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E-mail :
editor.ijpast@gmail.com
editor@ijpast.in

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Instead of taking a single reading, you may take a series of blood pressure readings every 15 minutes.

P.Chandrashekar, K.Anand kumar, E. Samantha, Korada Ramya

Abstract

An alternative to ambulatory blood pressure (BP) measurement that is not feasible to adopt is the thirty-minute office blood pressure (OBP-30). The objective of this research was to find out whether the chances of getting a blood pressure measurement below 140/90 would be the same if the reader was left alone for 15 minutes to take their readings. The study included 67 persons who reported having high blood pressure. Initial blood pressure (BP) was recorded at baseline and then every five minutes for fifteen minutes, with the average of the previous three measurements used to calculate the overall blood pressure (OBP-15). Normalized systolic blood pressure (4.2 points) and diastolic blood pressure (2.8 points) were lower than baseline. With OBP-15, the multivariate model increased the likelihood of BP control from 71.6% at baseline to 78.0% (p=0.011). Compared to whites, indigenous people, and people of color, as well as men and women, showed a statistically significant improvement in blood pressure management between the first measurement and the OBP-15. OBP-15 is a practical tool that, when compared to the first measurement, leads to lower blood pressure readings and an increased likelihood of blood pressure management. Hypertension, unmonitored blood pressure, serial blood pressure measurement, OBP-15

Introduction

The manual auscultatory approach has been largely superseded in clinical practice by automated office blood pressure (AOBP) monitors due to their ability to decrease human error. They are able to take an average of many blood pressure measurements after activation and may be left unattended.1 If an automated blood pressure monitor (ABPM) is not available, the American Heart Association (AHA) recommends using a validated automated oral blood pressure (AOBP) device that can record three or more measurements and average them; unattended AOBP is better than attended AOBP.1 In addition to producing lower BP values than AOBP, the thirty-minute office blood pressure measurement (OBP-30), a variant of AOBP, has also shown favorable comparisons to daytime ABPM4.5- 7 The OBP-30 procedure involves having the patient sit alone in a medical examination room for 30 minutes while a series of seven automated blood pressure readings are taken,

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one every five minutes. Obtaining the final "OBP-30 reading" requires averaging the last five or six outcomes. Compared to office blood pressure, one research found that OBP-30 reduced systolic blood pressure (SBP) by an average of -22.8 mmHg and diastolic blood pressure (DBP) by an average of -11.6 mmHg.6 Over the course of two visits, a second research found that systolic blood pressure (SBP) decreased by 7.6 and diastolic blood pressure (DBP) decreased by 2.5 and 1.2 mmHg, respectively.5 An additional trial indicated that when compared to normal AOBP, OBP-30 enhanced the adjusted likelihood of having a blood pressure reading below 140/90. Using OBP-30, the research also discovered that Black patients, as comparison to white patients, and female patients were more likely to achieve a blood pressure target of less than 140/90.7

Because it requires patients to sit for 30 minutes while their blood pressure is measured serially, OBP-30 may be challenging to execute in an outpatient practice, even if it is simpler to integrate into a clinical environment than 24-hour ABPM. Incorporating it frequently into a clinical context would be simpler if it could provide reliable results equivalent to OBP-30 in less time, say, 15 minutes. The researchers in this study set out to determine whether taking a blood pressure reading without someone else present for 15 minutes (OBP-15) would improve the chances of reaching a target blood pressure reading below 140/90 mmHg ("<140/90") compared to the first reading. Based on earlier OBP-30 studies showing a decrease in blood pressure during the first fifteen minutes followed by a plateau, the duration of fifteen minutes was selected.7

Methods

Population

Attended by researchers from the University of Minnesota's "Driven to Discover" program—a research facility—subjects were recruited at the Minnesota State Fair on August 28 and 29, 2021. Adults (not including pregnant women) who were 18 years or older and who had a doctor's diagnosis of high blood pressure were eligible to participate. Age, sex, race/ethnicity, number of blood pressure drugs currently used, presence of chronic renal illness, total number of hours spent at the fair, and number of alcoholic drinks consumed in the two hours before to the survey were among the demographic details gathered. All subjects were removed from the study if they were clearly drunk and unable to provide their informed consent.

