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Use of Patient Portals among Diabetes Educators and Registered Nurses in Practice - 🔓

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ABSTRACT

Patient Portals (PPs) have significant potential to empower patients with diabetes, as they offer helpful tools to manage health conditions. Even though prior studies explored the use of PPs by healthcare providers, such as physicians, little is known about its use by nurses or diabetes educators in practice. This preliminary study examined the current status of PP use by nurses and diabetes educators using a survey. Participants (N = 58; mean age, 48 years) were attendees of a regional diabetes conference. Most had sufficient knowledge about PPs (M = 4.59 ± .68; 0-5); however, their confidence in using PPs for their own care (M = 31.5 ± 6.9; 0-40) and perceived usefulness of PPs for their practices (M = 15.74 ± 3.73; 3-21) were low. Further research is needed to identify the current trends in using PPs among different health professionals and to explore opportunities to optimize PP use for patients.

Keywords: Patient portal; Self-management; Patient engagement; Diabetes

INTRODUCTION

Diabetes is a major chronic illness affecting 29.1 million Americans [1,2]. Another 86 million have pre-diabetes. The condition requires continuous care for glucose control and preventive measures to reduce complications. Ongoing self-management is important for these individuals to maintain healthy lives in the community [3,4]. Patient self-management support is a standard of care in diabetes education [5,6] and prior findings have demonstrated its effectiveness on diabetes outcomes [7-9]. Recently, many e Health and m Health programs have been used to promote self-management in patients with diabetes [10-13]. Most of these interventions have been implemented in addition to the usual care with no payer reimbursement. Thus, sustainability of the programs has been a major concern [7,14]. The recent Meaningful Use (MU) incentive payment program by the Centers for Medicare & Medicaid (CMS) presents an innovative solution by supporting the use of Patient Portals (PPs) [15].

PPs are secure websites that include helpful health tools. Through PPs patients can view their Electronic Health Records (EHRs), send their health care providers e Messages, and request medication refills and appointments [16,17]. These functions can especially benefit patients with chronic illnesses by providing a health information infrastructure to support self-management [18-20]. For example, the information from EHRs can help patients make health decisions, and eMessaging can empower patients to ask questions and offer their health information to providers [20-22] other functions, such as renewing medications and scheduling appointments, can help patients manage complex medication lists and appointments. Prior studies suggest positive effects of PPs on self-efficacy for managing health conditions and improving glucose control [18,19,23] other studies also report that the use of PPs could reduce office visits [24-26]. With the increasing prevalence of diabetes in the current fragmented care environment, PPs can be an excellent tool to manage diabetes conditions [5].

Despite the potential benefits and availability of PPs [15,18,27,28] Only a small portion of patients are actively using PPs. In addition, the current PP workflow in most ambulatory settings, where diabetes patients regularly follow up with their providers, is not optimized to help patients use PPs to their full potential. Often, clinicians perceive the PP as additional work added to their regular tasks [29-31] and patients receive only limited information about the PP via simple brochures without further training. In a qualitative study, Nazi [30] conducted in-depth interviews of 30 Veterans Administration health care professionals about their experiences with using a PP. Participants included health care providers, nurses, and pharmacists. In general, participants reported limited experience using a PP with patients and for their own health care. Another qualitative study (N = 12) that examined nurses' acceptance of PPs showed a high degree of acceptance [30]. Generally, the nurses perceived that the introduction of PPs was inevitable in current health care. Some nurses experienced an increased workload due to patients asking more non-urgent questions via the PP that otherwise would not have been asked.

