



July 2020

Effectiveness of Electronic Documentation: A Case Report

Christie Wroten

Rocky Mountain University of Health Professions - USA, christieot@icloud.com

Susan Zapf

Rocky Mountain University of Health Professions - USA, sue.zapf@rm.edu

Ellen Hudgins

Rocky Mountain University of Health Professions - USA, ellen.hudgins@rm.edu

Follow this and additional works at: <https://scholarworks.wmich.edu/ojot>



Part of the Occupational Therapy Commons

Recommended Citation

Wroten, C., Zapf, S., & Hudgins, E. (2020). Effectiveness of Electronic Documentation: A Case Report. *The Open Journal of Occupational Therapy, 8*(3), 1-10. <https://doi.org/10.15453/2168-6408.1722>

This document has been accepted for inclusion in The Open Journal of Occupational Therapy by the editors. Free, open access is provided by ScholarWorks at WMU. For more information, please contact wmu-scholarworks@wmich.edu.

Effectiveness of Electronic Documentation: A Case Report

Abstract

Background: This case report aims to inform the occupational therapist and other health care professionals of documentation best practices.

Method: This qualitative case report uses an exploratory approach to compare the quality of one participant's handwritten documentation to her electronic documentation. Outcome measures include the Accuracy Rationale Completeness (ARC) Audit to score the quality of the notes and quantity of words, and an informal discussion with the participant about her experiences using both types of documentation.

Results: The participant's 25 handwritten notes scored a sum of 321 and the 25 electronic notes scored a sum of 517 out of 650 possible points on the ARC Audit, indicating a 61% overall improvement in scores for electronic notes. All 13 attributes of the ARC Audit indicated a higher score for electronic documentation. The participant wrote 333% more words and reported that she saved up to 10 min per note using the electronic health record system.

Conclusion: This case report illustrates that the participant produced more accurate and comprehensive documentation, including improved clinical reasoning and rationale for therapy services in less time when using an electronic health record system.

Comments

The primary author acknowledges that she is the developer of the EasySteps electronic health record system; however, the ARC Audit used to score the notes was based on AOTA *Guidelines for Documentation of Occupational Therapy*.

Keywords

accuracy, ARC Audit, clinical reasoning, comprehensive, efficiency, electronic health records

Credentials Display

Christie Wroten, OTD, OTR/L; Susan Zapf, PhD, OTR/L, BCP, ATP; Ellen Hudgins, OTD, OTR/L

Copyright transfer agreements are not obtained by The Open Journal of Occupational Therapy (OJOT). Reprint permission for this Applied Research should be obtained from the corresponding author(s). Click here to view our open access statement regarding user rights and distribution of this Applied Research.

DOI: 10.15453/2168-6408.1722

Requirements for Documentation

The movement to evidence-based practice (EBP) continues to reshape the requirements of and responsibilities for occupational therapists and other health care professionals (Holm, 2000). In addition to providing client interventions using the best available evidence, occupational therapists must document how therapy improves the client's health, well-being, and quality of life (American Occupational Therapy Association [AOTA], 2017). The American Occupational Therapy Association (AOTA) provides documentation guidelines for occupational therapists to follow (AOTA, 2018). Occupational therapists must complete documentation in established time frames, formats, and standards according to the regulatory and payer requirements in the practice setting (AOTA, 2015b). *AOTA Guidelines for Documentation of Occupational Therapy* (2018) provides specific requirements for occupational therapists to cover in their daily treatment notes, including date of service, length and type of session, client name, goals, interventions, the client's response to the interventions, the clinical reasoning for the interventions, and a professional signature with credentials. The documentation guidelines also require occupational therapists to use acceptable terminology, acronyms, and abbreviations as defined by the practice setting (AOTA, 2018).

The documentation of services is a legal document and may be read by a variety of stakeholders, including clients, other members of the health care team, administrators, reimbursement agents, and legal personnel. Communicating the clinical reasoning of an intervention accurately conveys the necessity of occupational therapy and lends credibility to the profession. Payers and stakeholders require practitioners to document EBP for reimbursement of services (Brown, 2017). Effective documentation provides stakeholders with an accurate, clear, and complete description of the services provided. Occupational therapists, however, do not always communicate an accurate description of the services provided in their clinical documentation, making it difficult for stakeholders to translate the value of the intervention (Davis et al., 2008). The qualitative study by Harman et al. (2009) and the mixed-method study by Davis et al. (2008) indicated practitioners with increased documentation requirements and time constraints are less likely to produce accurate and effective documentation.

