Socioeconomic disparities in hypertension medication adherence in Quezon City: A cross-sectional study

Jamee G. Lanag,[1] Carolyn A. Lavadia,[1] Daniel Royce Lee,[1] Richelle Anne L. Matias,[1] Johanna Arndriella M. Mendoza,[1] Marianne Claire M. Morales,[1] Ina Mulingbayan,[1] Jose Ronilo Juangco, MD, MPH, FPSVI,[2] Norbert Lingling D. Uy, MD, MEM, MSPH[3]

Abstract

Introduction Hypertension is a major risk factor for cardiovascular diseases, with adherence to treatment often influenced by socioeconomic status. This study assessed adherence to hypertension medication among patients in Quezon City across economic classes from August to October 2023.

Methods An analytical cross-sectional design was employed, surveying 116 hypertensive Filipinos aged 18-64 years using the Brief Medication Questionnaire-1 (BMQ-1) and socioeconomic classifications based on multiples of the poverty line.

Results Findings revealed that 50.9% of respondents were adherent or probably adherent to treatment, while 49.1% exhibited low or probable low adherence. Those who are low adherent and probable low adherent are 1.399 times more likely to belong to the "Low Income and Below.", though this association was not statistically significant.

Conclusion Adherence to hypertension treatment among the respondents was suboptimal, particularly among the lower-income groups. While the association between socioeconomic status and adherence was not statistically significant, the findings underscore the need for interventions targeting financial barriers and improving healthcare accessibility. Addressing these challenges can enhance adherence levels and reduce the burden of hypertension and cardiovascular risks across socioeconomic strata.

Key words: Cardiovascular diseases, hypertension, prescription drugs, medication adherence, developing countries

Hypertension is one of the leading risk factors for cardiovascular diseases (CVDs) which have been rapidly rising in low-middle-income countries due to lack of awareness of the disease and limited access to healthcare services.[1,2] In Asia, hypertension presents a major burden, characterized by high prevalence rates coupled with low levels of awareness, treatment and effective control measures.[3] Effective management of hypertension typically involves a multifaceted approach that includes pharmacological treatment, lifestyle modifications, and continuous monitoring. Central to the successful control of hypertension is strict adherence to prescribed treatment regimens; however, this adherence is often compromised by various factors such as treatment-related adverse effects, polypharmacy,

Correspondence:
Daniel Royce Lee
Email: leed5061@uerm.edu.ph/ Jose Ronilo Juangco, Email: jgjuangco@uerm.edu.ph
[1]College of Medicine, University of the East Ramon Magsaysay Memorial Medical Center
[2]Department of Preventive and Community Medicine, University of the East Ramon Magsaysay Memorial Medical Center
[3]Department of Internal Medicine, University of the East Ramon Magsaysay Memorial Medical Center

forgetfulness, comorbidities including depression, and sociodemographic influences.[4] Among these factors, socioeconomic status significantly impacts patients' ability to seek medical assistance and adhere to prescribed treatments.

The COVID-19 pandemic has further complicated these dynamics, affecting not only national economies but also individual financial situations. Reports indicate that approximately 7.3 million Filipinos lost their jobs during the pandemic, leading to an unprecedented unemployment rate of 18%.[5,6] This economic upheaval may have altered patients' attitudes toward their treatment regimens and their capacity to adhere to prescribed hypertension management strategies. Given these circumstances, recent studies examining patient adherence to hypertension medications are crucial.

While existing literature highlights the prevalence of nonadherence among low-income patients, the specific influence of economic class on treatment adherence remains unclear. Therefore, this study aimed to investigate adherence to prescribed treatment guidelines among hypertensive patients in Quezon City across different economic strata from August to October 2023.

Methods

The research proposal was approved by the Ethics Review Committee of UERMMMCI Research Institute for Health Sciences (RIHS) under ERC Code: 1464/C/2023/036. Using an analytical cross-sectional research design, a total of 116 hypertensive Filipinos aged 18-64 years old residing in Quezon City were surveyed from August 2023 to October 2023 to assess adherence to treatment of hypertensive patients. The study's inclusion criteria were as follows: participants had to be Filipino aged 18 to 64 years old, residing in Quezon City, diagnosed with Hypertension, and currently taking hypertensive medications. Individuals on hypertensive medications but were not prescribed by physicians were excluded in the study.

