International Journal of Medical and Pharmaceutical Research
Website: https://ijmpr.in/| Print ISSN: 2958-3675 | Online ISSN: 2958-3683
NLM ID: 9918523075206676
Volume: 4 Issue:5 (Sep-Oct 2023); Page No: 257-263

Original Article

IJMPR

Copyright@IJMPR

Study of Factors Affecting For Non Adherence to Medications in Elderly Hypertensives in a Tertiary Care Hospital

Dr. Raveendra K R[1], Dr. Naveen K Nandeppagoudar[2*], Keerthana Kodur[3]

[1]Professor of Medicine BMC & RI
[2]Postgraduate in Department of Medicine BMC & RI
[3]Medical Student

ABSTRACT

Introduction: The prevalence of hypertension in the elderly is increasing worldwide. Non adherence to medication in elderly is a major concern which is associated with adverse outcomes. Non adherence to medications is a complex issue hence this study is undertaken to study factors affecting for non adherence to medications in elderly hypertensive patients. **Materials And Methods:** This retrospective study included 270 elderly patients i.e. (>60 years) after screening among out patients visiting general medicine and geriatric departments of BMCRI, Bangalore. Complete physical examination, BP measurement and the reasons for non adherence were assessed from patients. **Results:** Total of 270 patients, majority were in the age group of 60-70 years (63.3%). Males and females were 60% and 40%.The duration of hypertension was more in the range of 10-15 years (36%), followed by 15-20 years in (33.3%).The common reasons for non adherence was" the high cost" in 22% and "too many tablets to consume" in 18.7% of patients. Remaining 16% "did not understand the importance" in taking medication, about 13% of due to its "side effects" around 9% due to "forget fullness" and 6% stopped medications as they were "asymptomatic".**Conclusion:** The problem of non-adherence to medications is universal in patients with hypertension. The main reasons are poly pharmacy and increased cost in our study. Others include poor consultation, forgetfulness in elderly patients. Regular and repeated consultation especially establishment of "hypertensive clinics" will go a long way to improve the adherence to treatment protocol in hypertension patients.

Key Words: *Non adherence, Medications, Hypertension ,Elderly, Polypharmacy, Hypertensive clinics*

***Corresponding Author**
Dr. Naveen K Nandeppagoudar*
Postgraduate in Department of Medicine BMC & RI

INTRODUCTION

The prevalence of Hypertension is fast increasing across the globe and hypertension is one of the most significant causes of mortality worldwide. Elevated blood pressure (BP) is a major risk factor for coronary artery disease and its complications like heart failure, stroke, chronic kidney disease and blindness in diabetic patients. Adherence to antihypertensive medications is the cornerstone for achieving hypertension control [1].

Hypertension is defined as office SBP>_140 mmHg and/or diastolic BP (DBP)>_90 mmHg. This is based on evidence from multiple RCTs and the same classification is used in younger, middle-aged, and older people [2]. The overall prevalence of hypertension in adults is around 30-45%. Hypertension becomes progressively more common with advancing age, with a prevalence of >60% in people aged >60 years [3].

According to the available evidence, all CV events increase when systolic BP>_160mm of Hg and all need BP-lowering drug treatment [4,5]. The SPRINT trial, which included a cohort of patients older than 75 years, in whom more intense BP lowering reduced the risk of major CV events and mortality [6,7].

Non adherence to medication is a growing concern and is associated with adverse outcomes. Maintaining medication adherence to multiple medications is a complex issue especially in elderly patients with chronic diseases, particularly cardiovascular diseases (CVDs). A better understanding of these issues in elderly patients could help to tailor effective interventions and strategies to improve the medication adherence in elderly hypertensive patients [8].

MATERIALS AND METHODS

This was a retrospective observational study conducted among out patients visiting General Medicine and Geriatrics departments from August 2022 to February 2023 at Victoria Hospital attached to Bangalore Medical College in Bangalore, Karnataka, India. Approval and clearance were obtained from the institutional ethics committee.

The study included patients aged ≥ 60 years of either sex, diagnosed with hypertension on medications and willing to give informed consent. The study excluded patients <60 years and those not willing to provide signed informed consent prior to the study.

