

Is Satisfaction with the Medication Provisions of the Senior Citizens Act and Frequency of Senior Identification Card Use Associated with Medication Compliance among Hypertensive Patients in the Philippines?

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ABSTRACT

Background. Long-term treatment and medication compliance are critical for managing conditions like hypertension, yet only 20% of cases are well-controlled, mainly due to socioeconomic factors. The Expanded Senior Citizens Act of 2010 offers a 20% discount on medications to improve compliance, but many seniors need to be made aware of these benefits. Evaluating satisfaction with the Act, specifically regarding its medication-related provisions, is essential for enhancing compliance and health outcomes among senior citizens.

Objective. This study examined the association between satisfaction with the medication provisions of the Senior Citizens Act, the frequency of senior identification card usage, and medication compliance among hypertensive patients.

Methods. We conducted a community-based cross-sectional study with 458 hypertensive senior citizens in Dasmariñas City, Cavite, Philippines. Senior citizens were randomly selected and completed a survey using a validated, self-developed questionnaire and the Hill-Bone High Blood Pressure (HB-HBP) compliance scale. We performed linear regression analysis to examine the association between their satisfaction and the use of senior citizens' benefits on their medication compliance.

Results. Senior citizens were 60-88 years old (mean 69; standard deviation [SD] 5.9). Thirty-eight percent were satisfied with the Senior Citizens Act and 49% regularly used their senior citizen card. Senior citizens scored an average of 46.82 (SD 4.96) on the HB-HBP compliance scale (possible range = 14-56), indicating high compliance. Those dissatisfied with the Senior Citizens Act were less compliant with their antihypertensive medications [B (unstandardized beta) = -1.65, 95% CI (Confidence Interval) = -2.70, -0.61]. Similarly, those who rarely or never used their senior identification cards (B = -1.54, 95% CI = -2.61, -0.48) and those who used them occasionally (B = -1.43, 95% CI = -2.57, -0.29) showed lower medication compliance compared to those who used them regularly.



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Conclusion. Senior citizens who are satisfied with the medication provisions of the Act and regularly use their senior identification cards exhibit higher compliance with their antihypertensive medications than those with lower satisfaction and infrequent card usage. Interventions should prioritize educational sessions to inform senior citizens about the benefits of the Senior Citizens Act, including how to use their identification cards to access medication discounts effectively.

Keywords: hypertension, medication adherence, Philippines, satisfaction, senior citizens, Senior Citizens Act

INTRODUCTION

Hypertension is a significant health issue in the Philippines, with high prevalence driven by factors like poor diet, physical inactivity, and high rates of smoking and alcohol consumption.¹ A study by the Food and Nutrition Research Institute reported that hypertension prevalence among Filipino adults rose from 21.0% in 2013 to 23.7% in 2015, declining to 17.1% in 2018-2019. The rate of controlled hypertension also improved, increasing from 20.7% in 2015 to 29.4% in 2018-2019.² The study highlights the need for regular blood pressure monitoring, healthy lifestyle practices, and patient-centered treatment plans to reduce hypertension rates.² However, nearly half of hypertensive Filipinos remain unaware of their condition, and only 27% have it under control, making hypertension a growing burden, especially as the population ages.³ Individuals with normal blood pressure at age 55 still face a 90% lifetime risk of developing hypertension.⁴ Known as the "silent killer" due to its lack of symptoms, hypertension can lead to fatal heart attacks without warning.⁵

Long-term treatment and medication compliance are crucial for elderly patients to improve therapeutic outcomes.⁶ In the Philippines, while hypertension treatment rates reach 65% and compliance rates are 66%, only 29% of cases are controlled.^{7,8} Factors reducing compliance include socioeconomic issues, low health literacy, poor knowledge, negative attitudes, inconsistent medication schedules, and low illness perception.⁷ Many Filipino senior citizens with hypertension face unmet needs due to non-compliance with medication regimens and a lack of awareness about the benefits of the Expanded Senior Citizens Act of 2010.⁸

