

# Impact of Nutritional Counseling on Medication Adherence

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## Abstract

**Background:** This study examines the impact of nutritional counseling on medication adherence among patients with chronic diseases, specifically focusing on diabetes, hypertension, and hyperlipidemia. Medication adherence is critical for the effective management of these conditions, yet many patients struggle to follow prescribed regimens.

**Objective:** To evaluate whether structured dietary interventions provided by trained dietitians can improve patients' compliance with their medication schedules.

**Methods:** Using a cross-sectional survey design, data were collected from 200 participants who met the inclusion criteria of being adults with chronic diseases and receiving nutritional counseling. The study employed the Morisky Medication Adherence Scale to measure adherence levels, along with self-reported dietary habits and perceived impacts of counseling.

**Results:** indicate that 75% of participants reported high adherence to their medication regimens, with those receiving nutritional counseling at least once a month exhibiting a 25% higher adherence rate ( $p < 0.01$ ) than those with less frequent counseling. Additionally, 70% of participants reported significant improvements in their dietary choices post-counseling, which correlated with enhanced medication compliance.

**Keywords:** Nutritional Counseling, Medication Adherence, Chronic Diseases, Diabetes, Hypertension, Hyperlipidemia, Integrated Care.

## Introduction

Background Medication non-adherence is a key factor in the treatment of chronic diseases and affects health outcomes and overall quality of life. Discontinuation of prescribed medications may re file to progression of disease, escalate the cost of health care and increase rates of hospitalization (World Health Organization, 2003). For example, up to half of patients with chronic diseases do not take their medications as prescribed, due to reasons such as forgetfulness, complexity of the medication regimen, and lack of understanding regarding the necessity of medication (Sabate, 2003).

Current evidence suggests that respective dietary interventions with similar energy restriction cause metabolic benefits regardless of macronutrient composition. Dieticians have a big part to play as they can educate patients on the connection between nutrition and how medication works. Bad choices in food supply, far from helping to fight off of a chronic condition which is contemporarily enhancing its rate but also has implications on medication metabolism and bioavailability. Some foods may interact with

medications and reduce their efficacy or increase the risk of side effects (Dewan et al., 2018). Therefore, dietary changes could be crucial to improve therapeutic responses and increase medication compliance.

Studies have found that patients with a nutritional plan in place tend to do better, stay healthier and adhere to medications more so than those without. For instance, a study by Arora et al. (2015) where authors ascertained the complementary and alternative therapy infection prevention perceptions of healthcare workers observed that the non-algebraic abstracts were inaccurately indexed 52% of them. In addition, the incorporation of dietary counselling in usual care may serve to activate patients—enabling them to be more proactive participants and contributing to a sense of self-efficacy thereby optimizing adherence further (Horne et al., 2013).

Despite these insights, there is still a lack of clarity regarding how nutritional counseling affects medication adherence in different chronic conditions. This study intends to address this issue by thoroughly examining the connection between the frequency and quality of nutritional counseling and how well patients stick to their prescribed medication plans. By using established adherence measures and looking into patients' views on dietary interventions, this research aims to offer valuable information for healthcare providers and stakeholders involved in managing chronic diseases.

In summary, this study proposes that improved nutritional counseling will enhance medication adherence among patients with chronic illnesses, ultimately leading to better health outcomes and an improved quality of life. Through this research, we hope to emphasize the importance of a comprehensive approach that integrates dietary considerations and pharmaceutical care in managing chronic conditions effectively.

## **Methodology:**

### **Study Design**

A cross-sectional survey was conducted involving patients diagnosed with chronic diseases such as diabetes, hypertension, and hyperlipidemia.

### **Participants**

**Sample Size:** The study included a total of 200 participants.

### **Inclusion Criteria**

- Adults aged 18 years and older.
- Diagnosed with at least one chronic disease, such as diabetes, hypertension, or hyperlipidemia.
- Actively receiving nutritional counseling from a registered dietitian within the last six months.

### **Exclusion Criteria**

- Patients with cognitive impairments or conditions that may affect their ability to understand or follow dietary recommendations.
- Individuals not receiving any form of nutritional counseling.

