Acta Biomedica Scientia

e - ISSN - 2348 - 2168
Print ISSN - 2348 - 215X

www.mcmed.us/journal/abs

Research Article

PHARMACIES' MONITORING PRACTICES AND PATIENTS' KNOWLEDGE OF BLOOD PRESSURE

Ujwala S*, Neelam Sreeja, Krupalini Vadapally, Meruga Prashanthi, Jarpala Rambabu

KLR Pharmacy College, Paloncha, Bhadradri Kothgudadm, Telangana- 507115, India.

ABSTRACT

Cardiovascular disease is caused by hypertension, which can be modified. However, patients often underestimate their risk factors or cannot determine them accurately. As part of our efforts to improve pharmacist interventions, we implemented the following strategies: 1) assess the knowledge and self-monitoring behaviors of patients about blood pressure (BP). 2) Determine their relationship. A comparison of the knowledge of one's target and BP level with monitoring habits would be helpful in evaluating how well one's blood pressure is controlled. The pharmacy clerkship required students to interview patients in community pharmacies as part of their final year training. Ten patients on hypertension medication were recruited as convenience samples, and students surveyed them about their blood pressure targets, recent blood pressure levels, and home and monthly monitoring practices. 225 patients were interviewed, of which one third were able to identify a blood pressure target, while 25% were able to identify an accepted target. The majority of those who had reported a blood pressure target were able to provide a blood pressure reading, with 12% reaching their self-reported goal. Most patients believed that their blood pressure was “about right”, and slightly less than a third thought it was “high”. Over half of patients monitor their blood pressure monthly, but fewer than half monitor their blood pressure at home. Patients with chronic conditions are lacking in knowledge and self-management, according to this study and others that have come before it. Further, pharmacy students were able to screen patients during routine care with a brief intervention. Regular blood pressure monitoring can assist pharmacists in improving patient understanding and promoting self-management.

Keywords:- Self-care, Blood pressure monitoring, Hypertension medication.

Access this article online	
Home page: www.mcmed.us/journal/abs	**Quick Response code**

Received: 04.01.23	**Revised**:21.01.23	**Accepted**:12.02.23

INTRODUCTION

Worldwide, 1 billion people suffer from hypertension, the most common primary diagnosis. There are numerous conditions associated with it, including stroke, diabetes, renal morbidity, and heart attacks. As a result of lowering blood pressure (BP), the incidence of cerebral vascular events and myocardial infarction (MI) has been reduced by 20-25% and 35-40%, respectively [1]. It is still common for hypertension or diabetic patients to overestimate their risk factors, and 23% cannot estimate their risk factors, with up to 46% of them overestimating their risk. [2]. In accordance with National Guidelines, professional intervention can significantly improve adherence to lifestyle changes [3]. Patient blood pressure has been markedly reduced by pharmacists' involvement in drug monitoring [4-8]. It is convenient for pharmacists to monitor drug and self-monitoring practices so that clinical outcomes can be improved since they are one of the most accessible health care professionals. [9-15].

Patients managing their antihypertensive medications actively even though hypertension is often

Corresponding Author: **UJWALA S** Email: drujwalasunakapallyy@gmail.com

described as a silent disease. Among 623 hypertension patients, one third discontinued their medications or reduced the dose. A pharmacist's medication expertise might have been beneficial for these patients. Drug information is not the only contribution that pharmacists can make, but they could also educate patients about diseases, encourage greater patient responsibility, use drug compliance aids, and establish BP monitoring programs to manage hypertension more comprehensively

To improve pharmacists' care for hypertensive patients, it is necessary to improve patients' understanding of hypertension and self-monitoring practices. Three studies examined the knowledge and behavior of diabetics and hypertensives in terms of blood pressure measurements and target levels. [9]. All three studies used patient self-report data from either medical clinics or community pharmacies, utilizing direct questions or self-administered questionnaires. There was a 39-68% awareness of blood pressure values in the patients, however, only 20-30% of patients remembered their targeted blood pressure [9,17,18]. In hypertension care, pharmacists should take a more active role in encouraging patient awareness and monitoring of blood pressure and associated health risks, which is significant predictor of self-BP awareness.

To gain a deeper understanding of patients' perceptions of blood pressure levels, goals, and monitoring practices in the community, we conducted a cross-sectional survey of patients taking medications to control hypertension as well as an assessment of their self-monitoring practices. Similarly, to Guirguis et al. 's study [18], we used a face-to-face patient encounter as a method to clarify patient content, hence enhancing patient reporting accuracy. An observational study was conducted with a group of patients recruited from a local pharmacy about their self-monitoring knowledge and practices. The study will examine the following: 1) the percentage of patients with hypertension reporting their blood pressure target and level, 2) whether patients meet national blood pressure targets, and 3) how patients with hypertension monitor their blood pressure.

