STUDY OF A LARGE COHORT OF CONNECTED DEVICES USERS TO ASSESS THE ASSOCIATION BETWEEN WALKING AND BLOOD PRESSURE

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OBJECTIVE: Increase or decrease of blood pressure has recently been linked to active transportation, and represents a convenient prevention tool. However, there is a need of objective and longitudinal data to deliver tailored recommendations. The aim of the present study is to assess this link on a large population using data from connected pedometers and connected blood pressure monitors.

DESIGN AND METHODS: Cross-sectional and longitudinal multivariate linear regressions were performed on data from a pool of 19,000 adult owners of Withings’ Pulse activity trackers and Wireless Blood Pressure Monitors. These devices measure number of steps per day and systolic Blood Pressure (SBP) respectively. Analyses were adjusted according to age, sex and Body Mass Index (BMI) collected through Withings’ HealthMate mobile application. Covariates also included the frequency of measurement of SBP and the wear time of activity trackers.

RESULTS: The study population is characterized by a mean±SD age of 50.2±11.5 years, a BMI of 28.9±5.2 kg/m², 28.3±26.6 SBP measurement per month and 23.7±8.4 days of activity tracker wear time. Multivariate cross-sectional analyses showed an inverse association between SBP and number of steps per day in both sexes (p < 10⁻¹⁵ in men and p < 10⁻³ in women), and between SBP and number of days in the month in which the tracker was worn (p < 10⁻¹⁵ in both sex). In longitudinal bivariate analyses, a one-month increase of 1,000 steps a day was associated with a decrease of 0.13 mmHg of SBP in men (p < 10⁻¹⁵) and 0.21 mmHg in women (p < 10⁻³). These results remain significant in fully adjusted models for men (p < 10⁻¹⁵) but not for women (p = 0.07).

CONCLUSION: There is an increasing number of connected devices in general population, and Public Health should not miss the opportunities to use the large amount of detailed data coming from these devices. In the Withings’ population, daily walking was associated with a decrease of SBP in both sexes according to cross-sectional and longitudinal analyses. Our results show that physical activity improves physical health and helps lower blood pressure. These results provide new insights for additional tailored non-pharmacological measures using connected devices.