Patient Care and Electronic Medical Record Entry Demands on Physical Therapists

[1]Douglas Palmer, DPT, MS, [1,2]Carolyn M. Sommerich, PhD, CPE, [2]Amy R. Darragh, PhD, OTR/L, FAOTA
The Ohio State University
[1]Department of Integrated Systems Engineering
[2]School of Health and Rehabilitation Sciences

The work of physical therapists (PTs) is physically and cognitively demanding, though prior research has primarily focused on physical aspects of their work and associated musculoskeletal (MSK) symptoms. The goal of this study was to provide a more in-depth view into PTs working in outpatient settings, the largest area of practice. Of primary interest was learning about cognitive demands, particularly those associated with electronic medical records (EMRs) documentation. There is little information on the workload associated with this essential part of the PT's responsibilities. Interviews were conducted with 10 licensed PTs. Thematic analysis was conducted on transcripts from interviews. Analysis revealed several areas of concerns including significant portions of each day spent on documentation, poor organization of EMR content, inefficiencies from hardware choices, as well as opportunities for improvement such as means for providing visual evidence of a patient's performance progress and providing for side-by-side comparison of reports.

INTRODUCTION

Occurrence of work-related musculoskeletal disorders (WRMSD) is common in Physical Therapists (PTs). The occupational lifetime occurrence of WRMSD is 91%, with 50% of first occurrences in school or within the first 5 years of practice (Cromie et al., 2000). One year incidence rate for moderate to significant WRMSD was 20.7% (Darragh et al., 2012) with an 80% prevalence below age 35 (Sharan and Ajeesh, 2012). These injuries lead one in six PTs to change specialty or leave their occupation (Cromie et al., 2000).

This study seeks a more in-depth view into a sub-set of physical therapists in the outpatient setting. Outpatient rehabilitation is the largest therapy area of practice. Manual therapy is second only to patient lifting and transfers in terms of work activities associated with PTs' injury. Outpatient therapists accounted for 89.4% of all manual therapy related injuries (Darragh et al., 2012). It has been recommended that future research examine the physical demands on PTs in various clinical settings (Passier and McPhail, 2011) and mirror the trade specific approach used in other industries, such as construction.

A novel aim of this study is to begin the investigation of the cognitive work demands that are part of the daily demand on physical therapists. Healthcare work is described as a highly variable environment with multiple strategies to treat a spectrum of problems (Perry and Wears, 2012). Increased cognitive load is linked to risk factors associated with WRMSD, including increased fatigue and decreased endurance (Mehta and Agnew, 2015), as well as increased muscle activity and interference with task performance (Au and Keir, 2007). This study aims to examine the growing presence of electronic medical records (EMR) in the healthcare setting, including physical therapy. The use of EMR software and electronic information technology (IT) devices have the potential to increase communication and patient satisfaction, but can increase mental workload and decrease patient-centered care (Montague and Asan, 2012). The long-term goal of this study is to create a more robust understanding of physical therapists' work environment and practice which now involves maintenance of EMR while

simultaneously providing patient care. Improved understanding of how PTs perform these activities and understanding the extent to which this dual workload affects the health of PTs will eventually lead to conceptualization of interventions to reduce the imposed workloads, which in turn will lead to reduced work-related injuries and employment turnover.

METHODS

Participants

Ten practicing, state board licensed, outpatient physical therapists participated in the study; 9 were female. Ages ranged from 27 to 44 years of age. The median number of years in practice was 5.25, with total years of experience of 70.5.

Study design

Each subject participated in a 70-minute data collection session, including 10 minutes of introduction & consenting followed by a 60 minute semi-structured interview. The session was conducted in a location selected by the subject. Sessions were audio-recorded and later transcribed in preparation for analysis.

Immediately prior to the data collection, the investigator read an approved script informing the subjects of their voluntary participation, legal and ethical responsibility of non-disclosure of any patient's personal health information, and non-disclosure of their specific employers.

