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Drivers of mobile patient portal app use: Insights for implementation and value-based decision-making

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INTRODUCTION

- Patient portals are web- or mobile-based systems linked to an individual's electronic health record (EHR), and they enable users to access their personal health information and communicate electronically with their healthcare providers.
- Despite these positive impacts, overall uptake of patient portals remains limited especially due to barriers including low digital literacy and usability issues.
- The purpose of this study was to examine the factors influencing mobile portal app use by employing an extended framework based on the Unified Theory of Acceptance and Use of Technology (UTAUT). Specifically, we made the following hypotheses:

H1: Subjective norm (SN) would be positively associated with perceived usefulness (PU), which would subsequently increase intention to use the mobile portal app.
H2: Perceived ease of use (PEOU) would be positively associated with intention to use.
H3: Outcome expectancy (OE) would be positively associated with intention to use.
H4: Perceived privacy risk (PPR) would be negatively associated with intention to use.
H5: Perceived behavioral control (PBC) would moderate the association between intention to use and actual usage behavior.

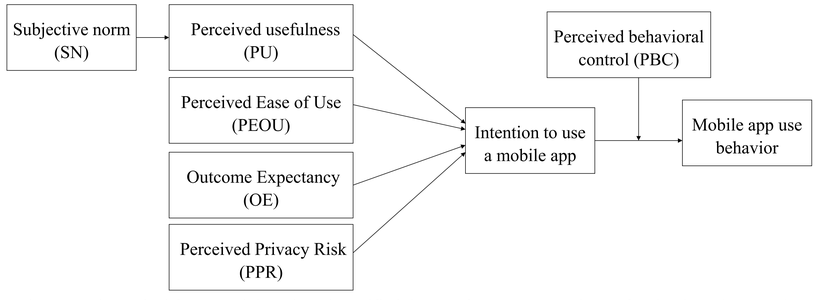

Figure 1. Theoretical framework based on the unified theory of acceptance and use of technology (UTAUT)

METHODS

- A cross-sectional online survey was conducted using an online platform to recruit U.S. adults. A total of 386 valid responses were included in the analysis.

METHODS (cont'd)

- Measures were adapted from previous studies to ensure validity. All scales demonstrated high reliability, with Cronbach's alpha values ranging from 0.81 to 0.89 (see Table 1).
- Hierarchical multivariate linear regressions were conducted while controlling for multiple covariates.

RESULTS

- The average age of the respondents was 57 years (SD = 16), and 53.6% were female. The majority of participants were White (81.87%), followed by African American (9.3%). Regarding marital and employment status, 59.1% were married and 44.3% were employed. Nearly 70% of the sample had at least some college education. In terms of self-reported health, 56.2% of respondents rated their health positively, while 43.8% described it as poor or fair.
- Table 1 presents descriptive statistics for the study scales. Mean subjective norm was slightly above neutral (3.17), indicating modest social pressure to use the app. Perceived usefulness, perceived ease of use, and outcome expectancy were high (3.92–4.31), reflecting (strong) agreement that the app was useful, easy to use, and helpful for managing their health. Perceived privacy risk had a mean of 3.42, suggesting relatively low concern. Intention to use was high (3.95). Perceived behavioral control was also high (4.31), indicating confidence in using the app. Usage was frequent (5.28/7; between "often" and "very often").

Table 1. Descriptive statistic for key constructs

Constructs	Number of items	Mean ± SD	Reliability
Subjective norm[a]	3	3.17 ± 1.17	0.81
Perceived usefulness[a]	3	4.31 ± 0.88	0.83
Perceived ease of use[a]	3	3.92 ± 0.74	0.81
Outcome expectancy[a]	3	4.03 ± 0.95	0.89
Perceived privacy risk[a]	3	3.42 ± 0.96	0.87
Behavioral intention[b]	1	3.95 ± 1.15	n/a
Perceived behavioral control[a]	2	4.31 ± 0.80	0.82
Usage behavior[c]	1	5.28 ± 1.12	n/a

[a] 5-point scale: 1 = strongly disagree, 2 = disagree , 3 = neutral, 4 = agree, 5 = strongly agree
[b] 5-point scale: 1 = very unlikely, 2 = unlikely , 3 = neutral, 4 = likely, 5 = very likely
[c] 7-point scale: 1 = never, 2 = rarely , … , 6 = very often, 7 = always

RESULTS (cont'd)

- **Results of hypothesis testing:**
  After controlling for covariates, subjective norm was positively related to perceived usefulness (β = 0.22, p < .0001), which in turn was positively related to intention to use the mobile portal app (β=0.40, p < .0001), supporting **H1**.

  Perceived ease of use was positively associated with intention to use (β = 0.85, p < .0001), supporting **H2**.

  Outcome expectancy was also positively associated with intention to use (β = 0.53, p < .0001), supporting **H3**.

  Perceived privacy risk was negatively associated with intention to use (β = 0.41, p < .0001), supporting **H4**.

  Finally, perceived behavioral control moderated the relationship between intention to use and actual usage behavior, supporting **H5**.

DISCUSSION

- Extending the UTAUT framework, this study identified key factors and underlying mechanisms that explain why and how individuals use a mobile portal app.
- The findings revealed a significant sequential pathway: individuals who perceived stronger expectations from others to use the app were more likely to view the app as useful, which subsequently increased their intention to use it. In addition, individuals' intention to use the app was strengthened when they perceived the app as easy to use, believed it would make managing their health more efficient and convenient, and felt that their personal information would remain private and secure. Notably, their intentions were more strongly associated with actual use when individuals perceived greater control over using the app's features.

CONCLUSIONS

- Findings indicate that mobile portal app use is shaped not by s single factor, but through the integrated influence of social expectations, perceives usability, anticipated benefits, privacy considerations, and individuals' sense of control over app use.
- The integrated perspective provides a strong foundation for designing targeted interventions, improving app features, and developing implementation strategies that promote meaningful and sustained use.