Research Protocol

Research workers obtained subjects' permission before having them sit in a backed chair with armrests, fill out a questionnaire, and begin the procedure. They might choose which arm to have an automatic blood pressure cuff attached to. During the research, participants were asked to remain calm, place their feet flat on the floor, and rest their arms on the armrest of their chair. They were also asked to refrain from consuming any caffeinated drinks. For fifteen minutes, the automated blood pressure cuff monitored blood pressure at baseline and every five minutes. The OBP-15 value was derived from an average of the latest three of four blood pressure readings. The participants received a drawstring bag as compensation and were informed of the results. A Welch-Allyn Connex® Spot Monitor, which has been validated, was used to assess blood pressure. The database system used for all data storage is Research Electronic Data Capture (REDCap), which is consistent with the Health Insurance Portability and Accountability Act and offers a safe, centralized, web-based environment.8 Approval from the University of Minnesota's Institutional Review Board was obtained for this project.

Data Analysis by Statistic

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In the OBP-15 measurement, blood pressure management was characterized as an average of the past three blood pressure readings that were less than 140/90. According to state-based quality metrics and guidelines from the American Academy of Family Physicians, a blood pressure target of less than 140/90 was selected. The authors do not pretend to know which patients would benefit most from this specific objective. After accounting for age, sex, race, number of blood pressure medications, amount of alcohol taken in the two hours before to BP measurement, and total time spent at the fair on that particular day, the likelihood of having blood pressure control was modeled using a logistic regression. There was insufficient data to draw any conclusions about the impact of chronic renal disease due to its low prevalence (4 out of 67). Using a paired t-test, we compared the odds of getting blood pressure under control between the first measurement and the OBP-15 measurement.

Results

In all, 67 out of the initial 72 participants with full data sets were considered for the study. Four individuals were omitted because the testing technique was too complicated, and one was removed because their drunkenness was plain to see. The youngest participant was 34 years old, while the oldest was 74 years old, making up 58% of the total. Participation was somewhat higher among men (54% vs. 46%). White people made up 87% of the research population, whereas Black people were not included in any way. Among those who identified as "Other Indigenous or Person of Color (IPOC)," Asians emerged as the clear frontrunners. At least one blood pressure medication was used by two-thirds of the participants, according to Table 1. The majority of the subjects (71.6% on the first measurement and 80.6% on the OBP-15 reading) had well-controlled blood pressure (BP). The mean diastolic blood pressure reading dropped 2.8 points from 82.5 mmHg to 79.7 mmHg, and the mean systolic blood pressure reading dropped 4.2 points from 128.5 mmHg to 124.3 mmHg between the first and OBP-15 readings. With OBP-15, the overall likelihood of blood pressure management was 78.0% (p=0.011), up from 71.6% with the original assessment using the multivariate model.

From the first to the OBP-15 assessment, two groups shown considerable improvement in blood pressure regulation. While white participants' blood pressure control increased somewhat from 74.8% to 77.5% (p=0.114), IPOC individuals' control increased significantly from 66.5% to 80.2% (p<0.001). Also, men's blood pressure control improved significantly, going up a percentage point from 58.5% to 66.1% (p<0.001), whereas women's control went up a non-significant 88.3% to 89.8% (p=0.083). Unadjusted blood pressure control trends by gender and race over time are shown in Figure 1. From the first two OBP-15 measures, all demographic groups showed comparable trends of better or stable BP control; however, there was a little variation in the third and last OBP-15 measurement. The upward trend persisted among white and female participants, while there was a small return to lower rates of blood pressure management among IPOC and male individuals.

Discussion

Although the drop in BP was less than in studies on OBP30, it did occur over the course of the 15-minute time frame. The American Heart Association still suggests OBP-15 as a potential alternative for serial blood pressure monitoring. The findings of the OBP-15 might be used by community pharmacists and ambulatory care pharmacists to control blood pressure.

In this research, one important conclusion was that men shown a higher improvement in reaching a blood pressure (BP) <140/90 compared to female participants. Previous

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study conducted by this team stands in stark contrast to this.7 One possible explanation might be that, contrary to what has been suggested in the literature, the white coat effect does not exist in non-clinic settings with female individuals.11 The study seems to back up the research team's earlier finding of the advantages of unattended AOBP in an IPOC population, even if the number of IPOC participants included was minimal.6 Due to the paucity of Black participants and the limited number of non-white persons in this research, caution should be used when applying this evaluation generally. Notably, several groups showed a little rise in BP at the last measurement, which is an important finding from the research. The original OBP-30 study (unpublished findings) also discovered a similar problem, which was supposed to be addressed with a shorter time period. From anecdotal evidence, it seemed that participants were eager for the research to conclude, which might have led to a small rise in blood pressure. Another possibility is that individuals may experience a rise in blood pressure (BP) towards the conclusion of the research because they are looking forward to the end of the measurement period, regardless of the time frame chosen. To find out what causes this behavior specifically, further controlled-environment study is required.