First, the subject was asked to complete a questionnaire asking general questions about work history, musculoskeletal health, and demographics. Second, subjects were asked to complete an Average Work Schedule matrix, using colored markers to differentiate their typical paid and non-paid work hours, including multiple employers if they worked for more than one clinic. Lastly, subjects participated in a semi-structured interview with questions designed to investigate the physical and cognitive demands of the subject's work and environment. Questions addressed the access of patient medical records (for new patients v. daily treatment, using what type of physical device, is paper also used), ways in which the documentation systems assisted or impeded the PT's ability to work, methods for catching up if they get behind on documentation, interventions they had devised for reducing daily mental or physical stress of being a PT, among other questions. During the final 8 minutes of the session, the subject was given a 3 circle diagram, containing a physical therapist, a computer, and a patient icon, and asked to describe the relationships/interactions between each. Using simple visual representations, such as the work schedule and circle diagram, facilitated exploration of the effects of engagement with electronic medical records within the PT's work environment.

Data Analysis

After data collection, the audio recordings were transcribed and the transcriptions were reviewed for accuracy. The data were reviewed multiple times and coded for emerging patterns and themes (Braun and Clarke, 2006; Saldana, 2012). The data were analyzed for patterns and themes concerning the daily physical and cognitive work demands on outpatient physical therapists. The data were intentionally examined for the effects of interactions with electronic health records on the PTs. The researchers drew conclusions based on patterns that emerged from the data. These patterns were also examined for possible areas of future intervention and research.

RESULTS

Participant health

Seven of 10 participants had "sustained any musculoskeletal injury/discomfort due to your work within the last 5 years", with six of the seven experiencing symptoms that were exacerbated by clinical practice. None reported considering changing jobs because of this injury or risk of another injury.

Themes

The major themes that emerged from the interviews with regards to electronic medical records were the percentage of the day spent documenting, assistance with documenting, strategies for when to document, system access and IT support, exercise logs, aspects of the EMR that enhance workflow, poor usability/efficiency, documentation oversight and

standards, communication with physicians via EMR, student teaching, learning the EMR system, ongoing need for paper, standardized outcomes, computer hardware, and ergonomic/MSK issues related to computer use. Brief introductions to some of these themes are presented below.

PTs spent a significant portion of their workday (or evening) documenting; estimates were 30 to 50%.

"if you add lunch I don't know what percentage that turns out to be. My lunch is entirely documentation so that may be a bit higher. But throughout the day, when patients are there probably 10%. You write something really quickly and then you help the patient."

"And I guess then if I include lunch probably 4 of the 11 hours that I'm at work during the day. Because I do notes for probably most of lunch."

If assistance is available in the form of an athletic trainer or PT assistant, then PTs can document while the patient is in the clinic, otherwise the bulk of the documentation must be done when not treating patients.

As with all types of work, documentation can be hampered when IT systems are not functioning up to par.

"Because documentation can be frustrating especially when the network is having issues… It doesn't happen often. I would say it's typically on a day where the network is slow so the computer just isn't…the EMR isn't running efficiently. And so when I can't use it the way I need to, it's just easier to walk away from it a little bit. That way I can still focus on the patient without them reading and sensing the frustration of the computer issues. The patient doesn't need to know or deal with any of that, they are there to try to get better."

EMRs appear to be helpful when it comes to documenting exercises:

"whatever we write stays in there. And then say we want to copy from the day before. So we write in the initial time and then after that we can copy from the previous day and change like the resistances or reps in there. That is one way. It also kind of memorizes exercises that you have used so when you start typing them it and it pops up."

EMRs can enhance workflow:

"so if I have someone with Medicare insurance, in there I will get a reminder before I close the chart that I need G codes or stuff like that."

"so there are tabs at the top so I can have 4 patients open at a time. But the screen will only show one person. So I can't look at 2 people's information at once. If that makes sense which is good so then don't have them mixed up."

Yet EMRs can also have characteristics that reduce usability:

"So the way our system is, you have to click here and then that takes you off the main screen. … If everything was just on one system that would make things so much easier for us. So not having to bounce back and forth between different windows."

"if I'm going to compare three assessments it's (paper is) easier than having to open up multiple screens on the computer which are not typically able to line up and not able to do more than two."

EMRs can facilitate communication with the physician, but not all do.

"the purpose of it is so everyone is uniform. And so we can see everybody else's stuff. It is actually very helpful. I can read other providers notes. I can communicate with them through the system. Can send patient messages. I can see images. It is very nice."

"I sent a script the other day for that because it wasn't on the script. Then I have to go back to find out who is policing that and did we get anything back yet. Because that is not a really well working process right now."

The hardware and where the hardware is used has an effect on the PT:

"the tablet interface is not user friendly and takes twice as long for me to enter it versus if I just sit down at a desktop computer."

