Aims of Study

In this study, we tried to investigate the characteristics and the associated factors of BPV using real-world data acquired from mobile-based blood pressure monitoring device throughout the world. Furthermore, we aimed to provide reference values of BPV according to blood pressure values and NMB.

Methods & Participants

Participants

From the data set of active user of Withings' wireless blood pressure monitor, we included a total of 56,365 participants from US, France, Germany, UK, and other countries who have ≥ 20 blood pressure measurements with the earliest and latest measurement set in the volume of data acquisition, thus it is expected that the mobile data set should be reproducible and not a random phenomenon (Parati et al. Nat Rev Cardiol 2013).

Real-world data set using mobile device has advantage over traditional data set in the volume of data acquisition, thus it is possible to collect multiple data without intervening the usual activity of daily life. In addition, any changes associated with environmental, emotional, or seasonal variation can be detected using mobile device.

Background


BPV including short-term (over 24 hour), mid-term (day-to-day) and long-term (year-to-year) variability is reproducible and is not a random phenomenon (Parati et al. Nat Rev Cardiol 2013).

Previous data of BPV were acquired from clinic based or community based cohort study. Thus, there was limitation that those data were not fully representative of the real world characteristic of BPV. In addition, due to the limitation of study population and geographic location, more general data set including real-world representative data of blood pressure measurement are required to investigate the relationship between BPV and its clinical outcome.

We included 56,365 participants from US, France, Germany, UK, and other countries who have ≥ 20 BPV measurements with the earliest and latest separated by at least 1 month. We computed standard deviation (SD), coefficient of variation (CV), maximum BP and maximum minus minimum BP difference (MMD) as intra-individual BP index.

Results

We computed standard deviation (SD), coefficient of variation (CV), maximum BP and maximum minus minimum BP difference (MMD) as intra-individual BP index. We report means (SD) or medians with interquartile ranges for continuous variables and counts with percentages for categorical variables.

We showed the characteristics of BPV and its association with age, sex, and time and seasonal variation. We could also establish reference values for BPV index from global real world home BP dataset.

Conclusion

We showed the characteristics of BPV and its association with age, sex, and time and seasonal variation. We could also establish reference values for BPV from a global real world home BP dataset that should help with future efforts to identify people who have greater BPV and potentially evaluate therapies that influence it beyond just BP alone, thus further diminishing risks of cardiovascular events or premature mortality.

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