A selection criterion for patients was used to screen all hypertensive patients attending the OPD services in Victoria Hospital from August 2022 to February 2023. Out of total screened patients 832, 270 patients were selected based on the criteria, BP on 2 occasions having>140/90 mm of Hg.

All patients were interviewed for detailed history - Demographic and socio-economic profile, co-morbidities, Drug history including drugs used for hypertension, such as names of medications used, dosage, and reasons for using antihypertensive medications, as well as any side effects experienced. Complete physical examination with special consideration of measurement of blood pressure was done as part of geriatric assessment. Finally the reasons for non adherence were assessed from patients and their relatives.

STATISTICAL ANALYSIS

SPSS (Statistical Package for Social Sciences) version 20. (IBM SPASS statistics [IBM corp. released 2011] was used to perform the statistical analysis

- Data was entered in the excel spread sheet.
- Descriptive statistics of the explanatory and outcome variables were calculated by mean, standard deviation for quantitative variables, frequency and proportions for qualitative variables.

RESULTS

DEMOGRAPHICS

SEX		
MALE	162	60.0%
FEMALE	108	40.0%

AGE		
60-70	171	63.3%
70-80	90	33.3%
>80	9	3.3%

PLACE		
RURAL	72	26.7%
URBAN	198	73.3%

EDUCATION		
ILLITERATE	54	20.0%
10TH STANDARD	207	76.7%
PROFESSIONAL	9	3.3%

STAY		
SINGLE	36	13.3%
FAMILY	230	85.3%
OLD AGE HOME	4	1.3%

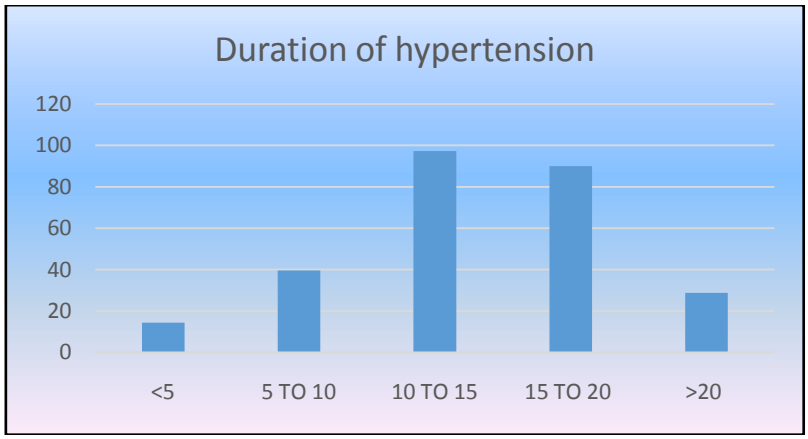
INCOME		
SELF	122	45.3%
DEPENDENT	148	54.7%

In our study all hypertensives whose BP recording on 2 occasions having BP >140/90 were included in the elderly population of age more than or equal to 60 years. The patients in the study were more in the age group of 60-70 years (63.3%), followed by 70-80 years (33.3%) and >80 years (3.3%) respectively.

Majority of the patients were male (60%) and the female contribution was 40%.The socio-economic status in the study participants majority was living in urban areas (73.3%) when compared to rural areas (26.7%).

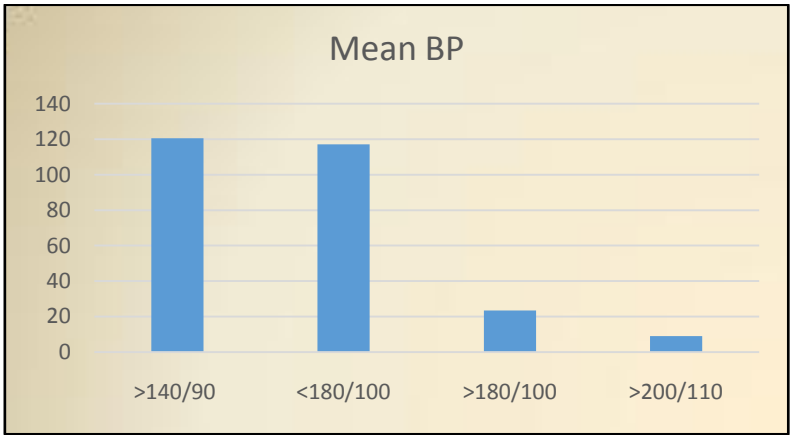
The education qualification of all the patients were analysed and majority have completed 10th standard (76.7%), followed by illiterates and professionals (20% and 3%).Elderly patients who were staying with the family was 85.3%, single 13.3% and 1.3% in old age homes. In that around 45.3% patients were independent as income is considered whereas majority 54.7% were dependent on family for the income.

