

The Effect of Pill Card Intervention on Antihypertensive Medication Adherence and Blood Pressure Control Among Elderly Hypertensive Patients at the Elderly Integrated Health Post in the Working Area of Skouw Community Health Center

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ABSTRACT

Hypertension is a chronic disease requiring long-term pharmacotherapy and adequate medication adherence to maintain optimal blood pressure control. A pill card is a simple pharmaceutical care tool that can support patients in remembering their medication regimen. This study aimed to analyze changes in antihypertensive medication adherence among elderly patients with hypertension after pill card use at Elderly Integrated Health Posts in the working area of Skouw Community Health Center. This study used a quantitative controlled intervention design with repeated measurements over three months, from October to December 2024. A total of 84 respondents were included, consisting of 42 respondents in the intervention group and 42 respondents in the control group. Medication adherence was assessed using the Medication Adherence Report Scale (MARS-5). Data were analyzed descriptively and inferentially using Cochran's Q test and McNemar test. The proportion of adherent patients increased from 47.6% in October to 67.9% in November and 79.8% in December. Cochran's Q and McNemar tests indicated statistically significant changes in adherence over the observation period. The use of a pill card may serve as a simple supportive medium in pharmaceutical care to improve long-term medication adherence among hypertensive patients.

KEYWORDS: hypertension, pill card, medication adherence, elderly, MARS-5.

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INTRODUCTION

Hypertension remains an important public health problem because it is closely associated with an increased risk of cardiovascular disease, stroke, kidney failure, and premature death. In Indonesia, hypertension continues to represent a major health burden, particularly among adults and older adults. In addition to its high prevalence, the main challenge in hypertension management is not limited to diagnosis and medication prescribing, but also includes the success of maintaining patient adherence to long-term therapy [1,2]. Medication adherence plays an essential role in blood pressure control. Patients with hypertension who are non-adherent are more likely to experience uncontrolled blood pressure, an increased risk of complications, and failure to achieve therapeutic targets. In primary health care practice,

adherence problems are often influenced by several factors, including older age, limited health education, continuous medication regimens, and the tendency of patients to forget taking their medications. Therefore, simple, easy-to-use interventions that can be implemented in basic health services are needed to help patients maintain regular medication-taking behavior [3]. One medium that can be used to support adherence is a pill card. A pill card is a medication reminder card containing key information about medication names, directions for use, therapeutic purpose, and medication-taking time. This medium is considered practical because patients can reread it at home, it helps patients recognize the medicines they take, and it assists health workers in strengthening medication education. Previous studies have shown that the use of pill cards or similar reminder media can

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help improve adherence among patients with hypertension and support the achievement of better therapeutic outcomes [4-6].

The working area of Skouw Community Health Center, particularly the Elderly Integrated Health Posts, is a relevant setting for this study because most hypertensive patients in primary care require repeated assistance and practical reinforcement of medication education. Elderly Integrated Health Posts are community-based health services that support promotive and preventive activities for older adults [7]. Based on this background, this study aimed to analyze the effect of pill card use as a reminder medium on medication adherence among patients with hypertension at Elderly Integrated Health Posts in the working area of Skouw Community Health Center.

METHODS

Study Design and Location

This was a quantitative study using a controlled intervention design with repeated measurements over three months. The study was conducted from October to December 2024 at three Elderly Integrated Health Posts located in the working area of Skouw Community Health Center, Jayapura City.

Population and Sample

The study population consisted of hypertensive patients attending Elderly Integrated Health Post services in the working area of Skouw Community Health Center. The study sample included 84 respondents divided into two groups: an intervention group and a control group, with 42 respondents in each group. Research subjects were selected based on inclusion and exclusion criteria established by the researcher. The inclusion criteria were hypertensive patients undergoing routine follow-up in the working area of Skouw Community Health Center, willing to participate as respondents, and completing the series of observations during the study period. The exclusion criteria included patients who were unwilling to complete the study or had conditions that made complete data collection difficult.

Research Intervention

The intervention group received a pill card as a medication reminder medium. The pill card contained information about medication names, directions for use, administration time, and brief notes to help patients recognize their ongoing therapy. The card was provided after patients received their medication. The researcher then explained the contents of the card and ensured that patients understood how to use it. The control group continued to receive routine services without pill card provision.

Variables and Instruments

The main variable in this study was adherence to antihypertensive medication. Adherence was measured using the Medication Adherence Report Scale (MARS-5), which

consists of five questions. Measurements were conducted repeatedly in October, November, and December. The adherence score was then categorized into two operational groups, namely adherent and nonadherent, according to the study criteria.

In addition to adherence, this study documented patient blood pressure as a supporting clinical outcome. Blood pressure was measured during visits according to the observation schedule.

