

# The Impact of Cardiovascular Medication Uses on Patients' Daily Lives: A Cross-Sectional Study

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## Abstract

**Background:** Patients with chronic conditions bear a burden when managing several long-term medications. However, little research has been done on how it affects patients' day-to-day activities. This study looked at how several parts of everyday living were affected by cardiovascular medicine and how adherent and non-adherent individuals differed in these areas.

**Method:** Patients utilizing cardiovascular medicine who were 45 years of age or older participated in this cross-sectional study. Patients who were adherent and non-adherent, as determined by pharmacy refill data, were divided into two equal group sizes. The Living with Medicines Questionnaire was used to gather information about how patients' daily lives were affected by their usage of medications.

**Results:** A total of 196 patients took part, of whom 96 were non-adherent. A significant percentage of patients reported that their daily lives were burdened by medication-related issues. Accepting long-term drug use, worries or discontent with medications, how medications affect social and everyday life, and how to connect and communicate with healthcare providers were the main causes of this stress. When evaluating the effect on patients' daily lives between adherent and nonadherent patients, no statistically significant findings were discovered.

**Conclusion:** Health care professionals should be aware of how taking multiple long-term medications affects patients' daily lives and try to reduce the burden that comes with taking medications by strengthening their relationships with patients and providing appropriate treatment information that takes into account each patient's unique situation. This could make it easier for patients to incorporate long-term medication use into their regular routines.

**Keywords:** Medication-related burden, Patients' daily lives, Medication non-adherence, The Netherlands, Cardiovascular medication

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## Introduction

Individuals afflicted with chronic ailments encounter numerous obstacles, encompassing comprehension of their pathological state, adherence to routine consultations, administration of multiple pharmacological agents, and implementation of alterations to their way of life [1]. The effective management of chronic diseases necessitates a substantial commitment on the part of patients. The complexity of treatment regimens and the prolonged administration of medications can impose a significant burden on patients. A comprehensive review has successfully identified and delineated five primary origins contributing to the burden associated with medication usage [2]. These sources encompass medication routines, medicine characteristics, side effects, healthcare system factors, and social determinants.

The deleterious impact of an elevated medication burden on patients' daily functioning and overall quality of life, particularly among individuals afflicted with cardiovascular ailments necessitating

lifelong pharmacotherapy, cannot be overstated [3]. When individuals experience an overwhelming burden, they may encounter difficulties in adhering to their prescribed therapeutic regimen, subsequently resulting in exacerbated health complications, increased frequency of hospitalizations, and elevated healthcare expenditures [4]. Nevertheless, there exists a paucity of data regarding the impact of prolonged medication utilization on the day-to-day functioning of individuals afflicted with cardiovascular ailments, as well as the influence of treatment adherence on these dimensions [5].

The primary objective of this study is to examine the impact of chronic cardiovascular medication utilization on diverse dimensions of patients' daily functioning. Additionally, the study aims to discern potential disparities in these dimensions between patients who demonstrate adherence to their prescribed treatment regimen and those who exhibit non-adherence.

## Methods

### Study Design:

A cross-sectional study was undertaken in Department of Medicine, NSMCH, Patna with the objective of recruiting two cohorts of patients, categorized as adherent and non-adherent to their prescribed cardiovascular medication, in equal proportions in a period of 2021-2022. The study encompassed the participation of two community pharmacies. The Living with Medicines Questionnaire (LMQ-2) [6] was employed to gather data, as it is a meticulously crafted tool utilized to evaluate the effects of medication usage on patients' day-to-day functioning. The survey instrument was dispatched via postal service to patients meeting the criteria for inclusion in the study.

### Study Population:

Inclusion criteria encompassed individuals of 45 years of age or above who had been prescribed cardiovascular pharmacotherapy, specifically antihypertensive agents, antihyperlipidemic drugs, and anticoagulants, for a duration exceeding one year. The exclusion criteria encompassed patients who demonstrated an inability to successfully fulfill the questionnaire, individuals who faced language barriers impeding effective communication, as well as those who relied on repeat dispensing services.