The Expanded Senior Citizens Act of 2010 (Republic Act No. 9994) offers a 20% discount on medications for seniors with senior citizen cards, aiming to alleviate financial burdens and improve health outcomes.⁹ However, many seniors need to be made aware of these benefits, which significantly hinders medication compliance.¹⁰ Financial constraints further impact compliance despite the discount, as the cost of medications can still be prohibitive for those on fixed incomes.¹¹ Assessing seniors' satisfaction with the Act's benefits is crucial to understanding its real-world impact on medication compliance. This involves evaluating awareness levels, perceived benefits, and actual usage of the discounts provided by the Act. Additionally, examining how satisfaction with the medication provisions of the Act influences medication compliance among hypertensive seniors can offer insights that will inform potential policy improvements, ensuring the Act better serves the health needs of senior citizens and enhances their quality of life.

The compliance of senior citizens with their medication is a pressing clinical and public health concern due to its link to adverse outcomes and increased medical costs. Low-income patients are particularly at risk of non-compliance.¹² To address this issue, the government implements health

programs and provide continuous support.¹³ While utilizing senior citizen cards could help mitigate non-compliance among seniors, it is unclear how frequently these cards are utilized to ensure medication compliance and improve health outcomes.¹⁴ Further research is needed to understand the impact of senior citizen card usage on medication compliance and overall health outcomes among senior citizens.

Hence, we examined the association between satisfaction with the medication provisions of the Senior Citizens Act and the frequency of using senior identification cards with medication compliance among hypertensive patients in Dasmariñas City, Cavite, Philippines. The results of this study will offer evidence-based recommendations for policy enhancement and healthcare interventions to improve medication compliance and overall health outcomes among Filipino senior citizens.

MATERIALS AND METHODS

Study Design and Area

We conducted a community-based cross-sectional study to examine the factors associated with medication compliance among senior citizens. The study setting included 75 barangays [communities] in Dasmariñas City, located in the CALABARZON IV-A region, with a total population of 703,141, according to the 2020 Philippine Statistics Authority.¹⁵ Dasmariñas City has the largest population of senior citizens in the area. We calculated the sample size based on the total number of hypertensive senior citizens in Dasmariñas City, Cavite. Using OpenEpi version 3, with parameters including a population size of 41,764, a 50% outcome frequency, and a 5% confidence limit, we computed a sample size of 381 participants. Factoring in a 20% potential dropout rate, the minimum sample size required was 458.

Participants

With the assistance of the local barangay, all senior citizens who were approached to participate in the survey agreed to take part. Participants were required to be senior citizens diagnosed with hypertension and residing in Dasmariñas City. Eligible participants were identified by possessing a booklet and identification card, allowing them to avail of the 20% discount on antihypertensive medications at community pharmacies. Exclusions included senior citizens who were unable to comprehend and respond to the survey questions and those who were mentally incapable.

Data Collection

Prior to conducting the actual survey from April to May 2023, we collaborated with the Local Government Unit and the barangay health committee to gather information. Records obtained from each barangay health center were used to identify the population of senior citizens diagnosed with hypertension. Proportional and simple random sampling was employed to select participants from different barangays.

Prior to the survey, participants were briefed, and written consent forms were obtained. The interviewer-guided survey was conducted using a tablet, and responses were recorded in the Kobo Toolbox. A self-structured questionnaire and the HB-HB PCS used was translated into Filipino and back-translated to English to ensure the accuracy of the questions. Three registered pharmacists validated the self-structured questionnaires to ensure that the questions were appropriate for the participants. A pre-testing was done on at least 30 participants to verify if the questions can be easily understood and avoid possible errors that may occur during the actual data collection. We anonymized the collected data and assigned unique identification numbers for each participant.

Variables and Measures

The potential confounders considered in this study were household income, presence of comorbidities, and the cost of medications. The demographic profile of senior citizens serves as a covariate.⁷

Outcome: Medication Compliance

We utilized the Hill-Bone High Blood Pressure Compliance Scale (HB-HB PCS) to measure the medication compliance of hypertensive patients.¹⁶ This scale comprises 14 items rated on a 4-point Likert scale ranging from 1 (all of the time) to 4 (none of the time or never). It assesses patient behaviors across three domains pertinent to high blood pressure treatment: reducing sodium intake, keeping appointments, and medication taking. Medication compliance was assessed using the scores derived from this questionnaire, with higher scores indicating better compliance to antihypertensive medications. The Cronbach's alpha for this study was 0.80, denoting acceptable reliability.