Data Collection Procedure

At the initial stage, the researcher coordinated with the health service facility and identified respondents who met the criteria. After respondents provided consent to participate, baseline data collection and initial adherence assessment were conducted. Subsequently, the intervention group received the pill card and an explanation of its use, whereas the control group did not receive the intervention. Adherence evaluation was repeated in November and December using the same procedure.

Data Analysis

Data were analyzed descriptively to describe the distribution of respondent adherence at each measurement time point. Cochran's Q test was used to assess changes in adherence across the three observation time points. McNemar test was then performed as a follow-up analysis to examine differences in adherence between paired time points, namely October-November, November-December, and October-December. All analyses were performed using SPSS software with a 95% confidence level and a significance threshold of $p < 0.05$.

Research Ethics

This study was conducted after obtaining permission from the relevant institution. All respondents received an explanation of the objectives, benefits, and procedures of the study before signing the informed consent form. Respondent identities were kept confidential, and all data were used solely for research purposes.

RESULTS

Based on Cochran's Q test, the SPSS significance value was 0.000 in the intervention group, control group, and all respondents. Therefore, it can be concluded that there was a significant change in adherence to hypertension medication across the three measurements. In the intervention group, Cochran's Q was 16.333 with $df = 2$ and $p = 0.000$. In the control group, Cochran's Q was 17.375 with $df = 2$ and $p = 0.000$. Meanwhile, in the analysis of all respondents, Cochran's Q was 32.882 with $df = 2$ and $p = 0.000$. These findings indicate that adherence to hypertension medication changed substantially from October to December.

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Table 1. Cochran's Q test results for medication adherence

Group	Cochran's Value	Q	df	p-value	Remarks
Intervention	16.333		2	< 0.05	Significant
Control	17.375		2	< 0.05	Significant
All respondents	32.882		2	< 0.05	Significant

Based on the frequency distribution, the number of adherent respondents increased in each month of observation. In October, 40 respondents (47.6%) were adherent. This number increased to 57 respondents (67.9%) in November and further increased to 67 respondents (79.8%) in December. In contrast, the number of non-adherent respondents decreased

from 44 respondents (52.4%) in October to 27 respondents (32.1%) in November and decreased again to 17 respondents (20.2%) in December. Descriptively, these findings show a tendency toward increased adherence to hypertension medication during the use of the pill card as a reminder.

Table 2. Distribution of medication adherence by month

Month	Non-adherent, n (%)	Adherent, n (%)
October	44 (52.4%)	40 (47.6%)
November	27 (32.1%)	57 (67.9%)
December	17 (20.2%)	67 (79.8%)

In the intervention group, the number of adherent respondents increased from 16 respondents in October to 23 respondents in November and 30 respondents in December. In the control group, the number of adherent respondents also increased, from 24 respondents in October to 34 respondents in November and 37 respondents in December. Thus, both the intervention and control groups showed changes in adherence during the observation period. Because Cochran's Q test only

indicates whether differences in adherence exist across the three measurement time points in general, McNemar test was performed as a follow-up analysis to identify which paired time points showed significant changes. Comparisons were made for three pairs of months: October and November, November and December, and October and December. The results of McNemar test are presented in the following table.

Table 3. McNemar test results for paired time comparisons

Time Comparison	p-value	Interpretation
October-November	< 0.002	Significant
November-December	< 0.002	Significant
October-December	< 0.001	Significant

The McNemar test results showed significant changes in adherence to hypertension medication across all paired observation times. In the comparison between October and November, the significance value was 0.002, indicating a significant difference in adherence between these two time points. In the comparison between November and December, the significance value was also 0.002, suggesting that adherence continued to change significantly until December. Meanwhile, in the comparison between October and December, the significance value was 0.000, indicating a highly significant difference between the beginning and the end of the observation period.

Based on the cross-tabulation, the observed changes were more frequently directed toward a transition from the non-

adherent category to the adherent category rather than the reverse. In the October-November comparison, the number of respondents who changed from non-adherent to adherent was higher than the number who changed from adherent to non-adherent. The same pattern was observed in the November-December comparison and was most evident in the October-December comparison. This finding confirms that the changes observed were not merely random fluctuations but moved toward improved medication adherence.

Substantively, the McNemar test results strengthen the findings of Cochran's Q test, showing that adherence to hypertension medication was not static but changed gradually from month to month. In other words, during the observation

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period, there was a tendency toward increased adherence among hypertensive patients observed in this study.

CONCLUSION

Based on Cochran's Q and McNemar test results, it can be concluded that there was a significant change in adherence to hypertension medication from October to December. This change was observed in the intervention group, the control group, and all respondents. Descriptively, the direction of change indicated an increase in the number of adherent patients at each monthly observation. Therefore, the use of a pill card as a reminder among hypertensive patients in this study occurred alongside improved medication adherence during the observation period.

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