Duration of hypertension



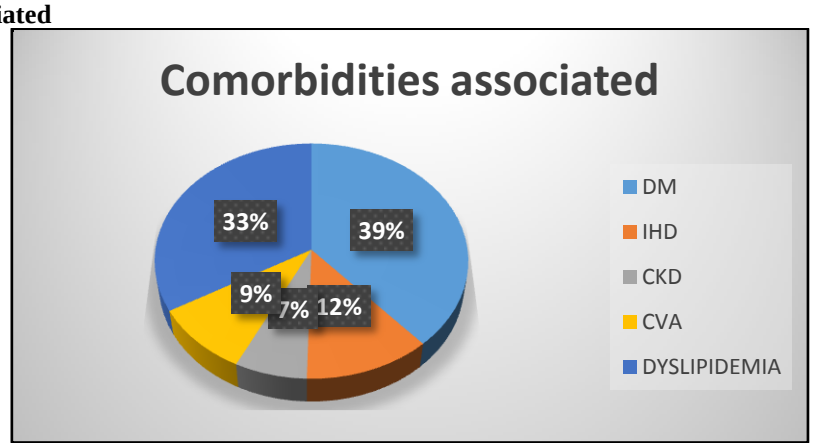
In total 270 patients included in the study the duration of hypertension was more in the range of 10-15 years (36%), followed by 15-20 years in (33.3%) and 5-10 years in 14.7%.More than 20 years and less than 5 years was 10.7% and 5.3% respectively.

Mean BP



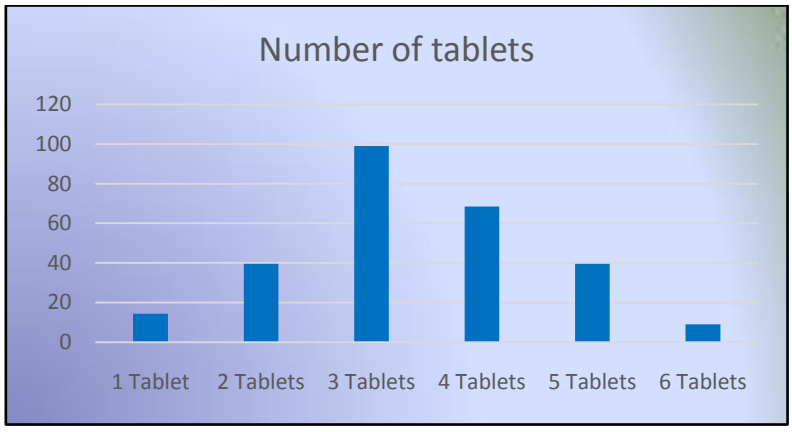
The patients whose mean BP on OPD based readings majority had BP in the range >140/90 to 180/100 (89%). Remaining patients whose BP was >180/100 in 8.7% and >200/100 in 3.3%.