In addition to primary objectives, secondary objectives address: 1) patients' perceptions of their blood pressure control and knowledge of their blood pressure level, 2) self-monitoring practices and perceptions about blood pressure, and 3) habits for self-monitoring blood pressure levels and targets.

METHODS

As part of their Ambulatory Pharmaceutical Care assignment, pharmacy students collected data from a required exercise for a year. Informed consent was obtained from the Institutional Review Board of the University of Sciences in order to move forward with the project.

Subjects

School of Pharmacy clerkship sites recruited patients. The clerkship sites may be neighborhood pharmacies, chains of pharmacies, or clinics. At least three and up to ten patients were recruited by about 60 student pharmacists. Using a convenience sample of patients with hypertension on medication, student pharmacists were asked to select them for the study. Incentives of any kind were not provided.

Data Collection

A guide to interviewing and guiding student pharmacists were used to ensure that data collection was systematically conducted. Data collection at pharmacy sites was consented to by pharmacy managers. While conducting regular pharmacy activities, student pharmacists approached patients who were taking antihypertensive medications, Patient's blood pressure and target numbers were recorded on the interview guide after asking them about their levels and target numbers, and gave them the American Heart Association information sheet and monitoring log. There are two sections titled: “What is High Blood Pressure? BP Tracker”. A pharmacy student asked patients verbally for consent to share their blood pressure information for research after conducting an interview. A written information sheet was provided to patients after the interview was completed. On a secure online website, students transcribed the interview guide. Using a transcription tool, students transcribed data as reported by patients, with a “DK” for “Don't Know” included in the transcription.

In case of suboptimal control of hypertension, students obtained the patients' permission before making recommendations, but this was not a requirement of the assignment.

Analysis

A statistical analysis of all data was carried out with SPSS version 13.0. All statistical tests were evaluated using an alpha value of 0.05. Missing values were attributed to unlikely levels. When a blood pressure level was 150/300, it was coded as missing. We analyzed the interview guide data using descriptive statistics to characterize patients' knowledge of blood pressure (BP), treatment goals, and demographics. In the JNC 7, patients' self-reported BP levels were compared with their self-reported clinical goals and targets to determine who is above target. To assess whether knowledge of blood pressure is related to self-monitoring practices, a Chi-square analysis was conducted.

RESULTS

Nineteen community pharmacy clerkship sites were evaluated to gather data. Three hundred and twenty-four patients consented to participate in the study after 60 students approached 358 patients and of those 310 had time to speak with them. A diabetes prevalence of 10% is expected, but only 1 patient was diabetic. It is possible that patients with diabetes were overlooked during the BP check in the previous year because students had approached them regarding awareness of diabetes targets. This subgroup would not be useful for analysis, so we excluded the data for the 1 diabetic patient. In addition, 19 patients who had previously received a blood pressure check had their second blood pressure check separately presented. The first and second blood pressure checks did not show any statistically significant differences (Table1-3).

Patient BP Knowledge and Self- Monitoring

Our first step was to assess patients' knowledge of their blood pressure targets. One eleventh of the people who reported their first blood pressure to the doctor reported a target of 121/79 mmHg, while another eighty four percent reported 132/88 mmHg, while one sixteenth reported 142/92 mmHg and another ten seventh reported other reasonable values (see table 1). 15.78 % of respondents were able to guess one of three acceptable BP targets at the second BP check (see Table 1). Three-quarters of patients reported their blood pressure level (see Table 2). In accordance with JNC 7 guidelines, hypertension should be treated at 140/90 mmHg at the time of the study (see Table 2). Based on 64 test results, 38.3% of people met their BP goal (Table 3).

A patients' blood pressure was also evaluated as 'high', 'low', or 'about right'. Most patients in both groups considered their blood pressure to be 'about right' at their first and second blood pressure checks, respectively 65.5% and 71.1%. More than a quarter of those in both groups considered their blood pressure 'high' (28.4%). Furthermore, a small percentage of patients reported having a 'low' blood pressure (3.4% and 2.6%, respectively).

As part of their assessment of patients' self-monitoring habits, students also evaluated their intake of self-monitoring at the start of their follow-up visits. Among the 37.7% who did so, 47.4% did so at the end of their follow-up visits. As far as monthly BP monitoring was concerned, both groups showed similar habits - 59.9% and 57.9%, respectively.