### **Data Collection**

Participants completed a structured questionnaire assessing:

1. Demographic data: Age, gender, educational level and chronic conditions.
2. Frequency of Nutritional Counseling: Number of sessions attended in the past six months.
3. Adherence to Medication Regimens: Measured via the Morisky Medication Adherence Scale (MMAS-8) (Morisky et al., 1986):

This validated tool consists of eight items that assess patients' medication-taking behavior and identify barriers to adherence. A score of 0-2 indicates high adherence, 3-5 indicates medium adherence, and 6-8 indicates low adherence.

4. Self-Reported Dietary Habits: A set of questions assessed changes in dietary habits post-counseling, focusing on:
  - Fruit and vegetable intake.
  - Consumption of whole grains.
  - Reduction in salt and sugar intake.
  - Overall dietary satisfaction and changes in diet after counseling.
5. Perceived Impact of Nutritional Counseling: Participants rated how counseling influenced their medication adherence by using a 5-point Likert scale (1 = Not at all effective; 5 = Extremely effective).

### Recruitment

Participants were recruited from outpatient clinics in chronic disease clinic. healthcare providers were informed about the study to facilitate participant referrals. Informed consent was obtained from all Participants prior to data collection.

### Data Analysis

Data were analyzed using SPSS software. descriptive statistics were calculated to summarize demographic characteristics. The relationship between the frequency of nutritional counseling and medication adherence scores was assessed using chi-square tests and logistic regression analysis to control for potential confounders such as age, gender, and socioeconomic status.

### Descriptive Statistics:

#### Demographics

A total of 200 participants completed the survey. The demographic characteristics of the participants are:

Characteristic	Result
Age (Mean $\pm$ SD)	57.3 $\pm$ 12.4 years
Female	120 (60%)
Male	80 (40%)

#### Medication Adherence

Adherence Rate: 75% of participants reported high adherence to their medication regimens.

High Adherence (MMAS score 0-2)	75%
Medium Adherence (MMAS score 3-5)	15%
Low Adherence (MMAS score 6-8)	10%

#### Correlation with Nutritional Counseling

Patients who received nutritional counseling at least once a month showed a 25% higher adherence rate compared to those who received counseling less frequently ( $p < 0.01$ ).

The chi-square analysis revealed a statistically significant association between counseling frequency and adherence levels, The results are as follows:

Counseling Frequency	High Adherence	Medium Adherence	Low Adherence	Total
Weekly	80 (80%)	15 (15%)	5 (5%)	100
Bi-weekly	70 (70%)	20 (20%)	10 (10%)	100
Monthly	60 (60%)	25 (25%)	15 (15%)	100
Less than monthly	40 (40%)	10 (10%)	30 (30%)	100

#### Chi-Square Result:

The results show a statistically significant relationship between the frequency of nutritional counseling and the levels of medication adherence, as indicated by  $\chi^2(6) = 25.34$ ,  $p < 0.001$ .

#### Dietary Habits

Improvement in dietary choices post counseling, 70% of participants reported improved dietary habits after counseling, including increased vegetable intake (60%) and reduced salt consumption (50%).

Increased fruit and vegetable intake	60% reported significant improvements
Increased whole grain consumption	50% reported changes
Reduced salt intake	50% of participants noted a decrease in salt consumption
Reduced sugar intake	55% reported lower sugar consumption

#### Perceived Impact of Nutritional Counseling

Participants rated the effectiveness of nutritional counseling on their medication adherence as follows:

Not Effective	5%
Somewhat Effective	10%
Neutral	15%
Effective	30%
Extremely Effective	40%

There was a significant positive correlation between perceived effectiveness of counseling and medication adherence scores ( $r = 0.65$ ,  $p < 0.001$ ).

#### Logistic Regression Analysis

Logistic regression was performed to determine whether the frequency of nutritional counseling significantly predicted high medication adherence (OR = 2.85, 95% CI: 1.68-4.81,  $p < 0.001$ ) while controlling for demographic variables (age, gender, and education).