Perceptions of Documentation

In the studies by Harman et al. (2009) and Davis et al. (2008) practitioners indicated they experienced difficulty translating evidence-based interventions into clinical documentation. Challenges and barriers to effective documentation using EBP included a lack of time for charting, fear of not achieving outcomes in an appropriate time frame, difficulty translating outcomes into functional goals, and length of the therapy session (Harman et al., 2009). Facilities with increased documentation requirements also created a barrier for clinicians to cite evidence in their documentation (Davis et al., 2008).

According to Harman et al. (2009) practitioner perceptions that documentation is not as important as client intervention causes practitioners to spend less time on documentation. Missing information creates miscommunication among a multidisciplinary team and fails to reflect the value of intervention, which can cause reimbursement and funding complications as well as potential ethical and legal repercussions (Buchanan et al., 2016). Harman et al. and Davis et al. (2008) identified barriers to documentation, including time limitations, high client quotas, and increased requirements. Despite the barriers, occupational therapists are obligated to use interventions that are evidence-based and articulate the profession's distinct value by documenting their clinical decision-making processes to enhance the profession (AOTA, 2015a).

Current Evidence for Electronic Documentation

Technological advances have changed the processes of documentation and have decreased the time it requires while improving the quality. With the increasing use of technology, more practitioners are adopting electronic health records (EHRs) (Hripcsak et al., 2011). In a qualitative study Ammenwert and Spötl (2009) concluded that EHRs provide relief to practitioners by decreasing the time required for documentation. The adoption of EHRs increases annually among many different health care professionals. Evidence supports electronic documentation is faster than handwritten documentation and improves communication among multidisciplinary teams by facilitating access to client records (Hripcsak et al., 2011; Jamieson et al., 2016).

In a qualitative study, Rathert et al. (2017) examined the experiences and perceptions of practitioners who had used an EHR for an extended period. Rathert et al. found that although there are challenges for practitioners who use EHRs, there are benefits, such as increased speed and improved accuracy when retrieving and sharing information. Participants in this study reported using shortcuts, such as completing electronic documentation at the end of their shifts rather than at the point-of-service (Rathert et al., 2017). DiAngi et al. (2019) concluded that training to use an EHR system improved health care practitioners' perceived control of their workload while employing the EHR; however, health care practitioners continued to use the EHR outside of clinic hours.

Jamieson et al. (2016) concluded in a quantitative, blinded randomized crossover study that internal medicine physicians who used an EHR system had a greater quality of admission notes than those who used handwritten documentation. The authors found no evidence that examined the effectiveness of electronic documentation compared to the handwritten documentation of an occupational therapist. The results of the Jamieson et al. study indicate that clinicians who use an EHR will be more likely to type more content that is of higher quality. When stakeholders implement EHRs, they reduce health care related costs and client morbidity through improved efficiency, timeliness, and accuracy of electronic documentation (Dinkins et al., 2018).

As the majority of health care professionals' documentation transitions to EHRs, occupational therapists must keep pace with technological advances. As reported by Dinkins et al. (2018), health care professionals who document by hand spend more time doing so, leading to reduced direct time with clients. Although evidence indicates electronic documentation improves quality and speed, many occupational therapists continue to use the handwritten form of documentation rather than implement an EHR system. Occupational therapists are legally and ethically required to document their skilled services, but proper documentation also enables the occupational therapy profession to construct a body of valuable data that can bolster the profession (Buchanan et al., 2016).

As evidence-based practitioners, occupational therapists should explore the evidence to best determine the most accurate and effective mode of documentation. This case report examines an occupational therapist's handwritten and electronic documentation and aims to inform health care professionals of the best documentation practices by investigating the following questions: (a) When using an EHR, does an occupational therapist produce documentation of greater quality in the areas of accuracy, clinical reasoning, and completion when compared to handwritten documentation? and (2) When using an EHR, does an occupational therapist produce documentation with more efficiency by writing a more comprehensive document in less time?

Method

Case Report Design

This qualitative case report used an exploratory approach to compare one participant's handwritten documentation to her electronic documentation to examine the benefits of each. The participant provided 25 handwritten notes and 25 notes created in an EHR for review. The participant also partook of a short, informal discussion about her experiences with both types of documentation to compare the efficiency and point-of-service delivery of the EHR to handwritten documentation. The participant provided signed informed consent. The Rocky Mountain University of Health Professions Institutional Review Board approved this case report.

