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Is there an app for that? Patient and provider preferences for promoting hydration with mobile phone apps: a strategy for increasing urine volume and decreasing stone risk

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INTRODUCTION AND OBJECTIVES: A role for mobile phone technology in healthcare is proposed. Mobile phone apps (MPAs) promoting hydration are available, but little is known about their stone-specific utility and of patient-desired features. We identified MPA features desirable for stone prevention purposes and determined patient preferences and enthusiasm for MPA technology.

METHODS: Stone clinic providers identified a reference to "fluids" (vs. only "water") and ability to individualize goals as required MPA stone prevention elements. A systematic search of the iOS App Store was then conducted between 5/2018-9/2018 using the words "fluid" and "hydration" as criteria. MPAs identified were assessed for the presence of the required stone prevention elements and then independently evaluated for characteristics related to user interface, cost, and functionality. Using an investigator-designed survey, a convenience sample of patients then rated these characteristics and overall enthusiasm for using a MPA to increase fluid intake and urine output.

RESULTS: Of 115 MPAs, 15% (n=17) were self-described as having utility for stone prevention; but only 2.6% (n=3) had the 2 elements deemed essential by providers. Surveys completed by 42 patients (18 female; 50±15/median 57y; 72% had <2.5 L urine in a recent 24-hour collection) revealed 3 important MPA functions (ranked 4-5 on a 5-point Likert scale): free download (73%), ability to set alerts (61%), and a diary function (46%), all of which were available on the 3 MPAs identified earlier. MPA features of less import to patients were: reward system (29%); smart watch adaptability (18%), pleasing graphics (17%), and a social aspect (10%). Total survey score, a surrogate measure for overall enthusiasm for MPA technology (lower score=less enthusiasm), was strongly inversely correlated with age (R= -0.52). Inverse correlations with age for a social aspect feature were also noted: strong for men (R= -0.66) and moderate for women (R= -0.53).

CONCLUSIONS: Patients identified free download, an alert system, and diary function as most important features of a hydration MPA. Providers identified reference to all fluids (vs. "water" only) and customizable intake goal as important. Few available MPAs met ideal elements for stone-specific hydration efforts. Despite the growing popularity of MPA technology, lower levels of enthusiasm with increasing age suggest that MPAs may not be suitable for older patients and thus do not obviate the need for other motivational methods that stimulate behavioral change.

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