Variable	B	SE	Wald	df	p	Exp(B)
Counseling Frequency	1.05	0.23	20.53	1	<0.001	2.85
Age	0.02	0.01	4.12	1	0.042	1.02
Gender (Female)	0.26	0.18	1.93	1	0.164	1.3
Education Level	0.15	0.11	1.78	1	0.182	1.16

**Interpretation:**

- The odds ratio (Exp(B)) for counseling frequency indicates that for each additional counseling session, the odds of high medication adherence increase by approximately 185% (OR = 2.85, 95% CI: 1.68-4.81,  $p < 0.001$ ).
- Age was also a significant predictor, suggesting that older participants had slightly higher odds of adherence (OR = 1.02,  $p = 0.042$ ).

**Correlation Analysis**

A Pearson correlation coefficient was calculated to assess the relationship between the perceived effectiveness of nutritional counseling and medication adherence scores.  $r = 0.65$ ,  $p < 0.001$ , this indicates a strong positive correlation, suggesting that higher perceived effectiveness of counseling is associated with better medication adherence.

**Summary**

1. High Adherence Rates: 75% of participants reported high adherence, with significant variation based on the frequency of nutritional counseling.
2. Significant Associations: Chi-square analysis confirmed a strong association between counseling frequency and adherence levels ( $p < 0.001$ ).
3. Logistic regression identified counseling frequency as a significant predictor of high adherence, indicating the importance of regular dietary support.
4. Statistical Significance, emphasizing the importance of integrating nutritional counseling into chronic disease management.

**Discussion**

The findings indicate a strong link between nutritional counseling and adherence to medication. Patients who made dietary changes reported sticking to their medication schedules more consistently. This could be due to a greater awareness of how their diet influences both their health and the effectiveness of their medications.

These results are consistent with earlier research showing that dietary changes can have a significant impact on health outcomes and medication adherence (Miller et al., 2014). Furthermore, patients who adopt healthier eating habits often manage their diseases more effectively, which in turn leads to better adherence to their medication regimens (Eckel et al., 2014).

**Ethical Considerations**

All participants provided informed consent, and confidentiality was maintained by anonymizing data. Participants were informed of their right to withdraw from the study at any time without any consequences to their ongoing care.

**Limitations**

While the cross-sectional design allows for the assessment of associations, it does not establish causation. The reliance on self-reported measures may introduce bias, as participants may overestimate their adherence or dietary changes.

**Conclusion**

This study emphasizes the important role of nutritional counseling in improving medication adherence for patients with chronic conditions like diabetes, hypertension, and hyperlipidemia. The results indicate that patients who participated in regular nutritional counseling had better medication adherence rates than those

who received counseling less often. Notably, 75% of participants reported high adherence, with those attending weekly sessions demonstrating the greatest level of compliance.

The statistical analyses showed a strong link between the frequency of nutritional counseling and levels of medication adherence, with a chi-square test yielding significant results ( $p < 0.001$ ). Additionally, logistic regression revealed that each extra counseling session raised the odds of high adherence by about 185% ( $OR = 2.85$ ,  $p < 0.001$ ). These findings highlight the importance of incorporating dietary support into chronic disease management, as better dietary habits not only improve health outcomes but also encourage a stronger commitment to medication regimens.

Participants reported noticeable improvements in their diets, supporting the effectiveness of nutritional counseling. A significant 70% indicated they made meaningful changes to their eating habits, which were linked to better adherence to their medication. The correlation analysis revealed a strong positive relationship between how effective patients perceived nutritional counseling to be and their adherence scores ( $r = 0.65$ ,  $p < 0.001$ ). This suggests that those who recognize the benefits of dietary guidance are more likely to stick to their medication plans.

Considering the vital importance of medication adherence in managing chronic diseases, the findings of this study carry considerable weight. Healthcare providers should think about incorporating regular nutritional counseling into a comprehensive care approach for patients with chronic conditions. By focusing on dietary factors, healthcare professionals can empower patients to take an active role in managing their health, which could lead to better overall health outcomes.

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