Participant Selection and History

The participant was a 49-year-old female with 20 years of clinical experience as an occupational therapist who worked full-time in a state early intervention program. The authors purposefully identified potential participants for this project as occupational therapists who recently began using the EasySteps EHR system because the notes produced by the EasySteps EHR system are identical to the state's early intervention paper forms. Inclusion criteria for the participant was: (a) an occupational therapist with at least 10 years of clinical experience and currently practicing in the early intervention setting, (b) recent usage of handwritten documentation, (c) transitioned from handwritten documentation to the EasySteps EHR system in the last year, and (d) a minimum of 8 weeks of both handwritten and electronic documentation written in the last year. Inclusion criteria for the participant's documentation was: (a) an equal amount of handwritten and electronic documentation using the same form, (b) all handwritten documentation completely handwritten with no electronic type, and (c) all documentation completed in the last year. The participant met all of the eligibility criteria and does not have any conflicts of interest with any of the authors.

Outcome Measure: Development of the Audit Instrument

The primary outcome measure was the Accuracy Rationale Completeness (ARC) Audit. Unlike other quantitative outcome measures, such as the QNOTE and the Physician Documentation Quality Instrument (PDQI-9), which are designed to examine physicians' documentation in medical settings, the ARC Audit is a scoring rubric used to measure the quality of an occupational therapist's documentation based on the requirements set forth by AOTA *Guidelines for Documentation of Occupational Therapy* (2018). The primary author developed the ARC Audit. It was reviewed by two doctoral occupational therapy students in the areas of content validity aligned to AOTA's documentation guidelines. The ARC Audit examines the quality of a note by assessing the 13 attributes in the subsections of accuracy, completeness, and rationale. For accuracy, the assessor judges errors, use of acceptable terminology, and the readability of the note. To determine completeness, the reviewer assesses the inclusion of the client's full name, the response to the intervention, goals, completion of all fields on the daily treatment note, date of service, length of service, and the professional signature with credentials. The ARC Audit assesses the documented rationale using the attributes clinical reasoning for interventions, detail of skilled interventions provided, and interventions relate to goals. These 13 attributes are scored as 0 points for did not complete or \geq four errors; 1 point for partially completed, needs improvement or one to three errors; and 2 points for completed, does not need improvement or zero errors. The overall score is the sum of the 13 attributes with a maximum score of 26 for each note.

The secondary outcome is the quantity of words in each note. In addition to providing an objective measure, the quantity of words in a note provides insight into an occupational therapist's

clinical reasoning. Although the length of the note does not indicate higher quality, autofill and pick-list components of the EasySteps EHR system and the ability to dictate or type may allow the user to be more efficient in writing a more comprehensive document in less time. Jamieson et al. (2016) found that more words may relate to an increase of clarity and completeness of documentation. In addition to implementing the primary and secondary outcomes, the primary author partook of a short, informal discussion about the participant's experiences with both types of documentation to compare the efficiency and point-of-service delivery of an EHR to handwritten documentation.

Intervention

One month before recruitment for this project, the participant transitioned from handwriting her notes to creating them in an EHR system. The participant received access to user-friendly training videos to learn how to use the EHR system. When using the EHR, client data, such as the client's name, gender, date of birth, outcomes, and goals, are documented into the EHR system. The client data automatically populates into all documents created for that client, saving the user time and eliminating redundancy. The EHR also provides users the ability to create an individualized master list of skilled interventions for each client that can be selected from a pick-list to autofill on the note. The section of the note for client progress and response to intervention is a free-text area for typed or dictated data input. Fields of the note include the client's name and date of birth, the practitioner's name, date of service, time and length of service, the caregiver who participated in the session, location, outcome numbers and statements, client goals, skilled interventions related to the outcome(s), teaching strategies, client progress and response to interventions, regular session or make-up session, the practitioner's signature, and the caregiver's signature.

Data Collection

The participant submitted 25 handwritten notes in paper form. She submitted 25 notes electronically that were typed or dictated into the EasySteps system. For confidentiality, all names were redacted.

Data Analysis

Twenty-five handwritten notes and 25 daily notes were analyzed and scored using the ARC Audit. The primary author, along with one occupational therapy student, coded and scored each of the 50 daily treatment notes using a member checking method. Each note was numbered and categorized according to the mode of documentation. All errors and required fields of the note were identified, counted, and scored according to the criteria of the ARC Audit. The scores were recorded on a scoring sheet that corresponded to each labeled and numbered note as a means for member checking of the scores. Areas of the ARC Audit that required subjective analysis of the reviewer and student were agreed on before assigning a score. The reviewers also kept a detailed reflective journal that described the scoring analysis for each of the 50 notes for a clear audit trail. Two doctoral occupational therapy students also reviewed the analysis for accuracy. Notes received a score for each attribute of the ARC Audit. Scores for each subsection and a cumulative score were calculated. Preconceived assumptions and biases of the reviewers were detailed in the reflective journal.