The minimum sample size was determined to be 94 participants using the OpenEpi tool, which utilized data from a previous study.[7] Data collection involved both online and in-person surveys, utilizing questionnaires available in Filipino. The online survey was disseminated through various social media platforms including Facebook and Instagram.

Medication adherence was evaluated using the Brief Medication Questionnaire-1 (BMQ-1), which is a self-report tool designed to screen for adherence and barriers to medication compliance. The socio-demographic data collected included age, annual family income, financial assistance received (if any), and household size. The BMQ-1 comprises a 5-item Regimen Screen assessing medication intake over the past week, a 2-item Belief Screen evaluating perceptions about drug effects, and a 2-item Recall Screen addressing difficulties in remembering medication schedules. The sensitivity of the Regimen and Belief Screens ranges from 80-100% for "repeat" non-adherence, while the Recall Screen demonstrates 90% sensitivity for "sporadic" non-adherence. This tool has shown greater sensitivity compared to existing measures for identifying issues related to medication adherence, with its original English version validated for hypertensive patients.[8]

Socio-demographic data were utilized to classify participants into appropriate income strata based on multiples of the poverty line as defined by the Philippine Statistics Authority (PSA). Participants were categorized into low-income groups and below or lower-middle-income groups and above. This dichotomization is critical as low-income individuals often face significant barriers to accessing proper healthcare.[9]

Responses from the BMQ-1 were categorized into four levels of adherence: adherence (no positive responses in any screening), probable adherence (positive response in one domain), probable low adherence (positive responses in two domains), and low adherence (positive responses across all domains). Similar studies have further grouped these into two categories: non-adherent (including probable non-adherent and non-adherent) and adherent (including adherence and probable adherence).[10]

Data analysis was performed using IBM® SPSS® version 29.0. Summary statistics for socio-demographic data were presented as frequencies and percentages. The odds ratio was calculated to assess the association between hypertension medication adherence (dependent variable) and economic strata (independent variable). Statistical significance was determined using the chi-square test, with a significance threshold set at a p-value of less than 0.05 and a confidence interval of 95%.

Results

A total of 116 survey responses were received (Table 1). The majority of the respondents' ages were between 42-64 years old (81%). The income class distribution showed that most belonged to the poor income class (44.8%). Yearly income mean of the population is Php 832,283. With regards to the number of medications that the respondents took, the majority took only 1 kind of medication (56.0%) (Table 1).

In Table 2, the respondents were classified by income class by grouping "Lower Middle Class & Above" and "Low Income & Below", making up 33.6% and 66.4% of the respondent population (n = 116) respectively. Adherence based on the BMQ was categorized into "Adherent & Probable Adherent" (50.9%) and "Low Adherent & Probable Low Adherent" (49.1%). Majority of those who had low adherence and probable low adherence to their hypertension medication, belonged to those of the "low-income and below" income class. Based on the computed odds ratio, those who are low adherent and probable low adherent are 1.399 times more likely to belong to the "Low Income and Below."

Table 1. Socio-demographic characteristics of the participants

		Frequency	Percentage
Age	18-41 years old	22	19.0
	42-64 years old	94	81.0
Income Class	Poor *(Php <10,481)*	52	44.8
	Low Income *(Php 10,481 - 20,962)*	25	21.6
	Lower Middle Income *(Php 20,962 - 41,924)*	11	9.5
	Middle Income *(Php 41,924 - 73,367)*	7	6.0
	Upper Middle Income *(Php 73,367 - 125,772)*	9	7.8
	Upper Income *(Php 125,772 - 209,620)*	3	2.6
	Rich Income *(Php >209,620)*	9	7.8
Number of Medication	3	10	8.6
	2	41	35.3
	1	65	56.0

Table 2. Odds ratio of income class to hypertension medication adherence based on BMQ

		Adherence Based on BMQ		Odds Ratio	95% CI		P-value
		Low Adherence & Probable Low Adherence	Adherent & Possibly Adherent				
Income Class	**Low Income & Below**	40	37	1.399	0.645	3.036	0.396
	Lower Middle Income & Above	17	22				
Total	*Count*	57	59				