"So they have the two tablets in our manager's office, I don't take it with me. I know that I'm not going to use it at this point. I might try when we first got them in for a

while and then I was like no this does not work for me so this doesn't even come with me. I take a clipboard and pen"

"I can see in other clinics that I have visited and how you probably have to keep your laptop a little more in one area or else people are going to be tripping over it or pushing it out of the way."

"for the most part we are lucky in that way, where it used to be before we didn't have carts. So people were setting them (their computers) on linen bins, here and there that are not ideal location like setting it on the bed or…"

MSK discomfort related to computer use when interacting with the EMR was reported to occur in various body parts:

"I would say that I started having more vision problems when we switched over to the new EMR system" (which they attributed to a reduction in font size, based on other comments).

"I have some neck pain and some upper thoracic pain. It usually occurs for me after I've been sitting at my desk charting for a while."

"We teach people about posture and ergonomics all day long and we have the worst posture and worst ergonomics at work."

DISCUSSION

This sample of quotations from a small sample of experienced PTs who all work in outpatient settings provides rich insight into their experiences and concerns regarding the important task of documentation, which has changed with the introduction of EMRs. EMRs were not typically designed with PTs in mind, regarding what and how they need to document about their patients nor how to incorporate documentation into their workflow.

The themes and quotations presented here only focus on the EMR/documentation aspect of their work. Yet it is important to keep in mind all the other physical and cognitive aspects of a PT's job that form the total workload they experience. For example, the physical interaction with the documentation computer, when added to the physical exposure of manual therapy, and patient and equipment handling, can sum to overuse of an outpatient PT's upper extremities. One PT talked about concerns for developing osteoarthritis and another described a new athletic trainer at their clinic who developed wrist pain shortly after beginning work, which was associated with repeated use of a touch pad during documentation. Six of the 10 study participants reported pain in one or more parts of the upper extremity.

Concerns can also be interpreted as expressions of need and provide ideas for improvement. For example, computer carts were considered helpful when they were easy to push and to adjust to an appropriate height for the user (PT). Means for providing separation between the display and the keyboard was viewed favorably, as opposed to compromising neck or arm posture when using a laptop. Tablets were viewed favorably as a tool for patient education, but not for typing entries in the EMR. These are just a small sample of the deep, rich information provided through the analysis of this data set.

CONCLUSION

Involvement of end-users in the design of work tools and workflow has proven beneficial in numerous work settings. Input from PTs should be included in the development of EMR systems (meaning software, hardware, and workflow), in order that the EMR be a useful and usable tool that enables the PTs' productivity and quality of worklife, rather than adding to their workload burden.

Acknowledgement

This work was supported, in part, by the National Institute for Occupational Safety and Health (Training Grant 2T03OH008847).

REFERENCES

Au, A.K., Keir, P.J., 2007. Interfering effects of

multitasking on muscle activity in the upper extremity. J Electromyogr Kinesiol 17, 578-586.
Braun, V., Clarke, V., 2006. Using thematic analysis in psychology. Qualitative Research in Psychology 3, 77-101.
Cromie, J.E., Robertson, V.J., Best, M.O., 2000. Work-related musculoskeletal disorders in physical therapists: prevalence, severity, risks, and responses. Phys Ther 80, 336-351.
Darragh, A.R., Campo, M., King, P., 2012. Work-related activities associated with injury in occupational and physical therapists. Work 42, 373-384.
Mehta, R.K., Agnew, M.J., 2015. Subjective evaluation of physical and mental workload interactions across different muscle groups. J Occup Environ Hyg 12, 62-68.
Montague, E., Asan, O., 2012. Considering social ergonomics: the effects of HIT on interpersonal relationships between patients and clinicians. Work 41 Suppl 1, 4479-4483.
Passier, L., McPhail, S., 2011. Work related musculoskeletal disorders amongst therapists in physically demanding roles: qualitative analysis of risk factors and strategies for prevention. BMC musculoskeletal disorders 12, 24.
Perry, S.J., Wears, R.L., 2012. Underground adaptations: case studies from health care. Cognition, Technology & Work 14, 253-260.
Saldana, J., 2012. The Coding Manual for Qualitative Researchers. SAGE Publications Inc., London.
Sharan, D., Ajeesh, P.S., 2012. Injury prevention in physiotherapists--a scientific review. Work 41 Suppl 1, 1855-1859.