There is also a significant lack of PP use by the clinicians who are not Eligible Professionals (EPs) for the MU incentive program. EPs are physicians, dentists, nurse practitioners, certified nurse-midwives, and physician assistants who provide services in federally qualified health centers [33]. Patients with chronic conditions need to follow up with interdisciplinary clinical professionals, and other types of clinicians can use PPs to empower patients to better manage their health. For example, Diabetes Educators (DEs) and Registered Nurses (RNs) spend a great deal of time educating diabetes patients about their illnesses and illness management. They also follow up with many of those patients for an extended period of time to ensure their adherence to treatment and help them improve self-management skills. PPs can be a helpful tool in this process. Using PPs, DEs and RNs can follow-up with their patients (e.g., via the e Message function) and engage patients in their care (e.g., view care plans, labs, medications). The purpose of this descriptive study was to assess the current status of PP use by DEs and RNs via survey. Participants were asked about their PP knowledge, confidence for using a PP for their own health, current use of a PP for their own health, and current use of a PP for their patients in their practice setting. In addition, their perceived usefulness of the PP for their clinical workflow was also assessed.

METHODS

Design, setting and sample

An anonymous volunteer survey was conducted using a convenience sample of participants who attended a regional diabetes educators' conference that was held in March 2015 in Baltimore, Maryland. The study was reviewed by the University of Maryland Institutional Review Board and approved as an exempt protocol.

Measures

The survey included selected demographic and work-related variables, such as age, gender, race, professional credentials, and job experience (years). Other descriptive variables included web experience (years), web usage (hours per week), PP knowledge, self-efficacy for PP use, perceived usefulness of PPs for practice, and current use of PPs.

Patient portal knowledge: Participants' patient portal knowledge was assessed using a 5-item questionnaire that was tested in our prior

Table 1: Modified Tools included in the Survey.

Patient Portal Knowledge

A patient portal is a secure website that gives patients access to their personal health information. A patient portal may be provided by: _____
  1) A hospital
  2) Your health care provider
  3) A health care plan (e.g., Kaiser Permanente)
  4) All of the above
  5) I don't know
What is health eMessaging? Please select one best answer. _____
  1) Any messages about health sent to you by various people.
  2) A secure way to communicate with your health care provider by email or via the web.
  3) Messages sent to you by your health care provider by regular mail.
  4) None of the above
  5) I don't know
Some patient portals allow you to do all the following EXCEPT: _____
  1) Request an appointment and prescription refills
  2) Send a secure email to your health care team
  3) Buy health insurance
  4) Review your lab results
  5) I don't know
Choose whether each of the following statements is True or False. Circle the selected answer.
E-prescribing requires that your health care provider and your pharmacy be linked electronically.
  1) True   2) False
The purpose of "Meaningful Use" is to: Use electronic health records to improve quality of care, reduce medical errors, and improve efficiency of care delivery.
  1) True   2) False

PP Self-Efficacy
How confident are you that you can use a patient portal?
How confident are you that you can review your health record online and use eMessages?
How confident are you that you will keep track of your health status using the patient portal?
How confident are you that you will share information in the patient portal with your other health care providers or family members if needed?
PP Usefulness for their practice
A patient portal can help patients manage their health better.
Using the patient portal helps manage my workflow in the clinic (hospital, etc.)
Using the patient portal helps me better communicate with my patients.
* PP. Patient Portal

study (see Table 1) [34]. The five items were selected from the original 8-item questionnaire, which was developed based on the content of the PP learning modules that were designed for laypersons and validated by experts [34]. The measure has been used in our prior studies, and the calculated α coefficients ranged from 0.54 to 0.61 [34,35].

Patient portal self-efficacy: Participants were asked how confident they were using a PP for their own health. The survey used a modified 4-item Self-Efficacy for Computer-Based PHR scale on a 0-10 scale [34,36] (see Table 1). The original PHR Self-Efficacy measure [36] included 9 items assessing self-efficacy for using a general PHR, paper-based PHR, and computer-based PHR on a 0-10 scale. Validity of the measure was assessed by factor analysis and criterion validity. The calculated α coefficient in this study was 0.71.