Results

The ARC Audit

The 25 handwritten notes scored a sum of 321 (49% average) and the 25 electronic notes scored a sum of 517 (80% average) out of 650 possible points on the ARC Audit, indicating a 61% overall improvement in scores for electronic notes (see Table 1). A complete summary of the 13 ARC Audit

attribute scores demonstrates electronic notes were of higher quality than the handwritten notes (see Table 1). For each subsection of accuracy, rationale, and completeness the electronic documentation received 86%, 109%, and 41% improvement in scores, respectively (see Figures 1–4). All 25 handwritten notes contained at least one incomplete field. The client goals attribute scores improved by 457% for electronic documentation, likely because of the autofill feature of the EHR system. The detail of skilled interventions improved by 15%, whereas clinical reasoning for interventions and interventions relate to client goals reflected more substantial improvements. The detail of skilled interventions attribute did not increase as drastically as the other rationale subsection attributes, possibly because the participant did not fully implement the skilled interventions pick-list in the EHR system.

Table 1*ARC Audit Scores*

Subsections and Attributes	Handwritten Score	Electronic Score	Percentage of Improvement
Accuracy			
Acceptable terminology	19	37	95%
All errors noted and initialed	26	40	54%
Readability (flow and legibility)	17	38	124%
Subset Total	62	115	86%
Rationale			
Clinical reasoning for interventions	15	42	180%
Detail of skilled interventions provided	27	31	15%
Interventions relate to goals	12	40	233%
Subset Total	52	113	109%
Completeness			
Client's full name	49	50	2%
Client's response to intervention	20	32	60%
Client goals	7	39	457%
Completed all fields of the daily note	0	29	
Date of service included	49	50	2%
Length of service included	48	50	4%
Professional signature with credentials	32	39	23%
Subset Total	207	289	41%
Total Score	321/650	517/650	61%