### Selection Procedure:

The non-adherent sample was assessed Pharmaceutical Statistics (SFK) method, which involved the utilization of the Proportion of Days Covered (PDC) metric to identify patients who were non-adherent (defined as having a PDC < 80%). A systematic sampling technique was employed to select a representative sample from the aforementioned list within each pharmacy. Subsequently, diligent efforts were made to establish communication with the patients included in the sample, with the primary objective of ascertaining the reasons underlying their non-adherence to medication refills. Patients who demonstrated adherence to their prescribed medications, as evidenced by a PDC of 80% or higher, were identified through an analysis of pharmacy records. However, patients who were already listed on the SFK list were excluded from this study. The remaining patients were contacted to ascertain their willingness to participate in the study.

### Data Collection:

The study conducted by LMQ-2 aimed to evaluate the effects of medication utilization in relation to eight distinct themes. Participants were asked to rate their responses using a five-point Likert scale [7]. The questionnaire underwent a rigorous translation process, employing a forward-backward procedure, to ensure its linguistic equivalence in both Hindi and English languages. Subsequently, the translated versions were subjected to feasibility and readability assessments. Demographic data pertaining to the patients were gathered, encompassing variables such as age, gender, ethnicity, educational attainment, occupational status, residential arrangement, provision of aid for medication administration, and the quantity of prescribed pharmaceuticals.

### Data Analysis:

The present study employed descriptive statistics to succinctly summarize the demographic and clinical characteristics of the patients, as well as the scores obtained on the LMQ-2 assessment tool. Composite scores were computed to assess the overall impact as well as the impact within each individual theme. The present study employed independent samples t-tests to examine and compare the scores obtained by participants belonging to two distinct groups, namely the adherent group and the non-adherent group. A statistical significance level of  $\leq 0.01$  was employed using SPSS version 22.0 to determine the significance of the findings.

### Result

Among the cohort of 394 patients who were extended invitations, a total of 295 individuals expressed their willingness to partake in the study. A total of 94 participants exhibited non-responsive behavior towards the questionnaire, while an additional five individuals were excluded from the analysis due to incomplete questionnaire data. The study yielded a total sample size of 196 patients, comprising 100 individuals in the adherent group and 96 individuals in the non-adherent group.

The mean LMQ-2 sum scores for the entire study population were found to be 93.1 (SD 13.6). In both adherent and non-adherent patient groups, the sum scores exhibited a close resemblance, with values of 93.2 (standard deviation 13.3) and 93.0 (SD 14.0), respectively. There were no statistically significant differences observed between the groups classified as adherent and non-adherent in relation to the sum score or theme scores of the LMQ-2.

Patient characteristics	Total study population (N = 196)	Adherent sample (N = 100)	Non-adherent sample (N = 96)
Age (years)	71.0 ± 10.6	71.4 ± 10.2	70.5 ± 11.0
Male	100 (51.0)	54 (54.0)	46 (47.9)
Assistance with medication use			
Yes	22 (11.2)	12 (12.0)	10 (10.4)
No. of prescribed medicines ≥ 4	133 (67.9)	59 (60.2)	74 (79.6)

Several noteworthy observations were made, revealing that approximately 25% of both compliant and non-compliant patients expressed a lack of confidence in their physician's selection of medications (24.0%). Furthermore, nearly half of the participants felt that their physician did not consistently prioritize their apprehensions regarding potential adverse effects (42.3%). Approximately 40% of patients have reported expressing concerns regarding the potential occurrence of adverse effects or the potential long-term consequences associated with medication administration. A considerable proportion of patients, approximately 35%, reported experiencing adverse effects on their social and daily functioning as a result of their medication regimen. These effects manifested in various ways, including hindrances to their desired lifestyle (34.7%) and disruptions to their social interactions (23.0%). A significant proportion (57.7%) of patients reported a perceived inability to adapt their medication regimen to suit their individual lifestyles, while approximately one in four patients (23.0%) expressed resistance towards acknowledging the necessity of long-term medication. A significant proportion, specifically 35.2%, exhibited a deficiency in self-assurance when engaging in conversations pertaining to pharmaceuticals with their pharmacist.

In the comparative analysis between patients who adhered to the prescribed treatment regimen and those who did not, no statistically significant disparities were observed in the responses to the individual items of the LMQ-2 questionnaire.

### Discussion

This study elucidated the impact of cardiovascular medication utilization on patients' daily functioning, highlighting the prominent role played by various factors including adherence to long-term pharmacotherapy, apprehensions or discontentment pertaining to medication regimens, disruption of daily activities due to medication-related issues, and encounters with healthcare professionals. Notably, there were no statistically significant disparities observed in the perceived burden between the adherent and non-adherent cohorts.