Perceived usefulness of patient portals for practice: Three usefulness items of the Perceived Health Web Site Usability Questionnaire (PHWUQ) [37] were modified to assess the care providers' perceived usefulness of PPs (see Table 1). The items specifically assess the impact of PPs on patients' health management, clinic workflow, and communication between patients and clinicians. The original PHWUQ includes 12 items on a 7-point Liker scale. The PHWUQ assesses three usability dimensions: satisfaction, ease of use, and usefulness. Evidence of the validity was indicated by comparing the results measured by the PHWUQ with those from the usability experts' evaluations [37]. The calculated α coefficient in this study was 0.85.

Use of patient portals: Participants were asked about availability of a PP from their own healthcare providers and at their primary place of employment, as well as actual use of a PP for their own care and for their patients.

Procedures

Prior to the conference, the survey was approved by the conference planning group. During the conference, the chairperson briefly introduced the survey to the attendees. Research associates, who were not planning committee members, distributed surveys on the tables before the conference began and asked participants to drop off the surveys when completed. Research associates were present throughout the conference to answer questions and collect the surveys at the end of the conference.

Data analysis

Descriptive statistics (mean, range, frequency, percentage, etc.) were computed on demographic data, job-related characteristics, and other descriptive data. Exploratory data analysis was also performed on each variable to assess normality and to ensure that assumptions of the analysis model were adequately met. The majority of participants were either DEs (n = 26, 44.8%) or RNs (n = 24, 41.4%), which have distinct practice areas. Thus, the differences between the two groups in PP knowledge, self-efficacy for PP use, and perceived usefulness of PPs for their practice were assessed using an independent t-test with a two-tailed alpha coefficient of 0.05. The differences in PP use for

their patients were assessed using Chi-Square statistics. The data were analyzed using SPSS V21 [38].

RESULTS

Table 2 summarizes the demographic characteristics of all participants. A total of 112 participants attended the conference, and 58 (51.8%) submitted a completed survey. Most participants were female (n = 55, 98.2%), with a mean age of 47 ± 12.6 (range, 24-68). More than half of participants were white (n = 40, 71.4%), followed by Asian (n = 8, 14.3%). The majority of participants were either a DE (n = 26, 44.8%) or an RN (n = 24, 41.4%) followed by registered dieticians (n = 16, 27.6%). Seven respondents (2.1%) held other credentials, such as nurse practitioners, therapists, etc. Sixteen participants held more than one professional credential. On average, participants had practiced in their primary field for 9.7 ± 8.15 years. The primary workplace for the majority of participants (n = 55, 51%) was in a city, followed by suburban areas (n = 18, 21%) and rural areas (n = 12, 11%). For work settings, 44 participants (54%) were working in an outpatient setting, and 19 (17%) were working in an inpatient setting. Five (5%) participants were employed by pharmaceutical companies. Their mean years of Internet use were 16.12 ± 5.41. Their average hours of Internet use per week for work were 14.7 ± 12.11 and for personal use were 10.48 ± 9.81.

Table 3 describes overall mean scores for all participants, the DE group, and the RN group. Participants had sufficient fundamental knowledge about PPs (M = 4.59 ± .68; range, 0-5). Their mean confidence score for using a PP for own care was relatively low, with 31.5 ± 6.9(range, 0–40). Their perceived usefulness of a PP for their practice was also low, with a mean score of 15.7 ± 3.7 (range, 3-21). Approximately 69% (n = 38) of participants reported that a PP was available from their own health care providers, and a similar number of participants (n = 34; 63.0%) reported the availability of a PP in their

current workplace. For actual PP use, 57.1% (n = 32) of participants were using a PP for their own care; however, only 24.4% (n = 11) were using a PP for their patient care.

When the RN and DE groups were compared, there was a significant difference in PP use for patients—more DEs were using a PP for their patients than nurses (*n* = 9 vs. 1; *p* = 0.05). On the other hand, the RNs' perceived usefulness of the PP for the clinic workflow was significantly higher than DEs' (t = 2.611; *p* = 0.01).