Co morbidities associated



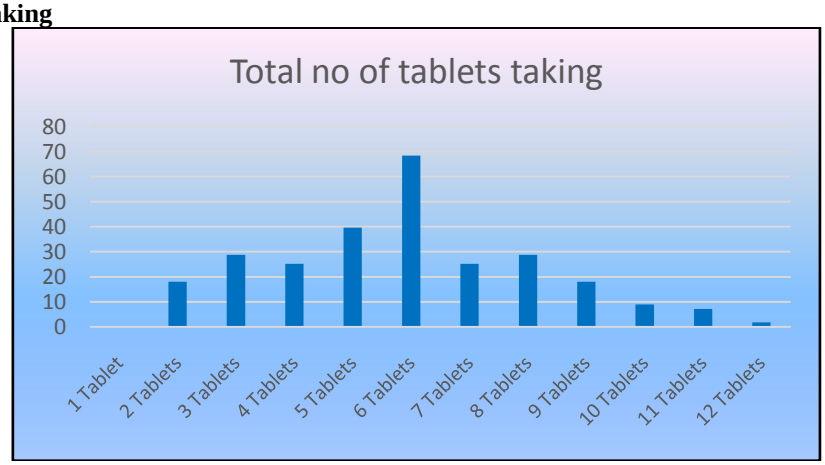
In patients with elderly hypertensive in our study the most common associated co morbidity was diabetes mellitus (39%). In about 33% had dyslipidemia. Patients with ischemic heart disease included 12%, cerebrovascular accidents 9% and chronic kidney disease 7%.

Number of tablets



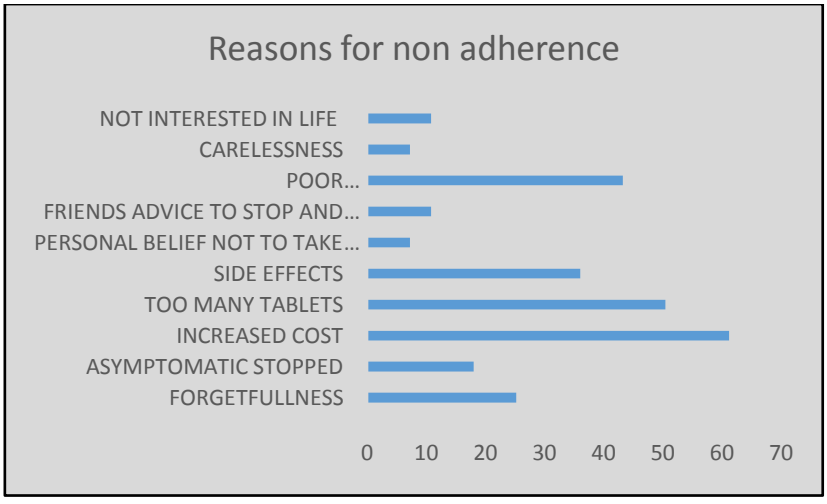
The number of antihypertensive medications in our study by the patients the majority were taking at least 3 tablets for hypertension in 99 patients (36.7%). Next followed by 4 tablets in 68 patients (25.3%), 5 tablets in 40 patients (14.7%). Less than 3 and more than 5 tablets were 54 (20%) and 9 (3.3%).

Total no of tablets taking



The total pill burden was huge in elderly patients with hypertension associated other multiple co morbidities. A vast majority of patients were taking at least minimum of 6 tablets (25%) to 12 tablets (0.7%) per day.

Reasons for non adherence



The common reasons for not taking medications (non adherence) in our study in elderly hypertensive patients included “the high cost” in 22% and “too many tablets to consume” which also add to the high cost in 18.7% of patients.

Remaining 16% of patients "did not understand the importance" in taking medication which was attributed due to poor consultation with the treating doctors. About 13% of the patients had stopped medications due to its "side effects". Around 9% had stopped due to "forget fullness" and 6% stopped medications as they were "asymptomatic", and felt that they need not take medications. In the remaining small percentages 4%, had stopped medications because of the advice of their friends and relatives, thinking that taking tablets for too long is not good.4% of patients had "no interest in life", 3% had stopped due to "personal belief" of not to take tablets for long time and 3% were because of "carelessness".

DISCUSSION

In this study of total 270 patients, the age group of 60-70 years (63.3%) were maximum, followed by 70-80 years (33.3%) and >80 years (3.3%) respectively. Majority of the patients were male (60%) and the females were 40%.The socio-economic status in the study participants majority was living in urban areas (73.3%) when compared to rural areas (26.7%). In a similar study done by Hamza S et al. total 150 study participants; 41.3% belonged to 60-69 years age group, followed by 32.7% in 70-79 years age group, while 26% were 80 years or older and Most of the study subjects 52.7% were females and 47.3% were males [9].