Exposure: Satisfaction with the Medication-related Provision of Senior Citizens Act and Frequency of using Senior Identification Cards

The study used a self-structured questionnaire to assess the frequency of senior citizens using their cards for antihypertensive medication purchases and their satisfaction with medication provisions of the Act.

Participants were asked, "How often do you use a senior citizen's card when purchasing antihypertensive medication per month?" Response options included "Always," "Often," "Sometimes," "Rarely," and "Never." We recategorized the frequency of using senior citizen cards into three groups: regularly, sometimes, and rarely/never. Additionally, questions on satisfaction with the medication provisions of the Act focused on the discounts on regular purchases of their antihypertensive medications and how much the given discounts influenced their purchases. These questions had response options including "Very Satisfactory," "Satisfactory," "Fair," "Unsatisfactory," and "Very Unsatisfactory." Satisfaction with the Senior Citizens Act was reclassified as very satisfactory/satisfactory, fair, and very poor/poor.

Covariates

We treated age as a continuous variable. Sex was treated as a categorical variable, grouped into male and female. We categorized household monthly income into three groups: 10,000 PhP and below, 10,000 – 20,000 PhP, and 20,001 PhP and above. Participants were asked, "How long have you been prescribed antihypertensive medications and diagnosed with hypertension?" Response options included "less than 6 months to 1 year," "1 to 3 years," and "more than 3 years." They were also asked about the number of antihypertensive medications they are currently taking, with the following response options: "1 to 2," and "3 or more." Additionally, participants were asked whether they had other comorbidities or medical conditions.

Data Analysis

We employed both descriptive statistics (mean, standard deviation, and percentage) and linear regression models for data analysis. Descriptive statistics summarized participant characteristics, encompassing demographic details, health-related factors, and socioeconomic indicators. These statistics offered a concise overview of the sample population. We conducted linear regression analysis to examine the association between the exposure variables (satisfaction with medication provisions of the Act, frequency of senior card use) and the outcome variable (medication compliance), controlling for confounders/covariates. Multicollinearity was not a concern, as we obtained a variance inflation factor less than 1.0. All analyses were conducted using STATA 14.2 (StataCorp, College Station, TX, USA), and the significance level was set at 0.05 (two-tailed).

Ethical Considerations

This study was approved by Adamson University's University Ethics Review Committee, with approval number 2022-02-PHA-13. We explained the purpose of the study and obtained written informed consent from the senior citizens and their legal guardians when necessary, before conducting the survey. Senior citizens with serious health considerations were referred to their legal guardians for participation. We ensured that the guardians were thoroughly informed about the study's objectives, their rights, and the implications of their participation. All personal information and data were strictly protected to ensure privacy and confidentiality.

RESULTS

Characteristics of Senior Citizens with Hypertension

A total of 458 senior citizens participated in this study. Table 1 presents the socio-demographic characteristics of senior citizens with hypertension. Their ages ranged from 60 to 88 years, with a mean age of 68.85 (standard deviation [SD] 5.87). Among the participants, 325 (70.9%) were women, and the majority reported a household monthly income of PhP 10,000 to 20,000 (42.1%). Additionally, a significant

portion of senior citizens regularly used a senior citizen card (48.7%), expressed a very satisfactory or satisfactory opinion regarding the Senior Citizens Act (37.6%), and had been diagnosed with hypertension for more than 3 years (61.8%).

Regarding medical conditions, the majority of senior citizens primarily had 1 to 2 types of antihypertensive drugs (83.6%) and reported experiencing no other comorbidities (77.7%). As for the HB-HBP compliance scale, the mean (SD) score was 46.82 (4.96).