Figure 1

ARC Audit Accuracy Subsection

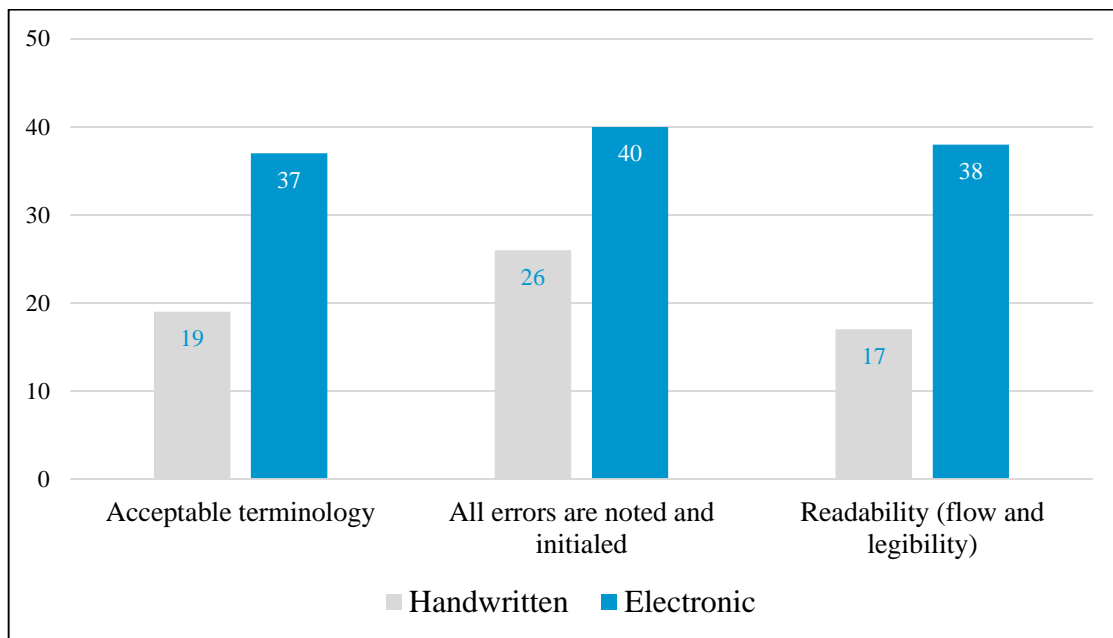


Figure 2

ARC Audit Rationale Subsection

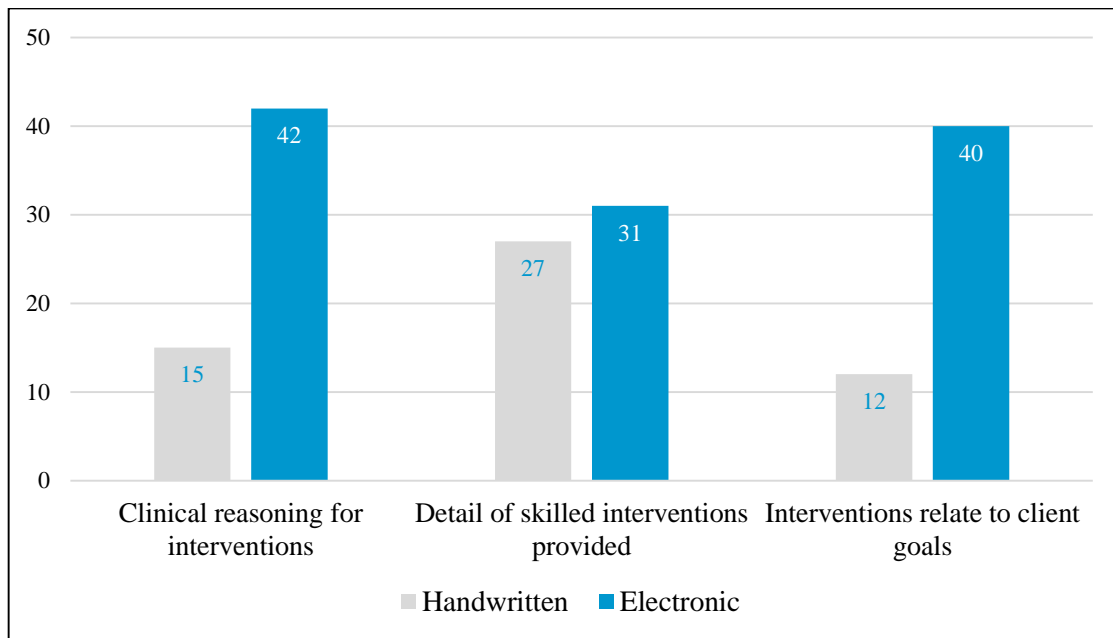


