



Inefficient Patient Follow-Up and Its Contribution to Healthcare Expenditure: A Thematic Review

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DOI: 10.31080/ASNH.2026.10.1617

Received: March 18, 2026

Published: March 31, 2026

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Abstract

Rising healthcare expenditure is a concerning problem in health system globally specifically it has very challenging impact in low income and middle-income countries who are already struggling with increasing diseases' burden in the form of chronic diseases, infectious and Non- Communicable Diseases. We are able to manage various structural variables as, implementation of technology, effective use of pharmacy etc yet still we are deficient in managing the various processes involved in the healthcare and which are significantly contributing in health care expenditure. Patient follow up is one of the less documented processes and unexplored area, which adversely affects the healthcare expenditure in the patient healthcare journey. As still follow up is unstructured in healthcare, data not captured effectively, a thematic narrative review was preferred and conducted to synthesize the evidence for the relationship between inefficient patient follow-up and healthcare expenditure. Study suggests that unstructured follow-up contributes to increased healthcare costs as continuity of care is disrupted, further progression of disease leading to preventable complications necessitating the hospital re-admission. The efficiency of healthcare facilities decreases due to repetition of diagnostic services, restart of treatment etc. All these events significantly enhance the out- of pocket expenditure. Strengthening of structured patient follow up will help in a cost-effective strategy for improving health system efficiency, equity, and financial protection.

Keywords: Follow Up; Artificial Intelligence; Provider Payment Methods; Low- and Middle-Income Countries (LMICs); Demographic Transitions

Introduction

Rising healthcare expenditure is posing a great challenge across both high-income and low and middle -income countries. Demographic transitions, epidemiological shift and increased demand and consumption of Health care services are the few main factors responsible this worrying trend [1,2]. Healthcare providers focus mainly on structural part such as buildings, pharmaceuticals, and advanced technologies, etc but healthcare delivery processes are not getting the adequate attention of healthcare organizations. Lack of efficient processes results into the compromised healthcare

services and contributing in avoidable health spending [3].

Patient follow-up is a core element of healthcare delivery that ensures continuity of care, supports adherence to treatment, and enables early identification of complications [4]. Inefficient patient follow-up—manifested as missed appointments, weak referral mechanisms, poor post-discharge monitoring, and fragmented care pathways—represents a critical system failure with substantial economic consequences [5].

Evidence suggests that inadequate follow-up increases healthcare utilization through preventable hospital admissions, repeated diagnostic testing, and emergency care use [6]. These effects are particularly pronounced in LMICs, where health systems face limited public financing and high reliance on out-of-pocket payments [7]. This review synthesizes existing evidence to examine how inefficient patient follow-up contributes to increased healthcare expenditure.

Methods

A thematic narrative review approach was employed to synthesize conceptual and empirical literature on patient follow-up, continuity of care, healthcare utilization, and expenditure. Peer-reviewed articles, systematic reviews, and policy reports were examined. Thematic analysis was used to identify recurring pathways linking inefficient follow-up to increased healthcare costs. This approach is appropriate for complex health system issues involving multiple interacting mechanisms [8] to identify patterns, gaps, and relationships in existing literature, for effective analysis and guides future research.

Results

Disruption of continuity of care

Continuity of care is an important aspect of healthcare management which helps in better and improved health outcomes and reduced healthcare expenditure [9]. Follow up after the initial treatment helps in informational and relational continuity. Inefficient follow leads to fragmented care delivery and repeated healthcare visits to the centres [10]. In the absence of adequately supported follow up, patients often consult multiple providers without any coordinated care plans, resulting in unnecessary referrals and duplicated services and enhanced healthcare expenditure [11].

Studies have reflected that poor continuity is associated with higher healthcare utilization and increased costs, particularly for patients with chronic conditions [12].

Disease progression and preventable complications

Regular follow-up is needed for controlling chronic diseases and preventing complications [13]. Inefficient follow-up may delay in detection of disease deterioration, which may lead to manageable conditions into progressive advanced stages requiring costly interventions [14].

Preventable complications such as cardiovascular events, renal failure, and advanced infections significantly increase healthcare expenditure due to prolonged hospitalization, intensive care, and long-term treatment requirements [15].

Avoidable hospital readmissions

Many times, hospital readmissions are responsible for avoidable healthcare costs due to inadequate post-discharge follow-up [16]. Poor discharge planning, lack of medication review, and absence of follow-up appointments increase the risk of early readmission [17].

These avoidable readmissions further impose the substantial financial burdens on health systems indicating the poor quality and inefficiency in care delivery [18].

