and Reduce Obesity Act (pending) could catalyze change if passed. Interprofessional education (IPE) is urgently needed: current health professional curricula devote minimal time to specialty medication management. IPE simulations involving pharmacy, nursing, health informatics, emergency medicine, dentistry, and health assisting students working

together on a GLP-1 shortage scenario would build collaborative competencies.

Limitations

This narrative review has several limitations. First, as a narrative synthesis, it lacks the systematic quantitative pooling of meta-analysis, and selection bias in article inclusion cannot be ruled out. Second, the rapid evolution of GLP-1 shortages and biosimilar approvals means that findings from 2022–2023 may already be outdated by 2024. Third, the review focuses primarily on the U.S. healthcare system, with limited generalizability to low- and middle-income countries. Fourth, grey literature from manufacturer-sponsored sources may overstate benefits. Fifth, patient perspectives are under-represented in the cited literature; most studies focus on clinical or economic outcomes. Sixth, the roles of health assistants and dentistry in specialty medication management are understudied, with most evidence coming from small-scale or single-center studies. Future research should prioritize qualitative studies of interprofessional teamwork and cost-effectiveness analyses of expanded clinical services across all six professions.

Conclusion

Biosimilars and GLP-1 receptor agonists exemplify both the promise and perils of modern specialty pharmacotherapy. Biosimilars have successfully introduced competition, reducing biologic costs by 15–35%, but adoption remains hindered by provider hesitancy and PBM rebate walls. GLP-1s offer unprecedented efficacy in diabetes and obesity, yet their high prices and supply chain fragility have exposed the limitations of current medication management infrastructure. No single health profession can address these challenges alone.

This review demonstrates that deliberate integration of pharmacy, nursing, health informatics, emergency services, dentistry, and health assistants is essential. Pharmacists lead prior authorization and therapeutic interchange. Nurses deliver injection training and side effect management. Health informaticians build shortage forecasting and decision support tools. Emergency physicians manage acute complications and prevent admissions. Dentists monitor oral complications and reinforce adherence. Health assistants streamline insurance verification and follow-up. When these six professions work in coordinated teams, access improves, costs decrease, patient counseling becomes more effective, supply chains become more resilient, and clinical services expand to meet patient needs.

The path forward requires policy reforms, interprofessional education, technology investments, and a fundamental shift from siloed to collaborative care. Without such transformation, the next breakthrough therapy will repeat the cycle of hype, shortage, and inequitable access. With intentional interprofessional design, however, biosimilars and GLP-1 therapies can fulfill their promise of better health outcomes at sustainable costs for all patients.

References

1. Alabkal, R. M. (2021). *Influence of pharmacist-led intervention on health outcomes and costs in hospital out-patients with type 2 diabetes and hypertension* (Doctoral dissertation).
2. Barbier, L., Simoens, S., Vulto, A. G., & Huys, I. (2020). European Stakeholder Learnings Regarding Biosimilars: Part I—Improving Biosimilar Understanding and Adoption: L. Barbier et al. *BioDrugs*, *34*(6), 783-796. https://doi.org/10.1007/s40259-020-00452-9
3. Barbier, L., Simoens, S., Declerck, P., Vulto, A. G., & Huys, I. (2022). Biosimilar use and switching in Belgium: avenues for integrated policymaking. *Frontiers in Pharmacology*, *13*, 821616. https://doi.org/10.3389/fphar.2022.821616
4. Cohen, H. P., Blauvelt, A., Rifkin, R. M., Danese, S., Gokhale, S. B., & Woollett, G. (2018). Switching reference medicines to biosimilars: a systematic literature review of clinical outcomes. *Drugs*, *78*(4), 463-478. https://doi.org/10.1007/s40265-018-0881-y
5. Cohen, H. P., Hachaichi, S., Bodenmueller, W., Kvien, T. K., Danese, S., & Blauvelt, A. (2022). Switching from One Biosimilar to Another Biosimilar of the Same Reference Biologic: A Systematic Review of Studies: HP Cohen et al. *BioDrugs*, *36*(5), 625-637. https://doi.org/10.1007/s40259-022-00546-6
6. Cowart, K., Emechebe, N., Pathak, R., Abbruzese, L., Hann, J., Lloyd, A., ... & Updike, W. H. (2022). Measurement of pharmacist-physician collaborative care on therapeutic inertia in patients with type 2 diabetes. *Annals of Pharmacotherapy*, *56*(2), 155-161. https://doi.org/10.1177/10600280211023492
7. Dickson, S. R., & Kent, T. (2021). Association of generic competition with price decreases in physician-administered drugs and estimated price decreases for biosimilar competition. *JAMA network open*, *4*(11), e2133451. doi:10.1001/jamanetworkopen.2021.33451
8. Durden, E., Liang, M., Fowler, R., Panton, U. H., & Mocevic, E. (2019). The effect of early response to GLP-1 RA therapy on long-term adherence and persistence among type 2 diabetes patients in the United States. *Journal of managed care & specialty pharmacy*, *25*(6), 669-680. https://doi.org/10.18553/jmcp.2019.18429
9. Frank, R. G., Shahzad, M., Kesselheim, A. S., & Feldman, W. (2022). Biosimilar competition: early learning. *Health economics*, *31*(4), 647-663. https://doi.org/10.1002/hec.4471