Figure 3

ARC Audit Completeness Subsection

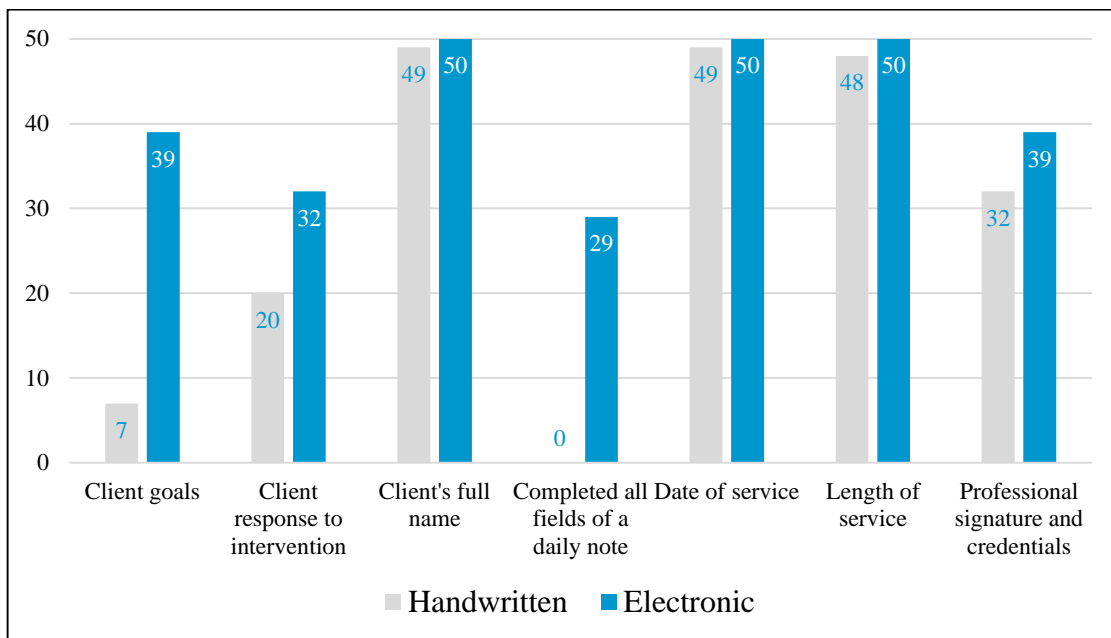
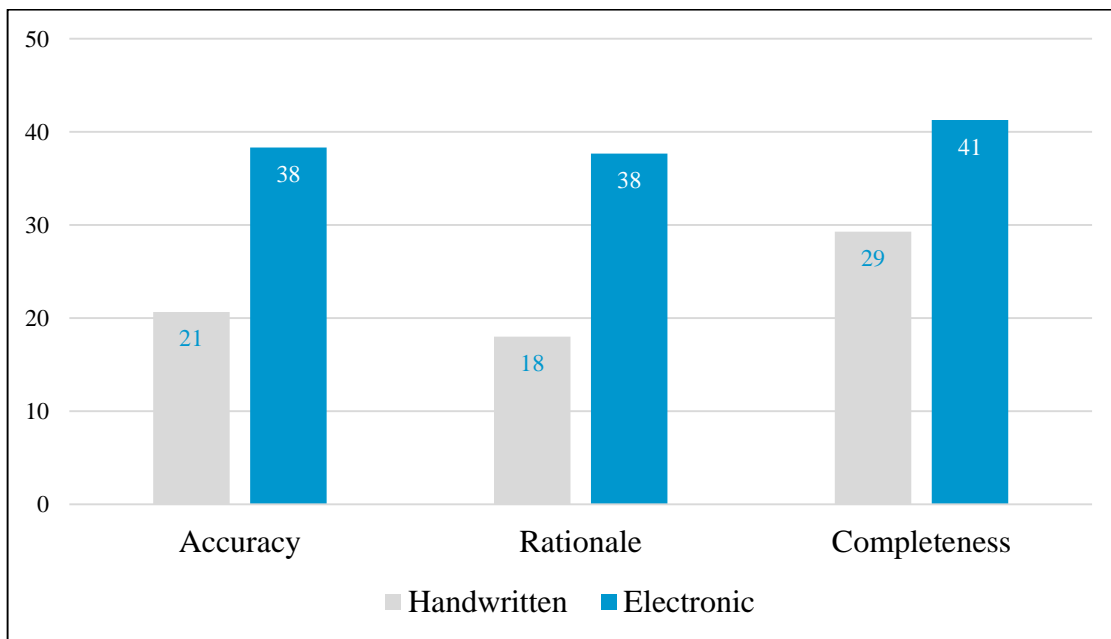