Majority of our patients were educated up to 10^{th} standard (76.7%), followed by illiterates and professionals (20% and 3%). Patient's level of education is a significant predictor of antihypertensive medication adherence in the current study therefore educated patients were expected to report better adherence to medications compared to patients with less or no educational backgrounds in a similar study by Bader et al. [10].

Family support and financial stability of the patient remains an important factor in the management of any disease. In this study elderly patients who were staying with the family was 85.3%, single (live alone) in 13.3% and 1.3% in old age homes. Around 45.3% patients were independent of their income whereas 54.7% were dependent on their families for the income. Most of the participants were widow 53.3%. 43.3% of the study population was illiterate, 72% had insufficient income, 80% were living with their families, 69.3% were non-smokers and 74% were not working in a similar study done by Hamza S et al. [9].

Some studies suggest that adherence to medication for a patient with hypertension is higher among those who are married, and stay together in a family [11].

In our study of 270 patients the duration of hypertension was more in the range of 10-15 years in 36% of patients, followed by 15-20 years in 33.3% and 5-10 years in 14.7%.Duration more than 20 years and less than 5 years was observed in 10.7% and 5.3% respectively. In a study done by Hamza S et al most of the hypertensive patients 38.7% had HTN from 1 to 10 years, 32.7% had their HTN from 6 months to 1 year and 28.7% had HTN from more than 10years [9].

In this study the patients whose mean BP on OPD based readings majority had BP in the range 140/90 to 180/100 (89%). Remaining patients whose BP was >180/100 in 8.7% and >200/100 in 3.3%.The common co morbidities associated were diabetes mellitus 39%, dyslipidemia33%., ischemic heart disease 12%, cerebrovascular accidents 9% and chronic kidney disease in 7%.

A study in the USA found that patients with diabetes and hypertension were more likely than those with only hypertension, to adhere to prescribed medications [12].The authors argued that patients with multiple symptoms from multiple comorbidities including hypertension need to adhere to prescribed medications in order to control their symptoms effectively. Another explanation proposed by is that patients taking multiple medications are more cautious with their treatments compared with those who receive a single therapy [13].

Possible reasons for patients with comorbidities to adhere better to their medications is because they perceive more strongly the seriousness of their health condition and want to prevent further complications, in addition repeated and regular follow up with different health care providers increases the chances of adherence to the treatment protocol.

The number of antihypertensive medications consumed per day varied from 2 to 7 tablets. Numbers of patients taking at least 3 tablets were 99 patients (36.7%), followed by 4 tablets in 68 patients (25.3%), 5 tablets in 40 patients (14.7%). Less than 3 and more than 5 tablets were 54 (20%) and 9 (3.3%).

The total pill burden was huge in elderly patients with hypertension associated other multiple co morbidities. A vast majority of patients were taking atleast minimum of 6 tablets (25%) to 12 tablets (0.7%) per day. The pill burden is often greater in older patients because of the development of co morbidities associated with aging[14]. In a prospective cohort study conducted in Sweden using register data (1,742,336 individuals aged ≥65 years), individuals were exposed to 4.6 (SD = 4.0) drugs on average and the prevalence of polypharmacy (5+ drugs) was 44.0%, and of excessive polypharmacy (10+ drugs) 11.7%[15].

In a study done by Suzanne H. S et al, most participants took 1 or 2 types of antihypertensive medication; simplicity of the medication regimen additionally may have facilitated the participants' capacity to adhere to the medication regimen, as well as self-manage their hypertension without imposing an undue burden on their lives [16].

The common reasons for not taking medications (non adherence) in our study in elderly hypertensive patients included mainly the high cost of medications in 22%and too many tablets to consume (which also add to the high cost) in 18.7% of patients. Patients' income and financial stability was a significant predictor of antihypertensive medications in this study.

Some studies have found that patients' financial situation was a significant predictor for medication adherence[17]. Also hypertensive patients with low incomes struggled to adhere to antihypertensive medications due to their cost Antihypertensive medications are long term medications that need continual replenishing and the cost which hinders the continuity of treatment for patients with low incomes.