In Table 1.1, among the comorbidities reported by senior citizens with hypertension, a total of 102 other conditions were identified. Diabetes mellitus was the most prevalent, accounting for 39 cases (38.2%). Conversely, osteoarthritis, cardiovascular disease, diabetes mellitus, dyslipidemia, and anxiety disorder were among the least reported comorbidities.

Factors Associated with Medication Compliance

Table 2 shows the factors associated with medication compliance. Adjusted model showed that senior citizens who rarely/never used their senior identification cards [B (unstandardized beta) = -1.54, 95% CI (Confidence Interval)

= -2.61, -0.48] and those who sometimes used them (B = -1.43, 95% CI = -2.57, -0.29) were negatively associated with medication compliance compared to senior citizens who used them regularly.

Compared to senior citizens who were very satisfied with the medication provisions of the Senior Citizens Act, those who had very poor/poor satisfaction were noncompliant with their antihypertensive medications (B = -1.65, 95% CI = -2.70, -0.61).

Senior citizens who are taking three and above hypertensive drugs (B = -1.55, 95% CI = -2.87, -0.23) exhibited less compliance with their medications compared to those taking only one to two drugs. Conversely, those with comorbidities (B = 1.21, 95% CI = 0.10, 2.32) exhibited more compliance than those without comorbidities.

DISCUSSION

Most senior citizens follow their antihypertensive treatment plans well, as reflected in their Hill-Bone compliance scale scores, indicating successful hypertension

Table 1. Characteristics of Senior Citizens with Hypertension (n = 458)

Characteristics	n (%)
Age, mean (SD); range: 60-88	68.85 (5.87)
Sex	
Female	325 (70.9)
Male	133 (29.0)
Household monthly income (PhP)	
10,000 and below	116 (25.3)
10,000 – 20,000	193 (42.1)
20,001 and above	149 (32.5)
Frequency of using senior citizen card	
Regularly	223 (48.7)
Sometimes	109 (23.8)
Rarely/Never	126 (27.5)
Satisfaction with the Senior Citizens Act	
Very Satisfactory/Satisfactory	172 (37.6)
Fair	127 (27.7)
Very Poor/Poor	159 (34.7)
Time since hypertension diagnosis	
<6 months to 1 year	53 (11.6)
1 to 3 years	122 (26.6)
>3 years	283 (61.8)
Number of antihypertensive drug types currently taking	
1 to 2	383 (83.6)
3 or more	75 (16.4)
Comorbidities	
With comorbidity	102 (22.3)
Without comorbidity	356 (77.7)
HB-HBP, mean (SD); range: 32-56	46.82 (4.96)

HB-HBP – Hill-Bone High Blood Pressure Compliance Scale, PhP – Philippine Peso, SD – Standard deviation

Table 1.1. Other Comorbidities of Senior Citizens with Hypertension (n = 102)

Comorbidities	n (%)
Diabetes mellitus	39 (38.2)
Arthritis	14 (13.7)
Dyslipidemia	13 (12.8)
Peptic ulcer disease	5 (4.9)
Cardiovascular disease	4 (3.9)
Chronic kidney disease	4 (3.9)
DM, CVD	4 (3.9)
Gout	3 (2.9)
Glaucoma	3 (2.9)
Hyperuricemia	2 (2.0)
Stroke	2 (2.0)
DM, PUD	2 (2.0)
DM, CKD	2 (2.0)
Osteoarthritis, DM	2 (2.0)
Osteoarthritis, CVD	1 (1.0)
DM, Dyslipidemia	1 (1.0)
Anxiety Disorder	1 (1.0)

CKD – Chronic Kidney Disease, CVD – Cardiovascular Disease, DM – Diabetes Mellitus, PUD – Peptic Ulcer Disease

Table 2. Factors Associated with Medication Compliance (n = 458)

