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The impact of nursing students' use of an electronic health record in the home setting

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Abstract

The purpose of this study was to explore the perceptions of senior undergraduate nursing students and perceptions of home care clients regarding the use of a new electronic health record and its impact on client care and communication. Findings indicate that providing students with the opportunity and time to become familiar with the use of computers during client care in the educational environment allows them to move more comfortably from a computer focused visit to client focused nursing care.

Introduction

In 2007, it was estimated that 43% of home care agencies used an electronic health record (EHR) system and that 31% of agencies not using an EHR planned on doing so within the next year (Resnick, 2010). While point-of-care (POC) technology is an established practice for home care agencies, the academic setting has been slower to adapt (Nokes, 2012). The Institute of Medicine (IOM) clearly states the importance of technology in the delivery of safe client care (IOM, 2011). In addition, the American Association of Colleges of Nursing (AACN) has also published competency statements regarding the importance of information and client care technology for undergraduate and graduate nursing students (AACN, 2008). Perry and King (2009) emphasized the importance of BSN students having hands-on experience using information technology, including EHR to allow development of knowledge and skills needed for the appropriate use of both information and technology. It is the mission of the Federal Health Information Technology Strategic Plan “to improve health and health care for all Americans through the use of information and technology” (Office of the National Coordinator for Health Information Technology, 2011).

Several studies have stressed that more work is needed to adequately prepare clinicians for working with information technology (McNeil, 2003; Nokes, 2012). The numerous benefits of EHR technology include greater consistency of care; enhanced communication; improved efficiency; and improved client and caregiver satisfaction (Utterback, 2005). Healthy People 2020 define health communication as “strategies to inform and influence individual and community decisions that affect health. It links the fields of communication and health and is increasingly recognized as a necessary element of efforts to improve personal and public

health”(U.S. Department of Health and Human Services, 2013). But how does EHR technology influence interactions and communication with clients? There has been concern that introducing computers in the home care setting may interfere with direct client care (Stricklin, 2001). One study found that a majority of home care clients believed the use of the EHR technology did not take away from their time with the clinician and two-thirds believed they could still talk with their clinician while he/she was on the computer (Stricklin, 2001). It was concluded that clients would accept technology in the home if they believed that the clinician’s use of the computer did not take time away from the care they received (Stricklin, 2001). However, few studies have examined the perceptions of students during implementation of a new EHR. No studies were found to have examined client perceptions of student use of computers in the home setting. Therefore, the purpose of this study was to explore the perceptions of senior undergraduate nursing students and perceptions of home care clients regarding the use of a new electronic health record and its impact on client care and communication.

Background

In the summer of 2011, one University’s nursing faculty in the baccalaureate nursing program began piloting an academic electronic health record. In the fall of 2011, this academic EHR was introduced to a pilot group of nursing students. These pilot groups continued with several enhancements throughout the academic year and resulted in the implementation of the EHR system throughout all clinical courses in fall 2012.

In the senior year, students enroll in a three credit hour public health nursing clinical. Objectives for this clinical practicum include utilizing principles from the sciences and humanities to assess

individuals, families, communities and teaching principles of disease prevention and health promotion to family and community groups. This clinical involves a rotation of community home visits, wellness screenings and health education, and a rotation working directly with a public health clinician in the community. In the home visit rotation, students perform weekly home visits with new or established clients who have multiple chronic illnesses. The home visit clients live in surrounding counties and volunteer for student visits. The clients are self-referred, family-referred or referred by a community agency as being in need of intermittent assessments and health education. Generally, they are not established in a home health agency as they are not Medicare-eligible for home care services. Rather they are clients in the community with care needs such as blood pressure monitoring, teaching related to chronic disease processes, medication adherence, and awareness of community resources. A typical client may be an elderly female with three or four chronic diseases, twelve to twenty medications, and limited family or friend contact. Each student follows 2 to 3 clients. The visits lasted 45-60 minutes with each student performing 6-7 visits to each client throughout the semester. Faculty are responsible for oversight of the care provided. During these home visits, students complete individualized health assessments and subsequent teaching. To document the home visit, an academic electronic health record system was introduced to two of the eight clinical groups. These two clinical groups used laptop computers during the home visit to document the visit note. Each laptop computer had Wi-Fi access using an access card which allowed students to use on-line resources to search for evidence-based healthcare information and resources for client education. The EHR home visit note template was password protected with each student being required to put in 3 distinct passwords, assigned to them by the academic EHR, for access into the system. The template focused on clinical data with demographic information limited to client initials only. No

specific client information was uploaded into the academic EHR. The University faculty, administration and risk management worked with the academic EHR staff to ensure client privacy and confidentiality were maintained.