A notable proportion of patients included in our study reported the occurrence of medication-related burden, which is consistent with the results obtained

in prior studies utilizing the LMQ questionnaire [8, 9]. The aforementioned studies have reached the consensus that prolonged utilization of medication may impose a considerable burden and conceivably exert an adverse influence on the overall well-being of individuals. The present study's discovery that the burden related to medication exhibited associations with diverse facets of daily functioning aligns with the extant body of literature. In a comprehensive analysis conducted by Sav et al. [10], the notion of treatment burden was recognized as a multifaceted construct that encompasses various elements, including but not limited to treatment-related adverse effects, the financial implications of treatment, the temporal demands associated with medication management, and the psychosocial factors that exert an influence on individuals' daily functioning. Although the economic aspects were not evaluated in our study, the findings substantiate the notion that the burden of treatment is complex and interrelated.

The review conducted by Rosbach and Andersen [11] underscored the intricate nature of treatment burden and brought attention to the fact that patients employ tactics to mitigate this burden by integrating multifaceted treatment regimens into their everyday schedules. Given the association between medication-related burden and interactions with healthcare providers, the resolution of this matter necessitates structural modifications in healthcare delivery [12]. It is imperative for healthcare providers to acknowledge that suboptimal patient-provider relationships can potentially exacerbate the overall burden on patients. Therefore, it is crucial for healthcare providers to make concerted efforts to enhance communication, actively engage patients in treatment decisions, and take into account their unique circumstances and preferences. This approach has the potential to optimize the incorporation of long-term treatment into patients' daily routines, as indicated in a comprehensive analysis conducted by Mohammed et al. The review underscores the significance of comprehending patients' medication-related burden in order to positively influence their attitudes and actions towards pharmaceutical interventions [2].

In a rather unexpected manner, our study failed to identify any statistically significant disparities in the burden encountered by patients who adhered to the

prescribed treatment regimen versus those who did not adhere. The present discovery poses a challenge to our initial hypothesis, which postulated that patients who are non-adherent may experience a higher degree of perceived burden associated with medication. There are multiple potential etiological factors that may elucidate the observed outcome. There exists a plausible scenario wherein both patients who adhere to their prescribed medication regimen and those who do not adhere may experience a comparable degree of burden associated with the management of chronic medication. In an alternative perspective, it is plausible that these two cohorts may employ distinct coping strategies to effectively navigate the weight of their circumstances. It is important to note that the specific questionnaire utilized in this particular investigation was not specifically tailored to capture such nuances in coping mechanisms. Furthermore, it is worth noting that the beliefs surrounding medication may have a more pronounced impact on the adherence to medication regimens compared to the perceived burden associated with taking medication. Further investigation is warranted to comprehend the potential relationship between medication non-adherence and the slight differences observed in a subset of LMQ-2 items among adherent and non-adherent patients. These differences include challenges in medication use, a sense of control over altering medication intake times, and the belief that medications facilitate the ability to live life as desired [13, 14]. Nevertheless, it is imperative to exercise caution when interpreting these disparities, as there exists a possibility of statistical artifacts associated with the conduct of multiple tests. Further investigations are warranted to explore the intricate associations between these variables and the phenomenon of medication non-adherence.

### Conclusion

This study has provided evidence indicating that a significant number of patients who are prescribed chronic cardiovascular medication encounter burdens associated with their medication across various aspects of their daily lives. Healthcare providers are required to recognize the implications of prolonged utilization of multiple medications on the daily functioning of patients and should actively strive to alleviate the burden associated with medication usage for patients. Hence, it is imperative to enhance patient-provider relationships and optimize their communication, encompassing patients' unique circumstances and preferences. This approach aims to facilitate the seamless integration of long-term medication utilization into patients' daily routines. No significant disparities in perceived burden were observed between patients who adhered to the prescribed treatment regimen and those who did not adhere. The present study

reveals a noteworthy discovery, indicating the potential for underestimating the burden experienced by patients who exhibit non-adherence to medical recommendations. Additional investigation may be warranted to delve into this matter and examine the potential ramifications of intervention strategies targeting coping mechanisms for medication-related burden on patients' adherence to medication.

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