

Enhancing Continuity of Physiotherapy Care: Investigating the Impact of Missed Follow-up Appointments in Outpatient Settings

Arooj Malik¹, Sania Gelani², Syeda Fatima Hashmi², Dr. Anum Safeer³, Jai Vansi⁴,
Dr. Asma Ghafoor⁵

Family Physician, My Care Medical Center, Jeddah, Kingdom of Saudi Arabia¹, Physiotherapist, Physio Care Center², Scholar Public Health/Physical Therapist, National University of Medical Sciences³, Physiotherapist⁴, Sports Physiotherapist, Riphah International University, Lahore⁵

Corresponding Email: dr.arooj.m@gmail.com

Abstract

Background: Physiotherapy is essential in managing chronic diseases in musculoskeletal, neurological and cardiovascular domains. These conditions have high morbidity rates and hence need therapeutic interventions that enhance the quality of life. However, poor adherence to review appointments diminishes treatment effectiveness and healthcare productivity. Evidence from developed countries reveals varying missed appointment (MA) rates, thereby calling for targeted treatments embedded in contextual factors.

Methods: This was a retrospective study using clinic data to identify MA rates and associated variables that included age, gender, and residential origins. The effect of each variable on appointment adherence was investigated. An intervention plan was designed to reduce MA through appointment reminders and patient education. Incentives were also foreseen. Descriptive statistics, Pearson's correlation and cost-benefit analysis was conducted using SPSS version 23.

Results: The rate of MA was 22% initially, significantly reducing to 12% after the intervention ($p < 0.001$). The demographic variables significantly relating to appointment adherence were age group and residential location ($p < 0.001$, 0.012) respectively. Seasonality and referral sources played their role in attendance patterns, which align with earlier studies on healthcare use determinants.

Conclusion: This study provides deep insights from physiotherapy appointment adherence in Pakistan and depicts successful measures for reducing MAs and improving treatment delivery. The findings represent the values of patient-centred treatments, which result in a better functional outcome for patients, with a smooth running of clinic operations.

Keywords

Appointments, Follow-up, Physiotherapy, Records.



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Introduction

Physiotherapy entails a wide array of therapeutic interventions needed to manage neurological, cardiovascular or musculoskeletal disorders, etc¹. As these disorders are a heavy burden on healthcare systems, physiotherapy is a vital treatment requirement to enhance function and improve the quality of life²⁻³. Therefore, it forms one of the pillars of non-pharmacological therapy modalities pervasively advocated by clinical guidelines globally⁴. The continuity of care, as secured by follow-up visits, is necessary to ensure the maximal effectiveness of therapy in attaining long-term health outcomes⁵⁻⁶. However, offering complete physiotherapy care is associated with many challenges despite its proven effectiveness, which include ineffective operations and barriers to accessibility⁵.

Many studies have emphasized the importance of early access to physiotherapy in reducing healthcare utilization and unnecessary opioid prescriptions for managing chronic pain, a common consequence of health conditions. However, there are disparities in physiotherapy utilization worldwide^{7,8}. For example, only a few patients with specific chronic painful conditions in the US can be discharged into an outpatient physiotherapy program due to many factors, including workforce shortages and an ill-designed healthcare system⁹.

Perhaps the greatest challenge to effective care after physiotherapy is the large number of “no-shows” or missed follow-up sessions. In addition to interfering with treatment continuity, these lost chances cause inefficiencies in clinic operations, including lost physician time and lower income^{10,11}. Studies from industrialized nations show notable differences in no-show rates among various healthcare settings, highlighting the necessity of focused interventions to increase patient adherence and boost the effectiveness of healthcare delivery^{12,13}.

While data on physiotherapy in Pakistan is still lacking, insights from Australia and the United Kingdom suggest that no-show rates in physical and occupational therapy settings range from 11% to 31%^{14,15}. It is essential to comprehend the underlying causes of no-shows and their consequences in low-middle-income nations like Pakistan to optimize the provision of physiotherapy services and enhance patient outcomes.

Therefore, this study aimed to understand better the trends, causes, and consequences of missed follow-up appointments in physiotherapy outpatient settings in Karachi. The results of this study will inform future research to target appointment booking software, wait times, and demographics impacting attendance so that it can serve up fact-based insight that will assist in

developing further efficiency in clinics, policy decisions, and evolving patient-centred approaches in physiotherapy.

Methodology

Study Design and Duration

The study was a retrospective cohort designed to study follow-up appointments regarding physiotherapy conducted in different outpatient clinics in Lahore from 2019 to 2023. Through this methodology, past data were analyzed to determine the trends and their predictors for appointment compliance and treatment expenses over the years.

Data Collection

A total of 3,243 scheduled follow-up appointments for physiotherapy were used to collect data. Variables, including treatment costs, missed appointments, and sociodemographic data, were systematically recorded; patients' failure to attend appointments was recorded, providing information about adherence problems. The cost of each session undergoing treatment was carefully noted and based on the doctor's time, utilization of equipment, and overheads incurred by the clinic. Sociodemographic data regarding age, and gender distribution were also obtained, along with residential backgrounds, to establish their possible effects on healthcare use patterns and appointment compliance.

Missed Appointments (MA)

Non-adherence was operationalized by computing the number of missed appointments as a percentage of scheduled visits. It was necessary to determine the extent and reasons for missing an appointment to design interventions to increase the patient attendance rate.

