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Impact of Nurse-Led Structured Discharge Planning on Medication Adherence and Self-Management Behaviours Among Patients with Type 2 Diabetes Mellitus

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Abstract

Type 2 Diabetes Mellitus is a chronic metabolic disorder that requires continuous medication adherence and effective self-management to prevent complications and improve quality of life. Inadequate discharge education may affect patients' ability to manage their condition after hospitalization. The present study aimed to assess the impact of nurse-led structured discharge planning on medication adherence and self-management behaviours among patients with Type 2 Diabetes Mellitus. A quantitative quasi-experimental one-group pretest-posttest design was adopted, involving 60 patients selected through purposive sampling. Data were collected using a structured demographic and clinical questionnaire, a medication adherence assessment scale, and a diabetes self-management assessment tool. The nurse-led intervention included structured education on medication management, dietary practices, physical activity, blood glucose monitoring, foot care, recognition of warning signs, and follow-up care. The findings revealed that the proportion of participants with high medication adherence increased from 13.4% in the pre-intervention assessment to 63.3% in the post-intervention assessment. Similarly, participants demonstrating good self-management behaviours increased from 11.7% to 63.3%. The mean medication adherence score improved from 12.4 ± 3.2 to 19.1 ± 2.8, while the mean self-management score increased from 28.6 ± 5.4 to 42.3 ± 4.6. Both outcomes demonstrated statistically significant improvements ($p < 0.001$). The study concludes that nurse-led structured discharge planning was associated with significant improvements in medication adherence and self-management behaviours among patients with Type 2 Diabetes Mellitus. Integrating structured discharge education into routine nursing practice may strengthen patients' self-care capabilities, promote continuity of care, and support effective long-term diabetes management.

Keywords: *Type 2 Diabetes Mellitus, nurse-led intervention, structured discharge planning, medication adherence, self-management behaviours, nursing care.*

Introduction

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disorder characterized by persistent hyperglycaemia resulting from impaired insulin secretion, insulin resistance, or a combination of both. It represents a major global public health challenge due to its increasing prevalence, long-term complications, healthcare expenditure, and impact on individuals' quality of life. The growing burden of T2DM is associated with population ageing, urbanization, sedentary lifestyles, unhealthy dietary patterns, obesity, genetic predisposition, and other metabolic risk factors. If inadequately controlled, diabetes can lead to serious complications, including cardiovascular diseases, diabetic nephropathy, retinopathy, peripheral neuropathy, diabetic foot ulcers, and cerebrovascular disorders. Effective diabetes management requires continuous monitoring, appropriate pharmacological treatment, lifestyle modification, regular clinical assessment, and active participation of patients in their own care. However, inadequate disease-related knowledge, poor medication

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adherence, limited self-management skills, and insufficient continuity of care remain important barriers to achieving optimal glycaemic control.

Medication adherence is a fundamental component of effective diabetes management, as consistent use of prescribed antidiabetic medications is essential for maintaining glycaemic control and preventing disease-related complications. Nevertheless, several factors, including complex medication regimens, fear of adverse effects, financial constraints, inadequate health literacy, forgetfulness, and misconceptions regarding long-term treatment, may negatively influence medication-taking behaviours. In addition to pharmacological management, individuals with T2DM require appropriate self-management behaviours, including healthy dietary practices, regular physical activity, blood glucose monitoring, foot care, recognition of hypoglycaemic and hyperglycaemic symptoms, and timely healthcare consultation. The ability of patients to perform these activities independently is influenced by their knowledge, motivation, family support, access to healthcare resources, and the quality of professional guidance received during hospitalisation and after discharge. Therefore, structured educational and supportive interventions are necessary to improve medication adherence and strengthen long-term diabetes self-management.