Relationships Between Blood Pressure Knowledge And Monitoring

In primary analyses, there were no differences between first and second blood pressure checks, so a total of 223 checks were used for the secondary analysis. Patients' perceptions of their blood pressure ('about right', 'high' or 'low') were not associated with their perceptions of what a normal BP level is (p=0.611).

Blood pressure monitoring lowers patients' likelihood (p=0.02) of reporting that their blood pressure is 'about right' and increases their likelihood of reporting that their blood pressure is low or high. Home monitoring was not correlated with BP control evaluations (p=0.953).

According to secondary objective 3, self-smoothing practices on a monthly basis were significantly correlated with patients' knowledge of BP targets and levels (p=0.011 and p=0.001, respectively), as were home monitoring habits (p=0.0001 and p=0.001, respectively). Monitoring blood pressure at least monthly increased the likelihood of knowing your target blood pressure. Additionally, home blood pressure monitors are more likely to know their target values than those who don't. Patients who monitor their blood pressure monthly were more likely than those who don't regularly monitor their blood pressure to know their levels.

Table 1: Patient reported blood pressure target

	First bp check		Second bp check*	
Target	N	%	N	%
121/79 mm hg	25	11.16	3	15.78
132/88 mm hg	19	8.42	1	5.26
142/92 mm hg	26	11.60	1	5.26
Other	24	10.71	3	15.78
Don’t know target	122	54.46	11	57.89
Missing	8	3.57	0	0
Total	224	100	19	100

Table 2: Patients at Jnc 7 Guideline Targets

	First bp check		Second bp check*	
	N	%	N	%
At target less than 140/90	103	50.4	10	52.63

Not at target (>140/90 mm hg)	45	22.05	4	21.05
Don't know bp level	49	24.01	4	21.05
Missing	7	3.31	1	5.2
Total	204	-	19	-

Table 3: Patients at Self- Reported Target

	First bp check		Second bp check*	
	N	Percent	N	Percent
At self- reported Target	24	11.76	3	15.78
Not at self- Reported target	35	17.15	3	15.78
Don't know target	129	63.23	11	57.89
Missing	16	7.84	2	10.52
Total	204	100	19	100

DISCUSSION

National and personal blood pressure goals were not well understood by patients identified through community pharmacies. People may not understand their risk because they are unaware of target guidelines despite knowing their blood pressure levels. In the same study as Guirguis et al, three-quarters of patients were capable of reporting their blood pressure level, but only 40% knew their target. This will mean that 30% of patients will be unable to evaluate their progress. Two out of three JNC 7 target guidelines could only be reported by a quarter of the sample, and a second survey of a smaller population of the same group showed no improvement [1]. In contrast, Lau et al. found that only 8.9% of geriatric patients knew what an acceptable target was in their study. [9]. According to Guirguis et al., only 35% of patients could identify a target. Our sample has a broader age demographic (i.e. not exclusively geriatrics) and patients with diabetes were excluded, which could explain the discrepancy between these values. Considering concurrent medical conditions that may have affected a patient's ability to identify targets was not considered when analyzing the patients' ability to identify targets.

Nearly a third of respondents reported they met their target BP, which matches the findings of Whitley et al. and Guirguis et al. Although patients are more likely to know their own blood pressure levels, this information is sometimes not accompanied by an understanding of a target BP level. In addition, 65.5%-71.18% of patients surveyed indicated that their blood pressure levels were "about right". Perceptions about blood pressure may not correspond with actual blood pressure levels, putting patients at risk for poor medication adherence.

BP control was not affected by knowledge of BP levels (high, low, or about right). It could be due to three factors: first, patients may have only been given a global assessment of their blood pressure - high, low, or about right. Their ability to evaluate their blood pressure was not correlated with their ability to recall a blood pressure level. Even so, further research is needed to determine whether this knowledge is sufficient to motivate BP control activities. Other than BP levels, other factors can influence perceptions of BP control. Physiological symptoms like headaches and dizziness may influence patients' perception of blood pressure control. Because an objective measure of blood pressure was not obtained, we could not determine whether patients' perceptions reflected their actual blood pressure levels. A low level of health literacy may also be contributing to this. In order to make appropriate health decisions, Health and medication information are difficult to obtain, process, and understand for 78% of the population. Research on health literacy should include a measure of health literacy or knowledge of blood pressure, in order to investigate its role on patient knowledge and assessment.

Blood pressure was monitored more often by patients who knew their blood pressure level and/or target. It is unknown what caused this problem. In a similar study, Lau and colleagues found that knowing target blood pressure independently predicts self-monitoring [9].

There were no significant differences between the data sets of the first and second BP checks, according to further analysis. A number of reasons could explain this, including a small sample size in the second group. Finally, it is possible that the time interval between visits was insufficient for measurable changes to be measured because the study did not intend to have patients interviewed more than once.