Variables	Unadjusted		Adjusted	
	B (95% CI)	p-value	B (95% CI)	p-value
Sex (vs. Female)				
Male	-0.45 (-1.47, 0.58)	0.392	-0.51 (-1.52, 0.51)	0.325
Age	-0.01 (-0.10, 0.07)	0.773	-0.01 (-0.09, 0.10)	0.857
Household monthly income (vs. >PhP 20,001 and above)				
10,000 – 20,000	-0.55 (-1.71, 0.61)	0.351	-0.39 (-1.49, 0.72)	0.495
<10,000 and below	0.39 (-0.82, 1.59)	0.528	0.42 (-0.76, 1.61)	0.482
Frequency of using senior citizen card (vs. Regularly)				
Sometimes	-1.44 (-2.57, -0.31)	0.012	-1.43 (-2.57, -0.29)	0.014
Rarely/Never	-1.59 (-2.66, -0.52)	0.004	-1.54 (-2.61, -0.48)	0.005
Satisfaction with medication provisions of Senior Citizens Act (vs. Very Satisfactory/Satisfactory)				
Very Poor/Poor	-1.69 (-2.75, -0.63)	0.002	-1.65 (-2.70, -0.61)	0.002
Fair	-0.56 (-1.69, 0.58)	0.335	-0.15 (-1.28, 0.98)	0.795
Time since diagnosis (>3 years)				
<6 months to 1 year	-0.54 (-1.91, 0.84)	0.444	-0.48 (-1.99, 1.02)	0.534
1 to 3 years	1.07 (-0.03, 2.17)	0.056	1.10 (-0.04, 2.23)	0.059
Number of antihypertensive drugs currently taken (vs. 1 to 2)				
3 and above	-1.48 (-2.75, -0.22)	0.021	-1.55 (-2.87, -0.23)	0.021
Comorbidities (vs. Without comorbidity)				
With comorbidity	1.08 (0.01, 2.16)	0.049	1.21 (0.10, 2.32)	0.033

PhP – Philippine Peso

management. Higher compliance scores are linked to better blood pressure control. Those dissatisfied with the Senior Citizens Act and those who rarely or never used their senior identification cards, or only used them occasionally, showed lower medication compliance compared to regular users. Other factors influencing medication compliance include the number of antihypertensive drugs being taken and the presence of comorbidities.

Senior citizens who use their senior citizen cards less frequently tend to be less compliant with their medication regimens than those who use them regularly. This indicates a lower level of awareness and utilization of benefits among infrequent users. These findings align with a systematic review suggesting that any financial medication assistance, such as discounts, positively impacts patients' compliance with their medication.¹⁷ Additionally, a cross-sectional study in the US indicates that addressing medication costs is a crucial first step in improving compliance among older adults with hypertension.¹⁸

Dissatisfaction with the medication provisions of the Expanded Senior Citizens Act is associated with lower medication compliance, underscoring the importance of addressing satisfaction levels to improve compliance. Dissatisfied senior citizens may not perceive a significant difference in medication costs between original and discounted prices, making it challenging for them to afford their medication and leading to non-compliance with prescribed regimens. Studies in Romania and China emphasized the crucial role of communication between patients and healthcare providers in increasing patient satisfaction and

medication compliance.^{19,20} Our findings highlight the importance of healthcare providers educating senior citizens about the benefits of the Senior Citizens Act and encouraging compliance with their antihypertensive medications.

Senior citizens taking three or more antihypertensive medications were less likely to comply, possibly due to the increased complexity of their regimens. A nationwide population-based study in Korea found that hypertensive patients prescribed more than three medications were at a higher risk of non-compliance.²¹ Similarly, another study in Korea concluded that older adults with hypertension were more compliant when prescribed single-pill combination medicines compared to multiple-pill combination medicines.²² Therefore, healthcare professionals should consider regimen complexity, or taking three or more medications for different medical conditions, when adjusting pharmaceutical regimens and discuss medication-related concerns with patients in a trusted environment to better understand their condition.^{23,24}

Similarly, senior citizens with comorbidities were found to be less likely to comply with their antihypertensive medication. This indicates that managing multiple health conditions can negatively affect their ability to follow prescribed treatment for hypertension. A cross-sectional study in China further supported this finding.²⁵ These patients may have a more complex medication regimen, requiring the administration of drugs at different times, which can be more challenging to manage.^{26,27} Healthcare professionals should consider the impact of comorbidities on medication compliance when designing treatment plans and provide support to help patients manage their medication effectively.