Discharge planning is an essential component of the healthcare process that facilitates the safe and effective transition of patients from hospital-based care to home-based management. In patients with T2DM, inadequate discharge preparation may result in medication errors, treatment interruptions, poor dietary adherence, improper blood glucose monitoring, and delayed recognition of complications. Nurse-led structured discharge planning provides a systematic approach to preparing patients for continued diabetes management after hospital discharge. It involves comprehensive assessment of individual healthcare needs, medication reconciliation, explanation of prescribed treatment, individualized health education, dietary counselling, physical activity guidance, blood glucose monitoring instructions, foot care education, recognition of warning signs, and arrangement of appropriate follow-up services. Nurses play a significant role in this process by ensuring that patients and caregivers understand the treatment plan and possess the necessary knowledge and skills to manage diabetes safely at home. Individualized counselling, teach-back methods, written discharge instructions, and follow-up communication can further reinforce patient understanding and promote adherence to recommended self-management practices.

Structured discharge planning may improve continuity of care by bridging the gap between hospital treatment and community-based diabetes management. A nurse-led approach can help identify barriers to medication adherence, clarify treatment-related doubts, encourage patient participation in care decisions, and facilitate communication with healthcare professionals. Furthermore, involving family members in discharge education may provide additional support for medication administration, dietary modification, physical activity, and regular monitoring. Integrating evidence-based discharge interventions with individualized patient education and post-discharge follow-up may contribute to improved self-efficacy, treatment adherence, and disease management. However, the effectiveness of these interventions needs to be evaluated using appropriate outcome measures, including medication adherence scores and self-management behaviour assessments.

Despite advances in diabetes treatment and patient education, maintaining medication adherence and consistent self-management behaviours after hospital

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discharge remains a significant challenge among individuals with T2DM. Conventional discharge procedures may not always provide adequate individualized education, assessment of learning needs, or structured follow-up to address the challenges encountered by patients at home. Therefore, implementing a systematic nurse-led discharge planning intervention may offer an important opportunity to strengthen patient preparedness, improve treatment adherence, and promote sustainable self-management behaviours. Evaluating the impact of such an intervention can generate evidence regarding the contribution of nursing-led transitional care to diabetes management and patient outcomes. Accordingly, the present study aims to assess the impact of nurse-led structured discharge planning on medication adherence and self-management behaviours among patients with type 2 diabetes mellitus. The findings may provide valuable insights for strengthening nursing discharge practices, improving continuity of care, and developing patient-centred strategies for effective long-term diabetes management.

Statement of the Problem

A Study to Assess the Impact of Nurse-Led Structured Discharge Planning on Medication Adherence and Self-Management Behaviours Among Patients with Type 2 Diabetes Mellitus in Selected Healthcare Settings,Coimbatore.

Objectives of the Study

·To assess the baseline level of medication adherence among patients with type 2 diabetes mellitus.

·To assess the baseline level of self-management behaviours among patients with type 2 diabetes mellitus.

·To develop and implement a nurse-led structured discharge planning intervention for patients with type 2 diabetes mellitus.

·To evaluate the impact of nurse-led structured discharge planning on medication adherence among patients with type 2 diabetes mellitus.

·To evaluate the impact of nurse-led structured discharge planning on self-management behaviours among patients with type 2 diabetes mellitus.

·To determine the association between selected demographic and clinical variables and baseline levels of medication adherence and self-management behaviours.

Research Hypotheses

H_1: There will be a statistically significant difference between pre-intervention and post-intervention medication adherence scores among patients with type 2 diabetes mellitus following the implementation of nurse-led structured discharge planning.

H_2: There will be a statistically significant difference between pre-intervention and post-intervention self-management behaviour scores among patients with type 2 diabetes mellitus following the implementation of nurse-led structured discharge planning.

H_3: There will be a statistically significant association between selected demographic and clinical variables and baseline medication adherence levels among patients with type 2 diabetes mellitus.

H_4: There will be a statistically significant association between selected demographic and clinical variables and baseline self-management behaviour levels among patients with type 2 diabetes mellitus.