Figure 4

ARC Audit Subsection Comparison



The median score of the handwritten notes was 12 out of 26 possible points, indicating half of all handwritten notes contained 46% of the ARC Audit attributes, whereas the median score of the electronic notes was 21, indicating half of all electronic notes contained 80% of the attributes (see Table 2). The *SD* (standard deviation) of the handwritten notes was three and electronic was three, indicating the ARC Audit scores remained consistent in both modes of documentation (see Table 2). The *SD* also

demonstrates reliability of the ARC Audit scores, indicating results would likely be similar in additional notes. Quartile one (Q_1) of handwritten notes scored 10 and electronic 19; quartile four (Q_4) of handwritten scored 19 and electronic 25 (see Table 2). The Q_1 and Q_4 scores indicate that the lowest scoring electronic notes score is equal to or higher than the three highest scoring handwritten notes.

Table 2

ARC Audit Scores for Individual Notes

Measure	Handwritten Notes	Electronic Notes
<i>n</i>	25	25
<i>Mdn</i> score	12	21
Mean score	13	21
<i>minX</i>	8	13
<i>maxX</i>	19	25
Q_1	10	19
Q_3	15	23
SD	2.95	3.3

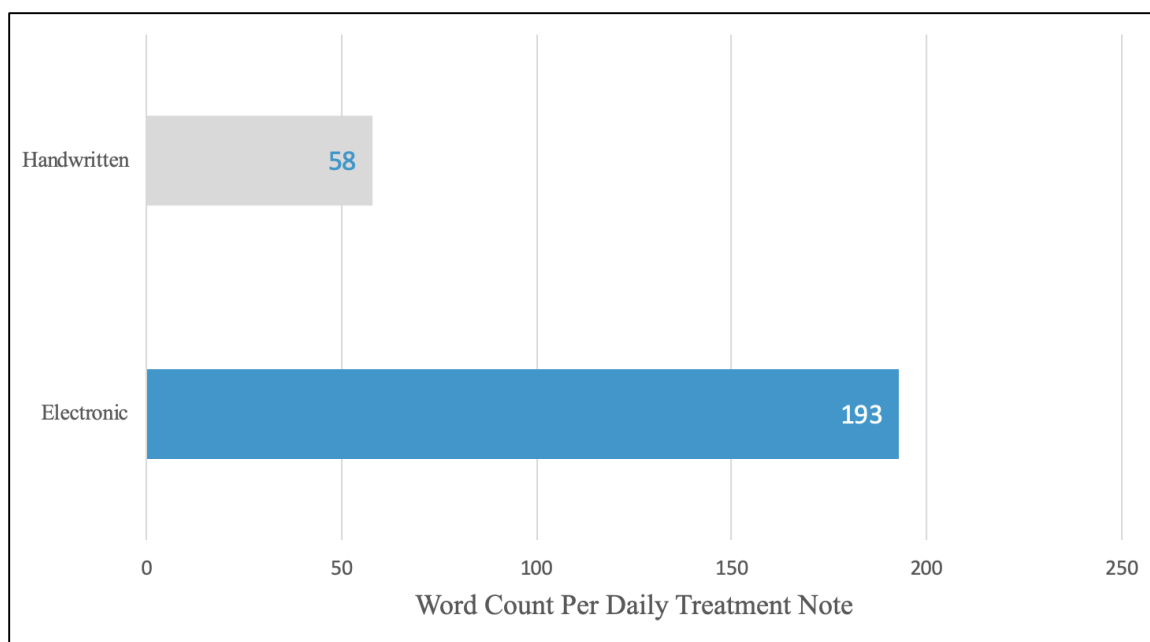
Note. *n* = number; *Mdn* = median; *minX* = minimum score; *maxX* = maximum score. Q_1 = first quartile; Q_3 = third quartile; *SD* = standard deviation.

Quantity of Words

The 25 daily treatment notes created in the EHR system contained a higher quantity of words (193-word average) compared to the 25 handwritten notes (58-word average) (see Figure 5). The electronic notes contained 333% more words compared to the handwritten notes. Although no direct correlation is made between the quantity of words and the quality of the documentation, the overall higher score on the ARC Audit, including the 109% improved rationale for occupational therapy services, may be related to the increased information provided in the documentation in the EHR system.

Figure 5

Median Word Count



Informal Discussion with the Participant

During a 15-min informal conversation, the participant reported that after 2 months use of the EHR system for her clinical documentation, she preferred to use the EHR for notes. The participant stated that she saves 5 to 10 min with each note and typically dictates information instead of typing. The participant acknowledged clinical documentation is essential; however, she believes client intervention is more important. For this reason, she indicated that she does all clinical documentation (handwritten or electronic) at the end of the workday rather than at point-of-service. Another noteworthy comment the participant made is that she emails her client's notes and other clinical documentation to the caregiver, case manager, physician, and other health professionals on the team directly from the EHR system, which she believes improves communication among team members.

Discussion

As the technology environment advances in the medical community it influences and changes the occupational therapist's occupational performance activities. Occupational therapists can make habitual changes to their occupational performance of documentation to enhance their direct client care, improve client outcomes, and advocate the distinct value of their profession. Electronic forms of documentation create opportunities for occupational therapists to improve their clinical documentation and meet the ever-growing and demanding documentation requirements.

The findings of this project indicate the participant wrote more accurate notes, provided more rationale for therapy, and completed more areas of the note when using the EHR system. All handwritten notes were incomplete and the participant's best handwritten notes scored only as high as her worst electronic notes. The participant also wrote an average of 135 more words per note using the EHR system, which provides insight as to why the scores for rationale for therapy improved drastically in the electronic notes. As in the study by Jamieson et al. (2016), the increased quantity and completeness of documentation provided greater clarity for the rationale for the skilled interventions and the practitioner's clinical reasoning for interventions.

Jamieson et al. (2016) also acknowledged that although the length of the note cannot be positively associated with the quality of the note, the quality of electronic documentation improved when a significant increase in quantity of words occurred. The participant's drastic increase of words per note and ability to create notes in less time with the EHR system aligns with the findings of Davis et al. (2008) and Harman et al. (2009), who postulate practitioners would create better quality notes if given more time or a documentation process that reduces the time required to complete documentation. The EasySteps EHR eliminates redundancy from the documentation process to allow more time to include clinical reasoning and rationale for interventions. Documentation that provides accurate information, clinical reasoning for interventions, and a complete description of the services provided can allow a profession to build a collection of data that serves as the foundation of the profession (Buchanan et al., 2016).

Limitations and Future Research

This case report focused on one occupational therapist who practices in the early intervention setting in the southern United States; therefore, it may not be representative of all occupational therapists and cannot be generalized to a larger population or to other therapy settings. Another limitation is the ARC Audit's psychometric properties have yet to be established to ensure reliability or validity of the outcome measure. Testing for psychometric properties of the ARC Audit would ensure a reliable and valid outcome measure of documentation.