Methods

Procedures and participants

The design of this study was exploratory. A convenience sample of twenty traditional senior-level undergraduate nursing students enrolled in the public health nursing clinical course were asked to participate in this study. At the end of the clinical rotation, each student voluntarily completed an on-line survey related to the use of the academic electronic health record.

A convenience sample of seventeen volunteer home visit clients was also utilized for this study. The age of the clients in years ranged from: 51-65 (n=4); 66-75 (n=2); 76-85 (n=5); 86-95 (n=4); and >95 (n=2). Fifteen of the seventeen clients were Caucasian. These clients have been participating as volunteers for home visits for the following length of time: <1 year (n=4); 1-3 years (n=2); 4-6 years (n=9); 7-10 years (n=2). Participating home health clients voluntarily completed a paper-based survey addressing their experience with the student's use of the electronic health record system during the home visits. The participating clients mailed their completed surveys back to the School of Nursing in a self-addressed, postage paid envelope. This study was approved by the University's Institutional Review Board. Completion of the survey's assumed consent for participation.

Measures

The survey instrument was created by the researchers. In the student survey, nine 5-point Likert scale items (definitely agree- definitely disagree) were used to evaluate student perceptions of EHR use during home visits. Three items assessed student's previous experience with EHR systems. Items also assessed the frequency of student use of the EHR in the home and the frequency of access failures of the EHR system during the home visit. In addition, two open-ended questions assessed perceived strengths and weaknesses regarding the use of the EHR. In the client survey, nine 5-point Likert scale items (definitely agree- definitely disagree) were used to evaluate client perceptions of student's use of the EHR during home visits. Two items assessed client familiarity with computers and two open-ended questions assessed client perceived strengths and weaknesses of the student use of the EHR during their home visits. See table 1 and 2 for complete survey questions.

Results

Ninety-five percent of the senior nursing students had previous EHR experience with a majority (63%) having 1-2 years of experience. Fifty-five percent of students reported accessing the academic EHR system to find information or provide teaching a total of 1-5 times while 30% used the system more than five times. A majority of students (85%) reported experiencing at least one access failure during the home visits. Sixty percent of students reported that they were able to focus more on the client using the EHR compared to 40% who felt that paper charting allowed more client focus. A majority of students felt that the EHR improved their ability to answer clients questions compared to paper charting and handouts (65% vs. 35%). There was a mixed level of agreement on whether the computer enhanced or hindered interaction with the

client. One student commented, “The computers sometimes took away time to interact with the client.” While another student stated, “It was quick and efficient and allowed me more time to spend with my client.” However, students strongly agreed that the EHR improved the physical exam of the client and that it was important for them to learn to use the EHR (see Table 1).

Clients reported an even split on whether the student was able to focus more on them while using paper or computer charting. As one client reported, “Using the computer gives us more time to check me closer, with me being a diabetic, checking the feet is important. With the computer we had more time to check out more, to discuss things that we didn’t have time for before.” Yet, another client perceived that the EHR, “Takes time away from interacting with the client.” And, one client even went so far as to say, “I felt like I was interfering with the student.”

Clients did report agreement (71%) that paper charting and/or handouts improved the student’s ability to answer questions over computer charting. There was mixed agreement on whether the computer hindered or enhanced interactions with the student. However, there was agreement that the computer increased client safety and that it was important for the students to learn how to use the EHR system. In addition, fifteen of the seventeen home visit clients reported that their primary care provider utilized a computer during clinic visits (see Table 2).

Limitations

Limitations of the study include the survey was developed by the researchers, a small sample size at one school of nursing, one geographic area of the country, and the clients may not be a good representation of Medicare certified home clients. Additionally, the clients are unlikely to

require post-acute care and are more likely to require intermittent assessment and teaching to avoid an exacerbation of chronic diseases.

Discussion

Although a majority of the students reported previous EHR experience, the level of experience is unknown. Given that none of the students were licensed clinicians, it can be reasonably assumed that the students did not have a great deal of experience in documenting comprehensive client assessment findings. Furthermore, they likely did not have experience with point of care documentation in the home setting. An academic EHR affords the students electronic documentation practice without compromising the care of the client or the integrity of the medical record. Yet, students have the opportunity for true to life experience in point of care documentation during a home visit.

Another benefit of implementing academic EHRs is that students are able to document at their own pace without interruption from multiple other users. Additionally, it allows for quick access to web-based resources. For example, one student stated, “using the EHR charting system allowed me to make good use of my time, and was a good resource to look for answers to client questions.”