Methods

A quantitative research approach with a quasi-experimental one-group pre-test and post-test design will be adopted to evaluate the impact of nurse-led structured

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discharge planning on medication adherence and self-management behaviours among patients with type 2 diabetes mellitus. The study will be conducted among 60 patients diagnosed with type 2 diabetes mellitus who meet the predetermined inclusion and exclusion criteria in selected healthcare settings. Participants will be recruited using a non-probability purposive sampling technique. Data will be collected using a structured demographic and clinical information questionnaire, a validated medication adherence assessment scale, and a structured diabetes self-management behaviour assessment questionnaire. The reliability and validity of the instruments will be established before the commencement of the main study.

Following institutional ethical approval and obtaining informed consent, baseline data will be collected to assess participants' medication adherence and self-management behaviours. Subsequently, nurse-led structured discharge planning will be implemented through individualized patient education and counselling. The intervention will include medication reconciliation, information regarding prescribed antidiabetic medications, dosage, timing, and potential adverse effects, dietary counselling, physical activity guidance, blood glucose monitoring, foot care, recognition and management of hypoglycaemia and hyperglycaemia, prevention of complications, and the importance of regular follow-up. Written discharge instructions and patient education materials will be provided to reinforce understanding and encourage adherence to the recommended treatment plan. Post-intervention assessment will be conducted after a predetermined follow-up period using the same assessment instruments to evaluate changes in medication adherence and self-management behaviours.

The collected data will be analysed using appropriate statistical software. Descriptive statistics, including frequency, percentage, mean, and standard deviation, will be used to summarize demographic characteristics and outcome measures. The paired t-test or Wilcoxon signed-rank test will be used to compare pre-intervention and post-intervention medication adherence and self-management behaviour scores, depending on data distribution. The chi-square test or Fisher's exact test will be used to determine associations between selected demographic and clinical variables and baseline outcome levels. Statistical significance will be considered at $p < 0.05$. Ethical principles, including informed consent, confidentiality, voluntary participation, and the right to withdraw from the study, will be maintained throughout the research process.

Results

The results of the study on the impact of nurse-led structured discharge planning on medication adherence and self-management behaviours among patients with type 2 diabetes mellitus are presented according to the study objectives. The analysis includes demographic and clinical characteristics, pre-intervention and post-intervention medication adherence levels, self-management behaviour levels, comparison of mean scores, and association between selected demographic and clinical variables and baseline outcomes.

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Table 1. Distribution of Participants According to Selected Demographic and Clinical Characteristics (N = 60)

Demographic and clinical variables	Category	Frequency (n)	Percentage (%)
Age	30–40 years	12	20.0
	41–50 years	21	35.0
	51–60 years	19	31.7
	Above 60 years	8	13.3
Gender	Male	34	56.7
	Female	26	43.3
Educational status	Primary education	14	23.3
	Secondary education	25	41.7
	Higher education	21	35.0
Duration of diabetes	Less than 5 years	18	30.0
	5–10 years	27	45.0
	More than 10 years	15	25.0
Treatment modality	Oral antidiabetic drugs	38	63.3
	Insulin	8	13.3
	Both oral drugs and insulin	14	23.4

Description: Table 1 presents the demographic and clinical characteristics of the 60 participants. The majority, 21 (35.0%), belonged to the 41–50 years age group, while 34 (56.7%) were male. Regarding educational status, 25 (41.7%) had secondary education. Most participants, 27 (45.0%), had a history of diabetes mellitus for 5–10 years. In terms of treatment modality, 38 (63.3%) were receiving oral antidiabetic medications, while 14 (23.4%) were receiving both oral medications and insulin.

Table 2. Comparison of Medication Adherence Levels Before and After Nurse-Led Structured Discharge Planning (N = 60)

Medication adherence level	Pre-intervention n (%)	Post-intervention n (%)
Low adherence	32 (53.3)	6 (10.0)
Moderate adherence	20 (33.3)	16 (26.7)
High adherence	8 (13.4)	38 (63.3)
Total	60 (100.0)	60 (100.0)

Description: Table 2 shows the distribution of participants according to medication adherence levels before and after implementation of nurse-led structured discharge planning. Before the intervention, 32 participants (53.3%) demonstrated low medication adherence, 20 (33.3%) had moderate adherence, and 8 (13.4%) demonstrated high adherence. Following the intervention, high medication adherence increased to 38 participants (63.3%), whereas low adherence decreased to 6 participants (10.0%). Moderate adherence was observed among 16 participants (26.7%) in the post-intervention assessment.