DISCUSSION

Despite high levels of PP knowledge(M = 4.59 ± .68; range 0-5) and availability, clinicians' self-efficacy for using PPs for their own health and perceived usefulness of PPs for patient care were relatively low, which might have contributed to low PP usage. For example, based on a socio-ecological model, [39] self-efficacy is a precursor for actual behavior change (i.e., PP portal usage). The Technology Acceptance Model (TAM) well explains that perceived usefulness is an important factor for an actual system usage. [40,41]Within the usefulness dimension, participants perceived that PPs were more useful to patients than to clinicians (i.e., clinic workflow), as shown by higher item mean scores. These findings are consistent with prior findings. In a qualitative study conducted by Nazi, [30] health care professionals perceived PPs as a way to improve the communication between patients and clinicians; however, they also expressed concerns about increased workload. Other researchers reported similar perceptions; that PPs can benefit patients more than clinicians and other health practitioners [42]. This information is concerning because if clinicians perceive PPs as not helpful for their practice, they are likely to avoid using PPs for their patients. In our study, nurses reported a higher degree of perceived usefulness than DEs for the clinic workflow dimension. This outcome may be related to the current trend associated with the organizations' emphasis on meeting MU requirements [15] and the related MU training/ education provided to clinicians. In addition, many hospitals are implementing new EHR systems, and workflow has been highlighted as a vital component in this process [43,44]. Further efforts will need to be made by health care organizations to offer appropriate training to various interdisciplinary heath care team members about the benefits of PPs and to develop optimal workflow to include PPs in patient care.

Overall, participants' actual use of a PP for their own health and for their patients was lower than its availability. Specifically, in the RN group only one (6.7%) nurse reported using a PP for his or her patients as compared to nine (39.1%) DEs. Currently, PP use by clinicians mainly focuses on eligible professionals' use, specifically physicians or nurse practitioners [33]. There are, however, other healthcare professionals whose work is well aligned with the main goal of using a PP-engagement of patients in their own care [45]. For example, DEs can benefit from using a PP during patient education and follow-up. The PP can be an excellent tool to educate patients about the importance of checking their own lab values and medications, as well as communicating with their providers via e Messaging. Prior to the emergence of PPs, patients could communicate with their care providers by calling the provider's office, making a clinic appointment, or via private e-mail, if provided by their providers. E Messaging within the PP provides patients with a secure direct communication channel with their providers. These PP functions can empower patients to effectively manage their own health conditions [46] and help multi-disciplinary care providers develop a well-coordinated care team.

Table 2: Demographic Characteristics of Participants.		
Characteristic	**N (%)**	**Mean (SD)**
Gender Female Male	55 (98.2%) 1 (1.8%)	
Age (range, 24-68 years)	54	47.65 (12.55)
Race White Asian Black or African American More than one race American Indian / Alaska Naive	40 (71.4%) 8 (14.3%) 5 (8.9%) 2 (3.6%) 1 (1.8%)	
Ethnicity Not Hispanic or Latino Hispanic or Latino Hispanic and white	50 (96.2%) 1 (1.9%) 1 (1.9%)	
Current work position/credential* Diabetes educator Registered Nurse Registered Dietitian Others (nurse practitioners, therapists, etc.)	26 (44.8%) 24 (41.4%) 16 (27.6%) 7 (12.1%)	
Amount of time in primary position (range, 0.5-29 years)	56	9.72 (8.15)
Internet use (range, 7-30 yrs)	47	16.12 (5.41)
Internet use for work (range, 0.5-50 hrs./ wk)	55	14.75 (12.11)
Internet use for personal tasks (range, 0-40 hrs/wk)	52	10.48 (9.81)
* The total percentage is greater than 100% as16 participants reported holding more than one credential.		

Table3: Selected Descriptive Variables.