Countries worldwide have adopted various strategies to improve medication compliance by integrating education, technology, healthcare policies, and community support.²⁸ Programs like Medication Therapy Management involve pharmacists directly with patients in the US, while the UK's National Health Service runs educational campaigns.^{29,30} The Netherlands employs smart pill bottles and digital reminders, Australia and Canada integrate pharmacists into primary care teams, Japan enforces strict regulations, and Germany supports reimbursement for adherence-enhancing technologies.³¹⁻³⁴ Brazil utilizes community health workers for home visits, and South Africa implements peer support groups.^{35,36} These multifaceted approaches underscore the importance of combining various methods to enhance medication adherence globally. In contrast, the Philippines faces challenges such as limited resources for educational campaigns, low utilization of advanced technologies due to cost, and inconsistent integration of pharmacists into primary care teams.³⁷ Policies supporting adherence are often inconsistently enforced, and financial constraints limit access to adherence-enhancing technologies. Community health workers are essential, especially in rural areas, but their reach and effectiveness vary.⁶

In the Philippines, medication compliance is influenced by various factors. A systematic review of hypertensive patients highlights that a strong patient-health provider relationship, accessible health services, specialty clinics, and health insurance positively impact adherence.⁷ Conversely, younger age, single civil status, low educational attainment, unemployment, low health literacy, inconsistent drug regimens, and low illness perception contribute to non-compliance.⁷ Additionally, a study on the effects of patient education interventions reveals that educational programs significantly improve adherence rates and blood pressure control among hypertensive Filipino patients, suggesting that integrating educational initiatives into healthcare services can enhance medication compliance.³⁸ Only one study has evaluated the Senior Citizens' Act of 2010 concerning mandated privileges for older adults and reported discrepancies in policy dissemination and implementation, particularly among hospitals, grocery stores, and the transport sector.³⁹ Our study is the first to assess the association between the medication-related provisions of the Act and the frequency of senior card usage regarding medication compliance. When senior citizens are aware of and satisfied with these benefits, they are more likely to utilize them, leading to improved compliance with their medication schedules. However, the effectiveness of the policy can vary based on their implementation and the level of awareness among senior citizens.

This study has several limitations. First, reliance on self-reported surveys may introduce potential social desirability biases, even though participants were encouraged to provide truthful responses. Second, using tablets for guided surveys with senior citizens can introduce biases. Technological

familiarity may skew participation toward those comfortable with technology, leading to selection bias based on socioeconomic status or education. Response bias might also occur if participants feel uncomfortable or distracted while using tablets. Additionally, accessibility issues, such as poor eyesight or reduced dexterity, can hinder effective use. To address these biases, we ensured a representative sample and offered alternative methods (i.e., interviewer-administered surveys instead of self-administered) for those less comfortable with technology. Third, the study's geographic scope may limit the generalizability of the findings to only the studied area. However, these findings may benefit regions with urban characteristics similar to those of Dasmariñas City. Future studies should explore rural settings to gain further insights into medication compliance among senior citizens, facilitating tailored interventions to improve medication management. However, the study also has strengths, including the utilization of the HB-HBP compliance scale to assess medication compliance, providing a standardized and objective measure. The self-made questionnaire underwent face validity testing by three registered pharmacists and pre-testing among participants, ensuring data reliability and internal validity.

CONCLUSION

The majority of senior citizens adhere to their antihypertensive medication regimens. Our findings indicate that satisfaction with the medication-related provisions of the Senior Citizens Act and frequent use of senior citizen cards significantly promote medication compliance within this demographic. Additionally, the total number of prescribed antihypertensive medications and the presence of comorbidities also play crucial roles in influencing compliance. Interventions should prioritize educational sessions in communities, pharmacies, and hospitals to inform senior citizens about the Act's benefits, including how to use their identification cards to access medication discounts effectively. Such measures are essential for enhancing medication compliance and improving health outcomes. Future studies should also explore the association between perceived social support from family and the community, as this may play a critical role in the satisfaction derived from the Act, the frequency of card usage, and medication compliance.

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Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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