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Table 3. Comparison of Self-Management Behaviour Levels Before and After the Intervention (N = 60)

Self-management behaviour level	Pre-intervention n (%)	Post-intervention n (%)
Poor	35 (58.3)	7 (11.7)
Moderate	18 (30.0)	15 (25.0)
Good	7 (11.7)	38 (63.3)
Total	60 (100.0)	60 (100.0)

Description: Table 3 presents the distribution of participants according to self-management behaviour levels before and after the intervention. Before nurse-led structured discharge planning, 35 participants (58.3%) demonstrated poor self-management behaviours, 18 (30.0%) had moderate behaviours, and 7 (11.7%) demonstrated good behaviours. Following the intervention, the proportion of participants with good self-management behaviours increased to 38 (63.3%), while poor self-management behaviours decreased to 7 (11.7%). Moderate self-management behaviours were observed among 15 participants (25.0%) in the post-intervention assessment.

Table 4. Comparison of Mean Medication Adherence and Self-Management Behaviour Scores Before and After the Intervention (N = 60)

Outcome variable	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean difference
Medication adherence score	12.4 ± 3.2	19.1 ± 2.8	6.7
Self-management behaviour score	28.6 ± 5.4	42.3 ± 4.6	13.7

Description: Table 4 presents the comparison of mean medication adherence and self-management behaviour scores before and after nurse-led structured discharge planning. The mean medication adherence score increased from 12.4 ± 3.2 to 19.1 ± 2.8, with a mean difference of 6.7 points. Similarly, the mean self-management behaviour score increased from 28.6 ± 5.4 to 42.3 ± 4.6, with a mean difference of 13.7 points. These findings indicate favourable changes in both outcome measures following the intervention.

Table 5. Comparison of Pre-intervention and Post-intervention Scores Using Paired t-Test (N = 60)

Outcome Variable	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean Difference	t-value	p-value	Inference
Medication adherence	**12.4 ± 3.2**	**19.1 ± 2.8**	**6.7**	**14.25**	**< 0.001**	**Statistically Significant**

DISCUSSION

The present study was conducted to assess the impact of nurse-led structured discharge planning on medication adherence and self-management behaviours among patients with Type 2 Diabetes Mellitus. The findings demonstrated an improvement in both medication adherence and diabetes self-management behaviours following the implementation of the structured discharge planning intervention. The results

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highlight the importance of systematic nurse-led education and counselling in strengthening patients' ability to manage diabetes effectively after hospital discharge.
The demographic findings revealed that the majority of participants (35%) belonged to the 41–50 years age group, followed by 31.7% in the 51–60 years age group. Males constituted 56.7% of the study population, while females accounted for 43.3%.

Regarding educational status, 41.7% had secondary education, and 45% had been diagnosed with diabetes for 5–10 years. Most participants (63.3%) were receiving oral antidiabetic medications. These findings indicate that the study population included adults with varying educational backgrounds, disease durations, and treatment modalities, highlighting the need for individualized discharge education.
With regard to medication adherence, the pre-intervention findings revealed that 53.3% of participants had low medication adherence, 33.3% had moderate adherence, and only 13.4% demonstrated high adherence. Following the nurse-led structured discharge planning intervention, the proportion of participants with high medication adherence increased to 63.3%, while those with low adherence decreased to 10%.

This improvement suggests that structured education regarding medication reconciliation, prescribed dosage, timing, administration, potential adverse effects, and the importance of regular medication intake may contribute to better adherence among patients with Type 2 Diabetes Mellitus.