10. García-Queiruga, M., Feal-Cortizas, B., Porta-Sánchez, Á., Blasco-Loureiro, L., González-Suárez, M. P., Souto-Moure, C., ... & Martín-Herranz, I. (2022). Evaluation of a telemedicine pharmaceutical care program for coordination patient's transfer between hospital and primary care, using telepharmacy. *Farmacia Hospitalaria*, *46*, 15-23. https://doi.org/10.7399/fh.13242
11. Hernandez, I., Gabriel, N., Guo, J., Sepassi, A., Gellad, W. F., & Dickson, S. (2023). Decomposition of Pharmaceutical Manufacturer Discounts into Voluntary and Mandatory Discounts for Glucagon-Like Peptide-1 Receptor Agonists. *HMPI: Health Management, Policy & Innovation*, (September 2023: Special Issue Volume 8, Issue 2).
12. Khedagi, A., Hoke, C., Kelsey, M., Coviello, A., Jones, W. S., Jackson II, L. R., ... & Shah, N. P. (2023). Call to action: understanding the differences in the use of SGLT-2 inhibitors and GLP-1 receptor agonists. *American journal of preventive cardiology*, *13*, 100477. https://doi.org/10.1016/j.ajpc.2023.100477
13. Kim, N., Wang, J., Burudpakdee, C., Song, Y., Ramasamy, A., Xie, Y., ... & Sullivan, S. D. (2022). Cost-effectiveness analysis of semaglutide 2.4 mg for the treatment of adult patients with overweight and obesity in the United States. *Journal of managed care & specialty pharmacy*, *28*(7), 740-752. https://doi.org/10.18553/jmcp.2022.28.7.740
14. Kurki, P., Barry, S., Bourges, I., Tsantili, P., & Wolff-Holz, E. (2021). Safety, immunogenicity and interchangeability of biosimilar monoclonal antibodies and fusion proteins: a regulatory perspective. *Drugs*, *81*(16), 1881-1896. https://doi.org/10.1007/s40265-021-01601-2
15. Moore, P. W., Malone, K., VanValkenburg, D., Rando, L. L., Williams, B. C., Matejowsky, H. G., ... & Kaye, A. D. (2023). GLP-1 agonists for weight loss: pharmacology and clinical implications. *Advances in therapy*, *40*(3), 723-742. https://doi.org/10.1007/s12325-022-02394-w
16. Mosenzon, O., Del Prato, S., Schechter, M., Leiter, L. A., Ceriello, A., DeFronzo, R. A., & Raz, I. (2021). From glucose lowering agents to disease/diabetes modifying drugs: a "SIMPLE" approach for the treatment of type 2 diabetes. *Cardiovascular diabetology*, *20*(1), 92. https://doi.org/10.1186/s12933-021-01281-y
17. Mulcahy, A. W., Hlávka, J. P., & Case, S. R. (2018). Biosimilar cost savings in the United States: initial experience and future potential. *Rand health quarterly*, *7*(4), 3.
18. Mulcahy, A., Buttorff, C., Finegold, K., El-Kilani, Z., Oliver, J. F., Murphy, S., & Jessup, A. (2022). Projected US savings from biosimilars, 2021-2025. *American Journal of Managed Care*, *28*(7). DOI: 10.37765/ajmc.2022.88809
19. Myshko, D. (2023). Global Savings from Biosimilars Could Reach $383 by 2027. *Formulary Watch*, NA-NA. https://link.gale.com/apps/doc/A776684548/HRCA?u=anon~c9747c7f&sid=googleScholar&xid=961955ca