In our study the remaining 16% of patients did not understand the importance in taking medications (mainly illiterate patients) which were attributed due to poor consultation with the treating doctors in explaining the need and strict adherence to antihypertensive medications. About 13% of the patients had stopped medications due to medication side effects.

Most elderly hypertensive patients suffer from multiple concomitant diseases, which exposed them to multiple drug therapies, frequently given by different physicians. Thus, the probability of potentially inappropriate medications (PIM), defined as "medications in which harm potentially outweighs the benefits, namely those that are not indicated or lack evidence of efficacy and those that do not align with patients goals/preferences and values" is very high [18, 19].In all these studies, major risk factors for the prescription of PIM were being a woman, polypharmacy, multi-morbidity and mental problems. Hence, many patients took self decision to decrease the dosage, number of pills or altered medication. These changes happened in patients who had self monitored their blood pressure at home.

Less number of patients in our study, about 9% had stopped due to forget fullness and 6% since they were asymptomatic. In the remaining small percentages 4% had stopped due to advice by their friends and relatives thinking that taking tablets for too long is not good and need to reduce the tablets, 4% of patients had no interest in life, 3% had stopped due to personal belief of not take tablets for too long and 3% were because of carelessness.

An impaired cognitive impact may induce several forms of poor adherence in elderly patients. Indeed, frequent forms of non-adherence in the elderly include overuse and abuse of drugs, sometimes because of memory problems, forgetting, and alteration of schedules and doses [16].In a study done by Suzanne H. S et al about one-third of participants in our study did not experience any symptoms since the diagnosis of hypertension. Among those who reported symptoms, fewer than half perceived a relationship between symptoms and hypertension. Participants viewed readings of their blood pressure as relatively stable and that they were not feeling unwell. Participants who had a strong perception of the chronicity of hypertension, and nearly all of them reported that they knew that they had to take antihypertensive medications for the rest of their lives without discontinuation. They attributed the cultivation of this belief largely to such treatment being emphasized by their physician during consultations [20].

A review on non adherence in hypertensive patients suggests a use of simple, low-cost screening tests for identifying no adherent patients with uncontrolled hypertension. Patients who have severe and treatment resistant hypertension, despite prescription of usually effective combination antihypertensive pharmacotherapy, have a higher probability of non adherence. In these high risk patients, electronic or biochemical monitoring is useful for detecting non adherence and for improving adherence [21].

CONCLUSION

The problem of non-adherence to medications is universal in patients with hypertension. Drug adherence is a crucial issue in the pharmacotherapy of chronic diseases at all ages, especially in elderly patients. Adherence to medications tends to decrease for many reasons. The main reasons in our study include poly pharmacy and increased cost. Other reasons include poor consultation, forgetfulness due to progressive cognitive decline or depression developing with age. Regular and repeated consultation especially establishment of "hypertensive clinics" will go a long way to improve the adherence to treatment protocol in hypertension patients. So strategies to improve adherence to medications should be developed and needs more research in this regard.