CONCLUSIONS

Almost half of community pharmacy patients could recall their blood pressure level and 45% could remember their blood pressure target. There were only 12 percent of patients who met their self-reported target; two

thirds of patients felt that their blood pressure was at a healthy level. Less than half of patients perform home blood pressure monitoring, despite monitoring their blood pressure monthly. Among patients with chronic conditions, this study also found knowledge gaps.

In addition to promoting improved self-management, pharmacists can help patients understand their blood pressure and enhance their understanding

REFERENCES

1. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo Jr JL, Jones DW, Materson BJ, Oparil S, Wright Jr. JT, Roccella EJ, *et al*. (2003). Seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. *Hypertension*, 42(6), 1206-1252.
2. Frijling BD, Lobo CM, Keus IM, Jenks KM, Akkermans RP, Hulscher MEJL, Prins A, Van Der Wouden JC, Grol RPTM, *et al*. (2004). Perceptions of cardiovascular risk among patients with hypertension or diabetes. *Patient Educ Couns*, 52(1), 47- 53.
3. Onysko J, Maxwell C, Eliasziw M, Zhang JX, Johansen H, Campbell NRC, *et al*. (2006). Large increases in hypertension diagnosis and treatment in Canada after a healthcare professional education program. *Hypertension*, 48(5), 853-860.
4. Chabot I, Moisan J, Gregoire J, Milot A, *et al*. (2003). Pharmacist intervention program for control of hypertension. *Ann Pharmacother*, 37(9), 1186-1193.
5. Roughead EE, Semple SJ, Vitry AI, *et al*. (2005). Pharmaceutical care services: A systematic review of published studies, 1990 to 2003, examining effectiveness in improving patient outcomes. *Int J Pharm Pract*. 13, 53-70.
6. Erickson SR, Slaughter R, Halapy H, *et al*. (1997). Pharmacists' ability to influence outcomes of hypertension therapy. *Pharmacotherapy*, 17(1), 140-147.
7. Zillich AJ, Sutherland JM, Kumbera PA, Carter BL, *et al*. (2005). Hypertension outcomes through blood pressure monitoring and evaluation by pharmacists (HOME study). *J Gen Intern Med*, 20(12), 1091-1096.
8. Lee JK, Grace KA, Taylor AJ, *et al*. (2006). Effect of a pharmacy care program on medication adherence and persistence, blood pressure, and low-density lipoprotein cholesterol: A randomized controlled trial. *JAMA*, 296(21), 2563-2571.
9. Lau E, Kaczorowski J, Karwalajtys T, Dolovich L, Levine M, Chambers L. (2006). Blood pressure awareness and self-monitoring practices among primary care elderly patients. *Canadian Pharmacists Journal*, 139(6), 34-41.
10. Carter B, Helling D. (2000). Ambulatory care pharmacy services: Has the agenda changed? *Ann Pharmacother*, 34(6), 772-787.
11. Carter BL, Barnette DJ, Chrischilles E, Mazzotti GJ, Asali ZJ, *et al*. (1997). Evaluation of hypertensive patients after care provided by community pharmacists in a rural setting. *Pharmacotherapy*. 17(6), 1274-1285.
12. Tsuyuki RT, Semchuk W, Poirier L, Killeen RM, McAlister FA, Campbell N, Drouin D, Lewanczuk RZ, *et al*. (2006). Canadian Hypertension Education Program Guidelines for the management of hypertension by pharmacists. *Canadian Pharmacists Journal*, 139(3 suppl.1), S11-S13.
13. Kjome RLS, Granas AG, Nerhus K, Sandberg S, *et al*. (2010). Quality assessment of patients' self- monitoring of blood glucose in community pharmacies. *Pharm Pract (Granada)*, 8(1), 62-69.
14. Kicklighter CE, Nelson KM, Humphries TL, Delate T, *et al*. (2006). An evaluation of a clinical pharmacy- directed intervention on blood pressure control. *Pharm Pract (Granada)*, 4(3), 110-116.
15. Franic D, Pathak DS, Mott D, *et al*. (1999). Pharmaceutical care and health outcomes in community settings: Matched pair analysis of perceptions of hypertensive patients versus pharmacists. *Pharm Pract Manag Q*,19(2), 1-17.

Cite this article:
Ujwala S*, Neelam Sreeja, Krupalini Vadapally, Meruga Prashanthi, Jarpala Rambabu. (2023). Pharmacies' Monitoring Practices and Patients' Knowledge of Blood Pressure. *Acta Biomedica Scientia*, 10(1), 09-13.