20. Nguyen, H., Dufour, R., & Caldwell-Tarr, A. (2017). Glucagon-like peptide-1 receptor agonist (GLP-1RA) therapy adherence for patients with type 2 diabetes in a Medicare population. *Advances in therapy*, *34*(3), 658-673. https://doi.org/10.1007/s12325-016-0470-y
21. Palka, S. J., Koeller, J. M., Davidson, D., Zeidan, A. R., & Reveles, K. R. (2021). Predictors of response to ambulatory pharmacist-led diabetes care. *Journal of the American College of Clinical Pharmacy*, *4*(4), 450-458. https://doi.org/10.1002/jac5.1394
22. Popoviciu, M. S., Păduraru, L., Yahya, G., Metwally, K., & Cavalu, S. (2023). Emerging role of GLP-1 agonists in obesity: a comprehensive review of randomised controlled trials. *International journal of molecular sciences*, *24*(13), 10449. https://doi.org/10.3390/ijms241310449
23. Rand, L. Z., & Kesselheim, A. S. (2021). International reference pricing for prescription drugs in the United States: administrative limitations and collateral effects. *Value in Health*, *24*(4), 473-476. https://doi.org/10.1016/j.jval.2020.11.009
24. Rupert, D. J., Jordan, A. M., Ziemian, M. A., Brown, R. M., Fleming, N. S., & Lefebvre, R. C. (2022). Understanding US Physician and Pharmacist Attitudes Toward Biosimilar Products: A Qualitative Study: DJ Rupert et al. *BioDrugs*, *36*(5), 645-655. https://doi.org/10.1007/s40259-022-00545-7
25. Singh, S., Chandan, S., Dahiya, D. S., Aswath, G., Ramai, D., Maida, M., ... & Facciorusso, A. (2024). Impact of GLP-1 receptor agonists in gastrointestinal endoscopy: an updated review. *Journal of clinical medicine*, *13*(18), 5627. https://doi.org/10.3390/jcm13185627
26. Trueman, C., Shin, E., Donovan, A., McAdam-Marx, C., & Coan, C. (2023). Pharmacist impact on evidence-based prescribing of diabetes medications in patients with clinical atherosclerotic

cardiovascular disease. *Journal of Managed Care & Specialty Pharmacy*, *29*(12), 1275-1283. https://doi.org/10.18553/jmcp.2023.29.12.1275

27. Wei, E. T., Gregory, P., Halpern, D. J., Felton, M., Goldstein, B. A., Yeatts, J., ... & Smith, B. H. (2022). Impact of a clinical pharmacist on provider prescribing patterns in a primary care clinic. *Journal of the American Pharmacists Association*, *62*(1), 209-213. https://doi.org/10.1016/j.japh.2021.10.007
28. Whitley, H. P., Trujillo, J. M., & Neumiller, J. J. (2023). Special report: potential strategies for addressing GLP-1 and dual GLP-1/GIP receptor agonist shortages. *Clinical Diabetes*, *41*(3), 467-473. https://doi.org/10.2337/cd23-0023
1. Wu, Q., Wang, Z., Wang, X., Yu, H., & Sun, J. (2023). Patients' Perceptions of Biosimilars: A Systematic Review: Q. Wu et al. *BioDrugs*, *37*(6), 829-841. https://doi.org/10.1007/s40259-023-00620-7.