Because the participant selected the notes for the document review, it is possible that the participant chose her best notes to submit or improved the notes prior to submission. Finally, the EasySteps EHR system was created by an occupational therapist and designed specifically to fulfill the workflow needs of early intervention occupational therapists; therefore, assumptions cannot be made that other EHR systems reduce redundancy or are effective or efficient modes of documentation. Research is needed to determine if health care practitioners produce higher quality documentation with EHRs.

Conclusion

The participant produced higher quality notes when she used the EHR system for documentation compared to handwriting notes. In addition, the participant wrote more accurate and complete electronic notes with a greater amount of rationale for intervention and spent less time when documenting the notes in the EHR system. Although results from this case report cannot be generalized, occupational therapist should consider implementing the use of an EHR system to improve the quality of documentation and to reduce time spent on documentation.

References

- American Occupational Therapy Association. (2015a). Distinct value of occupational therapy. <http://www.aota.org/Publications-News/AOTANews/2015/distinct-value-of-occupational-therapy.aspx>
- American Occupational Therapy Association. (2015b). Standards of practice for occupational therapy. *American Journal of Occupational Therapy*, 69 (Suppl. 3), 6913410057p1–6913410057p6. <https://doi.org/10.5014/ajot.2015.696S06>
- American Occupational Therapy Association. (2017). Vision 2025. *American Journal of Occupational Therapy*, 71(3), 7103420010p1. <https://doi.org/10.5014/ajot.2017.713002>
- American Occupational Therapy Association. (2018). Guidelines for documentation of occupational therapy. *American Journal of Occupational Therapy*, 72(Suppl. 2). <https://doi.org/10.5014/ajot.2018.72s203>
- Ammenwerth, E., & Spötl, H. (2009). The time needed for clinical documentation versus direct patient care. *Methods of Information in Medicine*, 48(01), 84–91. <https://doi.org/10.3414/me0569>
- Brown, C. (2017). *The evidence-based practitioner: Applying research to meet client needs*. F. A. Davis Company.
- Buchanan, H., Jelsma, J., & Siegfried, N. (2016). Practice-based evidence: Evaluating the quality of occupational therapy patient records as evidence for practice. *South African Journal of Occupational Therapy*, 46(1). <https://doi.org/10.17159/2310-3833/2016/v46n1a13>
- Davis, J., Zavatt, E., Urton, M., Belgum, A., & Hill, M. (2008). Communicating evidence in clinical documentation. *Australian Occupational Therapy Journal*, 55(4), 249–255. <https://doi.org/10.1111/j.1440-1630.2007.00710.x>
- DiAngi, Y. T., Stevens, L. A., Felsher, B. H., Pageler, N. M., & Lee, T. C. (2019). Electronic health record (EHR) training program identifies a new tool to quantify the EHR time burden and improves providers' perceived control over their workload in the EHR. *JAMIA Open*, 2(2), 222–230. <https://doi.org/10.1093/jamiaopen/ooz003>
- Dinkins, M., McVeigh, K., Arnold, S., & Banta, C. (2018). Utilization of lean methodology to improve quality and efficiency of rehabilitation electronic health record documentation. *Perspectives in Health Information Management*. Retrieved from https://pdfs.semanticscholar.org/9a9c/8e4c3ea52460d74619d75b8ae3c85165a5bc.pdf?_ga=2.233508702.1527462159.1588036045-776450586.1588036045
- Harman, K., Bassett, R., Fenety, A., & Hoens, A. (2009). “I think it, but don't often write it”: The barriers to charting in private practice. *Physiotherapy Canada*, 61(4), 252–258. <https://doi.org/10.3138/physio.61.4.252>
- Hripcsak, G., Vawdrey, D. K., Fred, M. R., & Bostwick, S. B. (2011). Use of electronic clinical documentation: Time spent and team interactions. *Journal of the American Medical Informatics Association*, 18(2), 112–117. <https://doi.org/10.1136/jamia.2010.008441>
- Holm, M. B. (2000). Our mandate for the new millennium: Evidence-based practice. *American Journal of Occupational Therapy*, 54(6), 575–585. <https://doi.org/10.5014/ajot.54.6.575>
- Jamieson, T., Ailon, J., Chien, V., & Mourad, O. (2016). An electronic documentation system improves the quality of admission notes: A randomized trial. *Journal of the American Medical Informatics Association*, 24(1), 123–129. <https://doi.org/10.1093/jamia/ocw064>
- Rathert, C., Porter, T. H., Mittler, J. N., & Fleig-Palmer, M. (2017). Seven years after meaningful use: Physicians' and nurses' experiences with electronic health records. *Health Care Management Review*, 44(1). <https://doi.org/10.1097/hmr.000000000000168>