Several caveats should be noted about this investigation. The lack of a clinical context is the main drawback of this research, since it makes it difficult to compare the results to blood pressure readings taken in a clinic. The fact that the majority of individuals initially had a target blood pressure (BP) of less than 140/90 demonstrates this. Patients may feel more at ease and less likely to get white coat hypertension at a state fair setting, thanks to the enjoyable atmosphere of the event. Furthermore, it is plausible that those who were more concerned about their health choose to take part in the study due to the location, which was a facility exclusively used for research. Patients without hypertension may have also been included in this research. In order to include respondents who may not have a hypertension diagnosis, the phrase "been told by a physician that they have high blood pressure" was used. Roughly one-third of the individuals were not using a blood pressure medication, which means that they could be living with untreated hypertension or had never been diagnosed with the condition. Results identical to those stated here were, however, achieved by a sub-analysis of individuals who were on one or more drugs. Also, contrary to what the American Heart Association recommends, a 5-minute rest period was not taken before the first serial blood pressure measurement was taken.1 Lastly, an additional restriction is that a general blood pressure target of less than 140/90 was used, which could not have mirrored each subject's specific target.

Conclusion

Even though there were some significant differences between OBP-30 and OBP-15, it's possible that these were a result of the fact that the former was administered in a non-clinical environment. In individuals with IPOC, unattended AOBP is still the gold standard for diagnosing hypertension. A little rise in blood pressure towards the conclusion of the trial may suggest that fifteen minutes is still too lengthy for unattended blood pressure readings, as seen in this study. Averaging the latest two or three values across six minutes after five minutes of rest may be the optimal way to acquire AOBP measures in a hypertensive patient, according to some research. The ideal duration and frequency of unattended AOBPs need more investigation.

References

1. Muntner P, Shimbo D, Carey RM, et al. Measurement of Blood Pressure in Humans: A Scientific Statement From the American Heart

ISSN 2229-6107
www.ijpast.in
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Association. Hypertension. 2019;73(5):e35-e66. doi:10.1161/HYP.0000000000000087.

2. Whelton PK, Carey RM, Aronow WS, et al. ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2018 Oct 23;138(17):e484-e594. doi: 10.1161/CIR.0000000000000596.

3. Smolensky MH, Ayala DE, Hermida RC. Ambulatory Blood Pressure Monitoring (ABPM) as THE reference standard to confirm diagnosis of hypertension in adults: Recommendation of the 2015 U.S. Preventive Services Task Force (USPSTF). Chronobiol Int. 2015;32(9):1320-2. doi: 10.3109/07420528.2015.1082106.

4. van der Wel MC, Buunk IE, van Weel C, Thien TA, Bakx JC. A novel approach to office blood pressure measurement: 30-minute office blood pressure vs Daytime ambulatory blood pressure. Ann Fam Med. 2011;9(2):128-35. doi: 10.1370/afm.1211.

5. Scherpbier-de Haan N, van der Wel M, Schoenmakers G, et al. Thirty-minute compared to standardised office blood pressure measurement in general practice. Br J Gen Pract. 2011;61(590):e590-7. doi: 10.3399/bjgp11X593875.

6. Bos MJ, Buis S. Thirty-minute office blood pressure monitoring in primary care. Ann Fam Med. 2017;15(2):120-3. doi: 10.1370/afm.2041.

7. Philbrick AM, Mahoney MT, Harris IM, Carlin CS, Fallert C. Evaluation of 30-Minute Office Blood Pressure in a Diverse Urban Population. Am J Hypertens. 2021;34(12):1284-90. Doi: 10.1093/ajh/hpab132

8. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap) - a metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform. 2009;42(2):377-81. doi: 10.1016/j.jbi.2008.08.010

9. LeFevre M. ACC/AHA hypertension guideline: what is new? What do we do? Am Fam Physician. 2018;97(6):372-3.

10. Coles S, Fisher L, Lin KW, Lyon CC, Vosooney AA, Bird MD. Blood pressure targets in adults with hypertension: a clinical practice guideline from the AAFP. Am Fam Phyisican. 2022;106(6):Online.

11. Streitel KL, Graham JE, Pickering TG, Gerin W. Explaining gender differences in the white coat effect. Blood Press Monit. 2011 Feb;16(1):1-6. doi: 10.1097/MBP.0b013e32833f56c2.