Discussion

Adherence to antihypertensive medications is a key component to control blood pressure levels.[10] Despite the availability of hypertensive treatment, suboptimal adherence is a well-recognized factor contributing to the poor control of blood pressure.[11] In 2021, the Philippines reportedly had a control rate of 20% with a reported medication adherence of 66%.[12] Findings of this study revealed a lower medication adherence at 50%. Determinants of medication adherence are multifactorial, including demographics and socioeconomic status.[12] A systematic review done on the effect of COVID-19 revealed that barriers to medication adherence during the pandemic stem from fear of infection, medication shortage, and financial restriction.[13] Notably, one study reported that 57% of its respondents identified that the COVID-19 pandemic posed negative impacts on their affordability of medication prices.[14] Understanding the level of adherence in different economic classes will help provide insights into tailoring multifaceted interventions to improve adherence in a specific population.

Prediction of one's health outcome is multifactorial and can be attributed to both medical and nonmedical elements. Social determinants of health are nonmedical factors that influence health outcomes.[15] Health may be influenced by the social and economic environment, the physical environment, and the person's individual characteristics and behaviors.[16] High income and social status are both associated with better health outcomes; hence, the larger the gap in wealth, the greater the health disparity.[16] In the Philippines, the poverty line is calculated using food poverty metrics based on fixed welfare standards that are adjusted for price variations.[17] Variations across regions reflect differences in living costs. The Family Income and Expenditure Survey (FIES) published by the PSA in 2021 showed that 18.1% of Filipinos had incomes that were not sufficient to afford minimum basic necessities such as food and non-food items which is a significant increase against the 16.7% pre-pandemic period (2018).[18] This inflation affects both food and non-food items, including medications, thereby reducing accessibility and contributing to higher rates of non-adherence.

The majority of participants in this study represented the low-income hypertensive population. This aligns with findings from other studies indicating that individuals with low socioeconomic status have a higher prevalence of hypertension.[19] Their increased risk for low adherence may stem from limited access to healthcare despite numerous government programs aimed at reducing health inequalities and inequities.[20] Additionally, local government initiatives in Quezon City provide free access to monthly hypertension maintenance medications while requiring quarterly follow-ups for patients.[21] Research on a population from Indonesia revealed that having a higher economic status was associated with better living standards, healthcare education access, and medication access.[22] Utilizing the multiples of poverty line and BMQ-1, findings yielded a positive association between income and adherence to hypertensive medications. Respondents who are low adherent and probable low adherent are 1.399 times more likely to belong to the "Low Income and Below". Other studies conducted in Korea and Indonesia consistently demonstrated similar associations that were statistically significant.[7,22] The Philippine government through the Department of Health provides free medications for hypertension and this might have affected the results.

It is also important to note that many cited studies were conducted pre-pandemic or during the pandemic; these temporal factors may contribute to findings due to shifts in individual income, disruptions in global supply chains, and resource depletion affecting routine healthcare access.[5] Current findings mirror these amplifications of healthcare burden.

This study sheds light on the critical issue of hypertension medication adherence within varying socioeconomic contexts in Quezon City. Hypertension is a significant risk factor for cardiovascular diseases, and its effective management relies heavily on strict adherence to prescribed treatments. The COVID-19 pandemic has profoundly impacted individual finances and may have further complicated medication adherence issues as financial constraints and economic disparities have grown. The economic burden resulting from job losses and rising prices has likely affected individuals' abilities to afford medications and maintain treatment regimens.

Conclusion

The research found that adherence to hypertension medication in Quezon City was suboptimal, with only 50.9% of respondents categorized as adherent or probably adherent. The majority of those categorized

as having low adherence or probable low adherence belonged to the low-income group, suggesting that socioeconomic factors may play a role in adherence levels. However, this association was not statistically significant.

Recommendation

Understanding the complex interplay between socioeconomic status and medication adherence is essential for tailoring interventions to improve adherence among hypertensive patients. While the study did not find a statistically significant association, it highlights the need for targeted efforts to support those in lower income groups, ensuring that they can access necessary healthcare resources and maintain their medication regimens.

Efforts to improve medication adherence in this population should include interventions aimed at alleviating the economic burden, increasing healthcare accessibility, and promoting awareness of the importance of adhering to prescribed treatments. Addressing these issues can contribute to better hypertension control and, subsequently, reduced cardiovascular disease risk among individuals across all socioeconomic strata in Quezon City.

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