Students also commented on how they perceived that the physical exam was improved with use of the EHR. Examples of student comments include: “by using the computer system I feel that I was more thorough with my assessments and was able to go more in depth”; “the EHR helped

me to be more thorough and helped to guide me throughout the assessment”; and “It provides a faster charting system where I can type more details on the client’s condition.”

Implications

Health is shaped by communication, information, and technology that clients and nurses interact with every day. Communication and health information technology are central to health care, public health, and the way our society views health (U.S. Department of Health and Human Services, 2013). Colleges of health professions might consider introducing academic EHR’s into their courses to facilitate the learning process and familiarity with these systems, which will be fundamental in the workplace.

Conclusions

As educators, we are looking to prepare our students to meet the demands of the workplace. In today’s healthcare environment part of those demands will be the ability to use electronic health records. The academic EHR fills that gap in learning to better prepare the students for meeting the market needs and to be successful in healthcare. As one student commented, “EHRs are the wave of the future and whether we like it or not we are going to continue to see them more and more in our practice. I think they have a definite place in public health and I think the interaction between client, clinician, and computer will continue to improve as technology improves.”

Providing students with the opportunity and time to become familiar with the use of computers during client care in the educational environment allows them to move more comfortably from a computer focused visit to client focused nursing care.

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Table 1. Student responses to EHR survey (n=20)

Question	Frequency (f)	Percent (%)
Have you used an EHR before?		
No	1	5
Yes	19	95
How long have you used an EHR		
1-2 years	12	60
3-4 years	7	35
Not applicable	1	5
How many times did you use the computer in the client's presence to find information or teach		
0 times	3	15
1-4 times	11	55
5-10 times	4	20
>10 times	2	10
How many access failures did you experience while using the computer in the home		
0 times	3	15
1-4 times	14	70
5-10 times	2	10
>10 times	1	5
I was able to focus more on the client using the EHR		
Agree	12	60
Undecided	2	10
Disagree	6	30
I was able to focus more on the client using paper charting		
Agree	8	40
Undecided	1	5
Disagree	2	10
Not applicable	9	45
The use of the EHR improved my ability to answer client questions		
Agree	13	65
Undecided	3	15
Disagree	2	10
Not applicable	2	10
The use of paper charting and/or handouts, rather than using a computer, at the visit improved my ability to answer the clients' questions		
Agree	7	35
Undecided	4	20
Disagree	2	10
Not applicable	7	35
The physical exam was improved with the use of the EHR		
Agree	17	85

Undecided	1	5
Disagree	2	10
The computer enhanced the interaction between the client and me		
Agree	9	45
Undecided	1	5
Disagree	10	50
The computer hindered the interaction between the client and me		
Agree	6	30
Undecided	4	20
Disagree	10	50
The use of the computer during the home visit increases client safety		
Agree	10	50
Undecided	9	45
Disagree	1	5
It is important that students learn the EHR		
Agree	20	100
Undecided	0	0
Disagree	0	0

Table 2. Client responses to EHR survey (n=17)

Question	Frequency (f)	Percent (%)
Does your primary care provider use a computer during visits		
No	1	6
Yes	15	88
No response	1	6
How familiar are you in using a computer yourself?		
Familiar	5	30
Undecided	1	6
Unfamiliar	9	53
No response	2	12
The student was able to focus more on me when using the computer charting		
Agree	11	65
Undecided	0	0
Disagree	4	24
No response	2	12
The student was able to focus more on me when using the paper charting		
Agree	11	65

Undecided	1	6
Disagree	2	12
No response	3	18
The use of the computer at the visit improved the student's ability to answer my questions		
Agree	9	53
Undecided	2	12
Disagree	4	24
No response	2	12
The use of paper charting and/or handouts, rather than using a computer, at the visit improved the student's ability to answer my questions		
Agree	10	59
Undecided	1	6
Disagree	3	18
No response	3	18
My examination was improved or more thorough with the use of the computer charting system		
Agree	10	59
Undecided	2	12
Disagree	5	30
No response	0	0
The computer enhanced the interaction between the student and me		
Agree	9	53
Undecided	3	18
Disagree	5	29
No response	0	0
The computer hindered the interaction between the student and me		
Agree	9	53
Undecided	3	18
Disagree	5	29
No response	0	0
The use of the computer at the visit increases client safety		
Agree	10	59
Undecided	3	18
Disagree	3	18
No response	1	6
It is important that the students learn how to use the computer charting system		
Agree	14	82
Undecided	1	6
Disagree	0	0
No response	2	12