Impact of Demographic and Clinical Factors on Remote Patient Monitoring Acceptance

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Introduction

- Digital health interventions, including remote patient monitoring (RPM) have become increasingly popular for continuing patient-provider communication and symptom management after the COVID-19 pandemic[1].
- Poor symptom management is associated with increased healthcare spending, and worse quality of life, clinical outcomes, and overall survival[2]. For cancer patients, RPM has potential to enable self-care, caregiver engagement and early detection of adverse symptoms related to treatment.
- However, there are limited data on the efficacy of RPM that combines patient reported outcomes (PROs) and biometric data to support cancer patients[3,4] during challenging treatment periods, particularly in medically underserved populations.
- This study focuses on underserved patients at Lyndon B. Johnson hospital in the Harris Health system and is evaluating whether RPM improves treatment outcomes for these patients. This is the first study to evaluate RPM in a safety-net, oncology care setting.

Project Aim

To evaluate differences in clinical and demographic characteristics between those who enrolled or refused enrollment in the study, to date.

Methods and Recruitment

- A research nurse/digital health navigator (DHN) identified eligible high-risk patients that met clinically published criteria (Table 2).
- Eligible patients were approached at their treatment planning clinic visit by the DHN and were invited to participate. Consented patients were randomized to either standard care (SC) or RPM plus SC. Study duration was 12 weeks. All who enrolled completed patient-reported outcome surveys at specific time points (Table 1).
- Patients randomized to RPM + SC received a kit containing a blood pressure cuff, pulse oximeter, a weight scale, thermometer, and tablet computer with an internet hotspot. Patients were asked to record one set of biometric readings per weekday with each device, as well as complete one symptom assessment each weekday with the tablet.

Assessment scale	Baseline	week 4	week 8	EOS
Functional Assessment of Cancer Therapy (FACT)	x	x	x	x
MD Anderson Symptom Inventory (MDASI) (GI/Thoracic)	x	x	x	x
EuroQol-5D for health-related quality of life	x	x	x	x
Patient Activation Measure	x			x

Table 1: Timeline of assessments in study (EOS = end of study)

Results

	High Risk Criteria	Enrolled (n=54)	Refused (n=18)
1	Baseline co-morbidities that increase risk of chemotherapy adverse events	36 (67%)	12 (67%)
2	Provider-identified social barriers to care	3 (5.6%)	0 (0%)
3	Inability to tolerate oral intake	0 (0%)	0 (0%)
4	High tumor burden	42 (78%)	16 (89%)
5	High level of psychosocial distress or multiple symptomatic complaints	1 (1.9%)	0 (0%)
6	Recent (<6 months) ER visits or hospitalizations	15 (28%)	4 (22.2%)
7	Recent dose reduction with initial treatment	1 (1.9%)	1 (5.6%)
8	Combined modality therapy	1 (1.9%)	3 (16.7%)

Table 2: High risk criteria for screening patients

Demographic Categories	Enrolled: n=54, n(%)	Refused: n=18, n(%)
Age in years – mean (SD, range)	53.8 (9.9, 31-72)	56.2 (9.6, 34-73)
Gender – male; female	20(37%);34(63%)	9(50%);9(50%)
Employment status – unemployed	45(83.3%)	15(83.3%)
employed	9(16.7%)	3(16.7%)
Uninsured	36(66.7%)	11(61.1%)
Marital status – single	20(37%)	6(33.3%)
widowed	7(13%)	1(5.6%)
divorced or separated	5(9.3%)	5(27.8%)
married or life partner	22(40.7%)	6(33.3%)
Cancer type – colon, rectal or colorectal	23(42.6%)	7(38.9%)
breast	21(38.9%)	5(27.8%)
pancreatic or gallbladder	3(5.6%)	1(5.6%)
prostate	2(3.7%)	0(0%)
lymphoma	2(3.7%)	1(5.6%)
lung	2(3.7%)	1(5.6%)
other gastrointestinal	1(1.8%)	3(16.7%)
Race/ethnicity – White (non-Hispanic)	9(16.7%)	6(33.3%)
Black or African American	6(11.1%)	2(11.1%)
Hispanic	37(68.5%)	10(55.6%)
Other or unknown	2(3.7%)	0(0%)
Primary language – English	19(33.2%)	10(55.6%)
Spanish	35(64.8%)	8(44.4%)

Table 3: Patient demographic data

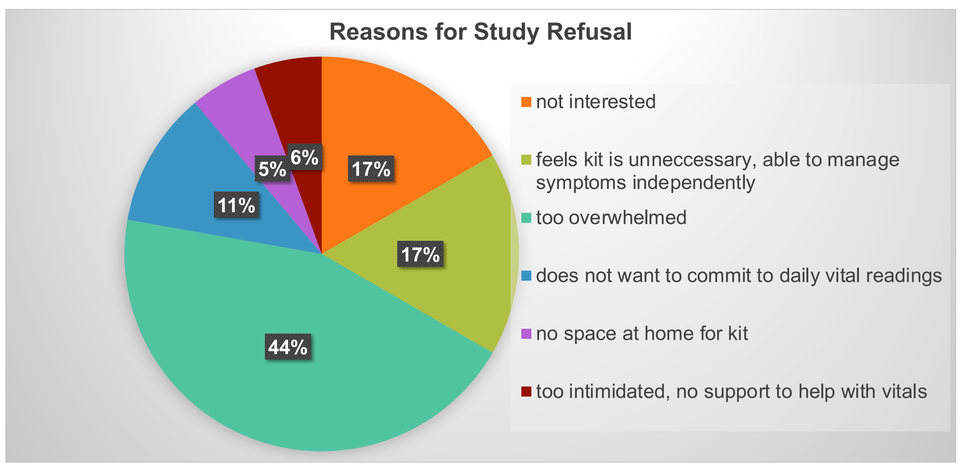

Figure 1: Patient-cited refusal reasons (n=18)

- Two patients passed away while enrolled on study.
- Two patients withdrew from the study: one patient felt unable to keep up with daily study tasks, and another patient could not learn how to use the kit and refused assistance from the DHN.

There are no statistically significant clinical or demographic differences between patients that consented vs refused participation.

The most common patient-cited refusal reason was "feeling too overwhelmed" with the demands of coping with cancer and/or treatment.

Conclusion and Future Work

- Based on these data, we modified our recruitment strategy and approached patients at their first infusion visit rather than at their treatment planning clinic visit. Patients may be particularly overwhelmed during their treatment planning visit and may be less inclined to consider study participation.
- Using implementation science to guide additional study modifications may help inform additional strategies for improving study recruitment and retention.

Responsible Conduct of Research

All patients are enrolled via an informed consent process, and the study is of minimal risk to patients. The Vivify platform used in the study is HIPAA-compliant, FDA-registered as a Class 1 Medical Device Data System.

References

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