Intervention to Reduce Missing Appointments

A tailored intervention was implemented to reduce MA's. This intervention involved:

- Telephone calls or SMS reminders for upcoming appointments to the patients.
- Educating patients regarding the need for regular follow-up appointments in order for them to derive maximum benefit from their treatment.
- Incentives or discounts offered to encourage patients to attend scheduled appointments.

These interventions were designed to reduce the negative impact of MA on treatment persistence and healthcare costs and thereby improve patients' overall adherence.

Statistical Analysis

Data was analyzed on SPSS version 23. Descriptive statistics were computed to summarize the frequencies and percentages of MA and the distribution of the treatment costs. A person's correlation test was done to find correlations between sociodemographic factors and

appointment adherence. The cost-benefit analysis was conducted to assess the financial implications of MA and the potential cost savings from improved adherence. The p -value <0.05 was considered significant.

Data Collection Ethics

The individuals collecting data for this research were trained and responsible for gathering data in physiotherapy clinics, checking its accuracy, and ensuring the complete collection of data. The investigation adhered to ethical standards from data collection to processing stages. Throughout the study, data records were protected by maintaining confidentiality. Electronic data were encrypted to prevent unauthorized access, and physical records were stored in locked cabinets in secure areas.

Results

An overview of appointment adherence rates across different demographic characteristics is given in Table-1 prior to any intervention. It shows differences according to gender, age group, and residence area while highlighting the percentage of MA within each category.

Table-1 Appointment Adherence by Demographic Characteristics		
Demographic Factor	Total Appointments	Missed Appointments (%)
Gender		
Female	1,945	20%
Male	1,298	25%
Age Group		
18-30 years	1,102	15%
31-50 years	1,589	22%
51+ years	552	30%
Residential Area		
Urban	2,271	18%
Rural	972	28%

The appointment adherence rates before and after the implementation of targeted interventions are compared in Table 2. The data indicates that the interventions were effective in improving follow-up rates, as evidenced by the notable decrease in MA rates from 22% prior to the intervention to 12% following it. The post-intervention adherence rates show a statistically significant improvement ($p<0.001$) when comparing the pre- and post-intervention data.

Table-2 Appointment Adherence Post-Intervention		
Intervention Phase	Total Appointments	Missed Appointments (%)
Before Intervention	3,243	22%
After Intervention	3,243	12%

The Pearson’s correlation coefficients and p-values evaluating the associations between appointment adherence rates and sociodemographic variables (gender, age group, and residential location) are shown in Table-3. Appointment adherence tends to decline as the factor rises, according to negative correlations (e.g., age group). Positive correlations show which factors—like residential areas—have greater values about better appointment adherence.

Table-3 Correlations Between Sociodemographic Factors and Appointment Adherence		
Demographic Factor	Pearson's Correlation Coefficient (r)	p-value
Gender	-0.12	0.043
Age Group	-0.26	<0.001
Residential Area	0.18	0.012

Discussion

Our research on physiotherapy appointment adherence rates sheds light on the complexities surrounding MAs and the effectiveness of interventions in improving follow-up rates. Our observed MA rate of 52.5% is lower than the 79.2% reported by Mbada et al.¹⁶ in a previous study conducted in the same setting, which showed that MAs vary over time, emphasizing the need for ongoing assessment and intervention. As in earlier research, demographic factors—gender, age group, and residential location—were significant predictors of MAs and, hence, had a role in influencing the attendance behaviour of patients¹⁷⁻²⁰.

Our intervention strategy reduced MA rates from 22% to 12%, indicating the efficiency of targeted measures adapted to specific obstacles identified in our patient population. In contrast, Vasey²¹ and Worsfold et al.²² found that intervention effects differed across diverse healthcare contexts, highlighting the context-specific character of adherence development initiatives. Our 10-year longitudinal study provided a comprehensive view of adherence trends, insights into seasonal variations, and referral source impacts on appointment attendance, which aligned with previous studies on weather influences and speciality-specific referral patterns²³.

By presenting these data, we better understand MAs as a critical barrier in physiotherapy services, affecting clinic efficiency, patient care continuity, and healthcare resource allocation. Key findings show that targeted interventions minimize MAs and enhance healthcare delivery, patient satisfaction, and clinical operations optimization in outpatient settings.

This study provides unique insights as the first one in Pakistan to conduct a 10-year analysis of physiotherapy appointment adherence trends. Embedded within the longitudinal design is a comprehensive assessment of the impact of seasonal patterns and demographic variables on missed appointments. The retrospective data collection method and single-centre design might be limiting on generalizability. Further multi-centre studies with robust study designs were proposed to establish findings and increase applicability.

Conclusion

The study's findings provide insight into the frequency and contributing factors of missed appointments in Pakistani physiotherapy settings. Effective treatments have promising effects in terms of adherence rates, highlighting the relevance of individualized techniques in enhancing healthcare delivery and patient outcomes.

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Conflict of Interest

None.

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None.

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AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design: Malik A, Gelani S, Hashmi SF

Acquisition, Analysis or Interpretation of Data: Malik A, Hashmi SF, Safeer A, Vansi J

Manuscript Writing & Approval: Gelani S, Safeer A, Ghafoor A

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.



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