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E-influence of the embracement versus blended learning/E-learning to improve the anxiety level, white coat effect and blood pressure control in hypertensive patient: A randomized controlled trial

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Introduction: Information and communication technologies (ICTs) may be alternatives for the control of hypertension. Few studies show the benefits of educational technologies as support for the control of chronic diseases. The approach known as 'embracement' adopts relational strategies or soft technologies which promote bonding and may impact therapy adherence and quality of life in hypertensive patients.

Objectives: The main objective of this study was to assess the impact of educational technology and the embracement approach on therapy adherence, quality of life, and the white coat effect in hypertensive outpatients followed in a specialized clinic. This approach may be associated or not with the use of educational technology in a virtual learning environment (VLE) for distance learning (DL) and educational technologies in blended learning (BL).

Methods: This was a prospective randomized clinical study registered in Clinical Trials.gov with identification number NCT03324386 conducted with the following four groups of hypertensive patients: Group A (n=16 [four women]; mean age, 55.3±13 years; mean BMI, 32.3±6 kg/m²; individual orientation as required by the embracement strategy at seven nursing visits at 20-day intervals, for four months); Group VLE (n=13 [five women]; mean age, 51.8±7 years; mean BMI, 29.4±5 kg/m²; adoption of a technological education strategy for DL; seven nursing visits at 20-day intervals, for four months); Group BL (n=14 [eight women]; mean age, 53±9 years; mean BMI, 29.6±4 kg/m²; adoption of a technological education strategy for BL; seven nursing visits at 20-day intervals, for four months); Control Group (n=13 [seven women]; mean age, 57.6±9 years; mean BMI, 29.9±6 kg/m²; one nursing visit at baseline and one after 120 days.) At baseline and after 120 days, the following tools were applied: The Spielberger State-Trait Anxiety Inventory (STAI), the Morisky test, the World Health Organization instrument to evaluate quality of life (WHOQOL-Bref), and ambulatory blood pressure monitoring (ABPM). The VLE group had remote access to the 'Hypertension E-Care' site (six specific educational modules). The BL group had remote access to the 'Hypertension E-Care' site through a tablet with Wi-Fi system and had the presence of nurses providing better interaction with the contents.

Results: At baseline, there were no differences in clinical blood pressure, ABPM, WHOQOL and socio-demographic variables among the four groups. At the final assessment, a significant difference was found between the ABPM and daytime diastolic blood pressure (DBP) means in group A (81.93±11) when compared to group VLE (82.31±9), group BL (95.92±15), and the control group (87.42±16) (ANOVA p=0.029); additionally, an important reduction in daytime blood pressure (DBP) load was observed in group A (36.1±7) as against group VLE (37.78±8), group BL (70.9±8), and the control group (50.1±11), (ANOVA p=0.025); also, an important reduction in anxiety level (STAI) was detected in group VLE (28.0±17), (ANOVA p=0.016) in comparison with group BL (43.1±13), group A (32.4±6) and the control group (36.7±9); the white coat effect did not difference the four groups. In relation to therapy adherence (Morisky test), the VLE group showed significant improvement at the end of the study (3.69±0.6), (ANOVA p=0.035), which was not the case with the other three groups (group A 2.88±1; group BL 2.36±1.2 and control group 2, 62±1.2).

Conclusion: The results indicate that the association of the several strategies may result in considerable benefits for hypertensive patients.