Variable		Total Sample (N = 58)		RN (n = 24)		DE (n = 26)		t-value	p
		n	M (SD)	n	M (SD)	n	M (SD)		
PP Knowledge (range, 0-5)		58	4.59 (0.68)	21	4.43 (0.75)	26	4.73 (0.60)	-1.53	.13
PP Self-efficacy (range, 0-40)		52	31.5 (6.9)	19	30.5 (8.0)	23	32.6 (1.1)	-0.95	.35
PP Usefulness for Patients (range, 3-21)		47	15.74 (3.73)	15	16.87 (2.47)	23	15.65 (3.60)	1.21	.23
PP can help pts manage better health (1-7)		55	5.85 (0.93)	19	5.89 (0.81)	26	5.88 (0.95)	0.04	.97
PP can help workflow (1-7)		48	4.58 (1.67)	15	5.40 (0.91)	24	4.29 (1.73)	2.61	.01
PP can help communication with pts (1-7)		48	5.15 (1.57)	16	5.31 (1.45)	23	5.30 (1.36)	0.02	.99
	Y/N	Total Sample		RN		DE		χ-/Fisher's test*	p-value
		N	N (%)	N (%)		N (%)			
PP availability from own health provider	Yes	55	38 (69.1%)	11 (55.0%)		19 (76.0%)		2.21	.33
	No		11 (20.0%)	6 (30.0%)		4 (16.0%)			
	DK**		6 (10.9%)	3 (15.0%)		2 (8.0%)			
PP availability at work place	Yes	54	34 (63.0%)	11 (64.7%)		19 (73.1%)		0.47	.79
	No		12 (22.2%)	4 (23.5%)		4 (15.4%)			
	DK**		8 (14.8%)	2 (11.8%)		3 (11.5%)			
PP use for their own care	Yes	56	32 (57.1%)	10 (47.6%)		17 (68.0%)		1.21	.27
	No		24 (42.9%)	11 (52.4%)		8 (32.0%)			
PP use for their patients	Yes	45	11 (24.4%)	1 (6.7%)		9 (39.1%)		*	.05
	No		34 (75.6%)	12 (92.3%)		12 (51.7%)			

A lack of PP use by nurses needs further investigation. In particular, the role and practice of nurses may be different between inpatient and outpatient settings. In inpatient settings, the majority of staff nurses are likely to be involved in the introduction and reinforcement of the value of the PP to their patients, rather than the use of the PP for care delivery. On the other hand, nurses in ambulatory settings, particularly in primary and chronic care practices, work with established patient panels. Thus, these nurses have more opportunities to use PPs as healthcare tools that can help them communicate more effectively with their patients and provide better self-management support.

Although PPs can provide an excellent infrastructure to deliver the health education and support needed for patients to better manage their health conditions [47-49], it is unknown whether healthcare professionals are capitalizing on the use of PPs to improve quality of care. With the arrival of MU stage III that focuses on patient outcomes, [50] investigation of the optimal use of PPs by both patients and care providers will become even more critical.

LIMITATIONS

The major limitation of this study is a small convenience sample recruited from the participants of a regional diabetes conference. The majority of participants were white women who had many years of work experience (9.72 ± 8.15 years). Thus, the results from this study may not be generalizable to DEs or RNs with other backgrounds. Specific characteristics of work settings may affect clinicians' use of the PP. In addition to the level of self-efficacy for using a PP for their own health care, clinicians' competency levels for using the PP component of an EHR, such as sending specific information to their patients, needs further investigation. Finally, the findings from this study indicate further opportunities to explore DEs and RNs use of PPs for patients in different settings. This study included only self-reported data using a short survey.

CONCLUSIONS

In today's rapidly changing healthcare environment, maintaining and improving patient outcomes within cost constraints has been a challenge. Management of chronic conditions such as diabetes is an urgent healthcare priority, as their prevalence and medical expenditures are rapidly increasing. PPs offer many opportunities for engaging patients in their care and delivering coordinated care throughout the care delivery system; however, little information is available about the use of PPs by clinicians and health care professionals who are not eligible providers. The findings from our study revealed that the use of PPs for patient care is limited among these care team members, indicating that an important opportunity

to improve quality of care is being overlooked. Further studies using larger and more diverse samples are needed to identify the current trends of PP use in practice and address challenges and opportunities for the optimal use of PPs in the health care delivery system.

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