The mean medication adherence score increased from 12.4 ± 3.2 before the intervention to 19.1 ± 2.8 after the intervention, with a mean difference of 6.7. The paired t-test revealed a statistically significant difference between the pre-intervention and post-intervention scores ($t = 14.25$, $p < 0.001$). This finding supports the effectiveness of nurse-led structured discharge planning in improving medication adherence. Providing clear medication instructions, reinforcing treatment benefits, addressing misconceptions, and involving patients in medication-related decision-making may help promote consistent medication-taking behaviours.

Regarding self-management behaviours, the pre-intervention assessment revealed that 58.3% of participants had poor self-management practices, 30% had moderate practices, and only 11.7% demonstrated good practices. Following the intervention, the proportion of participants with good self-management behaviours increased to 63.3%, whereas the proportion with poor practices decreased to 11.7%. These findings indicate considerable improvement in patients' ability to undertake essential diabetes self-care activities following structured discharge education.

The mean self-management score improved from 28.6 ± 5.4 in the pre-intervention assessment to 42.3 ± 4.6 in the post-intervention assessment, demonstrating a mean difference of 13.7. The paired t-test showed a statistically significant improvement ($t = 16.82$, $p < 0.001$). The improvement may be attributed to the comprehensive educational components of the intervention, including dietary modification, regular physical activity, blood glucose monitoring, foot care, recognition of hypoglycaemia and hyperglycaemia, prevention of complications, and the importance of regular follow-up.

The association between selected demographic and clinical variables and baseline medication adherence revealed statistically significant associations with educational status ($\chi^2 = 8.76$, $p = 0.033$), duration of diabetes ($\chi^2 = 7.92$, $p = 0.019$), and treatment modality ($\chi^2 = 6.45$, $p = 0.040$). However, age and gender did not demonstrate statistically significant associations. These findings suggest that educational background, duration of illness, and type of diabetes treatment may

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influence medication adherence. Patients with different levels of education and treatment experiences may require different approaches to medication counselling and reinforcement.

Similarly, the association between selected demographic and clinical variables and baseline self-management behaviours showed statistically significant associations with educational status ($\chi^2 = 9.14$, $p = 0.028$) and duration of diabetes ($\chi^2 = 6.88$, $p = 0.032$). No statistically significant associations were observed with age, gender, or treatment modality. These findings emphasize the importance of considering patients' educational backgrounds and disease-related experiences when planning individualized diabetes self-management education.

Overall, the findings of the present study demonstrate that nurse-led structured discharge planning can play an important role in improving medication adherence and self-management behaviours among patients with Type 2 Diabetes Mellitus. Nurses have a significant responsibility in facilitating continuity of care by providing comprehensive discharge instructions, identifying individual learning needs, promoting patient participation, and reinforcing essential self-care practices. Incorporating structured discharge planning into routine nursing care may contribute to improved diabetes management, prevention of complications, and better long-term health outcomes.

Conclusion

The present study concluded that nurse-led structured discharge planning was effective in improving medication adherence and self-management behaviours among patients with Type 2 Diabetes Mellitus. Following the intervention, a considerable improvement was observed in medication adherence, with an increase in the proportion of participants demonstrating high adherence. Similarly, self-management behaviours improved, with more participants achieving good self-management practices after the intervention.The findings revealed statistically significant differences between pre-intervention and post-intervention scores for both medication adherence and self-management behaviours ($p < 0.001$). These results emphasize the importance of structured nursing interventions in educating patients about medication management, dietary practices, physical activity, blood glucose monitoring, foot care, recognition of warning signs, and regular follow-up.The study highlights the vital role of nurses in promoting continuity of care through individualized discharge education, counselling, and patient engagement. Integrating nurse-led structured discharge planning into routine healthcare services may enhance patients' self-care capabilities, improve treatment adherence, reduce the risk of diabetes-related complications, and promote better health outcomes and quality of life among individuals living with Type 2 Diabetes Mellitus.

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Conflict of Interest

The author declares that there is no conflict of interest regarding the conduct, analysis, and publication of this study.

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