Conflict of interest: Nil

REFERENCES

1. Lim SS, Vos T, Flaxman AD, et al. (2012). A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 380:2224–60.

2. Williams B, Mancia G, Spiering W, Agabiti Rosei E, Azizi M, Burnier M, et al. (2018). ESC/ESH Guidelines for the management of arterial hypertension: The Task Force for the management of arterial hypertension of the European Society of Cardiology (ESC) and the European Society of Hypertension (ESH). *European Heart Journal*. 39(33):3021–104.
3. Chow C K, Teo K K, Rangarajan S, Islam S, Gupta R, Avezum A et al. (2013). PURE Study Investigators. Prevalence, awareness, treatment, and control of hypertension in rural and urban communities in high-, middle-, and low-income countries. *JAMA*. 310:959–968.
4. Zanchetti A, Grassi G, Mancia G. When should antihypertensive drug treatment be initiated and to what levels should systolic blood pressure be lowered? A critical reappraisal. *J Hypertens*. 2009; 27:923–934.
5. Benetos A, Bulpitt CJ, PetrovicM, UngarA, Agabiti RoseiE, CherubiniA, RedonJ, GrodzickiT, DominiczakA, StrandbergT, ManciaG. (2016). An expert opinion from the European Society of Hypertension-European Union Geriatric Medicine Society Working Group on the management of hypertension in very old, frail subjects. *Hypertension*. 67:820–825
6. Wright JT Jr, Williamson JD, Whelton PK, Snyder JK,et al. (2015). A Randomized Trial of Intensive versus Standard Blood-Pressure Control. *N Engl J Med*. 373(22):2103-16. doi: 10.1056/NEJMoa1511939. Epub 2015 Nov 9. Erratum in: N Engl J Med. 2017 Dec 21; 377(25):2506. PMID: 26551272; PMCID: PMC4689591. (SPRINT Research Group)
7. Williamson JD, Supiano MA, Applegate WB, Berlowitz DR, Campbell RC et al. (2016). SPRINT Research Group. Intensive vs Standard Blood Pressure Control and Cardiovascular Disease Outcomes in Adults Aged ≥75 Years: A Randomized Clinical Trial. *JAMA*. 315(24):2673-82. doi: 10.1001/jama.2016.7050. PMID: 27195814; PMCID: PMC4988796.
8. Abegaz TM, Shehab A, Gebreyohannes EA, Bhagavathula AS, Elnour AA. (2017). Nonadherence to antihypertensive drugs: A systematic review and meta-analysis. *Medicine*. 96(4):e5641.
9. Hamza S, El Akkad R, Abdelrahman E, Abd elghany S. (2019). Non adherence to Antihypertensive medications among hypertensive elderly patients in outpatient geriatric clinic. The Egyptian Journal of Geriatrics and Gerontology. 6(1):1–7.
10. R.J.K. Bader, F. Koprulu, N.A.G.M. Hassan, A.A.A. Ali and A.A. Elnour Predictors of adherence to antihypertensive medication in northern United Arab Emirates.
11. Morisky DE, DiMatteo MR. (2011). Improving the measurement of self-reported medication poor adherence: Final response. *J Clin Epidemio*. 2011; 64:258-263. PMID:21144706
12. Ronald Loeppke, Vince Haufle, Kim Jinnett, Thomas Parry, Jianping Zhu, Pamela Hymel and Doris Konicki Medication Adherence, Comorbidities, and Health Risk Impacts on Workforce Absence and Job Performance
13. Hashmi SK, Afridi MB, Abbas K, Sajwani RA, Saleheen D, Frossard PM et al. (2007). Factors associated with adherence to antihypertensive treatment in Pakistan. *PLoS One*. 2 (3):e280.
14. Mukete BN, Ferdinand KC. (2016). Polypharmacy in older adults with hypertension: a comprehensive review. *J Clin Hypertens*. 18:10–8. doi: 10.1111/jch.12624
15. Morin L, Johnell K, Laroche ML, Fastbom J, Wastesson JW. (2018). The epidemiology of polypharmacy in older adults: register-based prospective cohort study. *Clin Epidemiol*. 10:289–98. doi: 10.2147/CLEP.S153458
16. Suzanne H. S. Lo, BN, Janita P. C. Chau, BN, Jean Woo et al. Adherence to Antihypertensive Medication in Older Adults With Hypertension
17. Khanam M A, Lindeboom W, Koehlmoos T L P, Alam D S, Niessen L and Milton A H Hypertension: adherence to treatment in rural Bangladesh findings from a population based study in Bangladesh.
18. Fick DM, Cooper JW, Wade WE, Waller JL, Maclean JR, Beers MH. (2003). Updating the Beers criteria for potentially inappropriate medication use in older adults: results of a US consensus panel of experts. Arch Intern Med. 163:271624. doi: 10.1001/archinte.163.22.2716
19. Salzman C. (1995). Medication compliance in the elderly. *J Clin Psychiatry*. 56(Suppl. 1):18–22; discussion 3.
20. Gallagher P, Barry P, O'Mahony D. (2007). Inappropriate prescribing in the elderly. *J Clin Pharm Ther*. 32:113–21. doi: 10.1111/j.1365-2710.2007. 00793.x
21. Burnier M, Egan BM. (2019). Adherence in Hypertension: A Review of Prevalence, Risk Factors, Impact, and Management. *Circ Res*. 124(7):1124–40.