Duplication of diagnostic and therapeutic services

Unstructured follow up and multiple change in treating physicians frequently force for duplication of laboratory tests, imaging studies, and specialist consultations [19]. Inappropriate maintenance of health records leads to poor communication between providers augment this problem, particularly in mixed public-private healthcare systems [20].

Duplication of healthcare services are potential source of avoidable healthcare expenditure and contributes to inefficient resource utilization [21]. Costly and limited services are being consumed by the patients repeatedly and disturb the demand and supply equilibrium.

Poor medication adherence and treatment failure

Follow-up helps in monitoring adherence, managing side effects, and adjusting treatment regimens [22]. Inefficient follow-up is associated with poor adherence, treatment failure, and relapse, particularly in chronic and infectious diseases [23].

Poor adherence with the follow up, increases healthcare costs by necessitating additional consultations, alternative therapies, and prolonged treatment durations [24].

Shift toward emergency and curative care

Effective follow-up supports preventive and secondary care, which are more cost-effective than emergency and tertiary care

[25]. Inefficient follow-up weakens preventive pathways, increasing reliance on emergency services and hospital-based care [26].

Emergency care is among the most expensive components of healthcare delivery and contributes disproportionately to rising healthcare expenditure [27].

Increased out-of-pocket expenditure and financial hardship

In LMICs, inefficient follow-up increases out-of-pocket expenditure through repeated visits, emergency care, and prolonged treatment [28]. High out-of-pocket spending exposes households to catastrophic health expenditure and medical impoverishment [29].

Financial hardship further discourages follow-up, reinforcing a cycle of poor health outcomes and escalating costs [30].

Discussion

This review identifies inefficient patient follow-up as a significant yet underrecognized factor responsible for healthcare expenditure. There are various other structural cost drivers, and further follow-up inefficiency aggravates a modifiable process failure that can be addressed through system-level interventions [31] as shown in figure 1.

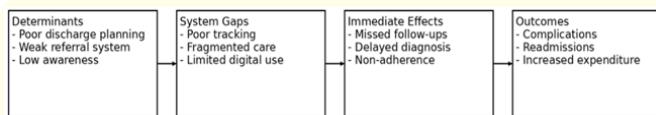


Figure 1: Thematic Analysis of Inefficient Follow ups of patients.

Strengthening follow-up mechanisms aligns with health economics principles emphasizing prevention, early intervention, and continuity of cost-effective care [32]. The findings are particularly relevant for LMICs, where inefficient follow-up exacerbates inequities and undermines financial protection goals [33].

Policy interventions focusing on primary healthcare strengthening, digital health systems, referral tracking, and community-based follow-up can improve efficiency and reduce avoidable healthcare expenditure [34].

Strengthening of continuity of care frameworks, with sound referral tracking systems and patient navigation models, are needed to minimize loss to follow-up. There is a need of study behavioral, socio-economic, and system-level determinants influencing patient adherence to follow-up, enabling the targeted interventions. Integration of provider payment mechanisms (PPMs) that promote and incentivize continuity of care—such as bundled payments or performance-based financing—may improve follow-up efficiency and reduce costs. Artificial intelligence and predictive analytics can help in identification of high-risk patients prone to poor follow-up and enable proactive care management. Ensuring data interoperability, privacy compliance (e.g., DPDP Act 2023), and ethical governance will be important in this crucial transition.

Limitations of the study

This thematic review provides important insights into the role of inefficient patient follow-up leading to healthcare expenditure, but few constraints exist when interpreting the findings. The study relies on secondary literature, which may be subject to publication bias and variability in study quality. Second, heterogeneity in methodologies, settings, and outcome measures across included studies limits direct comparability and generalizability of findings. Third, the review may have missed relevant unpublished or non-indexed studies, particularly from low-resource settings. Lack of quantitative synthesis also restricts precise estimation of the economic burden associated with inefficient patient follow-up. Finally, contextual differences in healthcare systems may limit the applicability of findings across diverse settings.

Conclusion

Inefficient patient follow-up contributes substantially to increased healthcare expenditure through disrupted continuity of care, disease progression, preventable complications, avoidable hospital readmissions, duplication of services, and increased out-of-pocket spending. Strengthening follow-up systems should be enforced as a strategic investment in healthcare efficiency, equity, and sustainability.

Future Direction of the Study

The findings of this thematic review highlight critical gaps in patient follow-up systems significantly contributing to avoidable

healthcare expenditure. Future research and policy efforts may focus on developing standardized, evidence-based follow-up protocols across different levels of care.

There is also a need for robust longitudinal and implementation research to quantify the direct and indirect economic burden attributable to inefficient follow-up practices, especially in low- and middle-income countries like India.

Conflict of Interest and Funding Source

The authors declare that they have no known financial or non-financial conflicts of interest that could have influenced the work reported in this paper.

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