ORIGINAL RESEARCH

Decision-Making Capacity Assessment Education using Online Modules

Lesley Charles, MBChB[1], Eileen Tang, BSc[1], Tara Kilkenny, MSc[2], Sharna Polard, MLIS[2], Peter George Jaminal Tian, MD, MSc[1], Jasneet Parmar, MBBS, MSc[1]

[1]*Division of Care of the Elderly, Department of Family Medicine, University of Alberta, Edmonton;*
[2]*Covenant Health, Edmonton, AB, Canada*

https://doi.org/10.5770/cgj.29.934

ABSTRACT

Background/Objectives

Specialized training is necessary for health-care providers such as physicians, nurses, and social workers, to be able to accurately perform decision-making capacity assessments (DMCAs). With an increasing demand for flexible, accessible education, there is growing interest in utilizing online training modules to keep health-care providers up to date on current best practices in DMCAs. This study evaluates the effectiveness of online training modules in enhancing clinicians' self-reported knowledge, confidence, and comfort with the core concepts necessary to conduct DMCAs.

Methods

This was a pretest/posttest study on an online DMCA training. Participants from a regional health authority (Alberta, Canada) took 13 online modules on 15 core DMCA concepts, from March to December 2021. A pretest and a posttest were completed before and after completion of the modules. Agreement to Likert-like items were collected and compared at a group level. Additionally, the ratings were compared with historical data from face-to-face DMCA workshops.

Results

A total of 683 pretests and 241 posttests were completed. All 15 posttest ratings were higher ($p < .001$) than pretest ratings. Compared to the historical face-to-face workshops, the self-reported ratings in the online modules tended to be higher both on pretest and posttest. However, the changes in self-reported ratings from pretest to posttest were similar between the online modules and the historical workshops.

Conclusion

Online learning of DMCA concepts can lead to higher self-reported learning posttest to pretest. Furthermore, the changes in self-reported ratings are similar to those observed in face-to-face workshops.

Key words: decision-making capacity assessment, health-care professionals, training, online education

INTRODUCTION

Decision-making capacity assessments (DMCAs) are conducted by health-care providers including physicians, nurses, occupational therapists, and social workers, to determine whether an individual can make informed decisions in their own best interest. DMCAs include the collection of valid information, including cognitive and functional assessments, and problem solving. Only if no suitable solution is found is there a need to go onto capacity interview. Various disciplines may be involved in the former and, to a varying degree, the latter. Capacity assessors vary by province and legislation. These assessments are complex and carry significant implications for an individual's autonomy and well-being; if not performed correctly, they can lead to harm, underscoring the importance of proper training for health-care providers. In 2006, a standardized DMCA education program was developed at the University of Alberta to support health-care professionals across the province.(1) The program included a face-to-face four-hour workshop aimed at enhancing the capacity of health-care practitioners, interprofessional teams, and associated organizations to conduct high-quality DMCAs in clinical settings. This training was built on a comprehensive DMCA model that integrates guiding principles, legislation, processes, tools, worksheets, and 15 core concepts, all designed to support person-centred, evidence-informed best practices.(2)

Initially, specialized face-to-face training in decision-making capacity assessments (DMCAs) was required to ensure that health-care providers were adequately prepared to conduct these evaluations effectively. However, in recent years, structural changes following the COVID-19 pandemic, along with increasing awareness of diverse learning preferences, have highlighted the need for alternative educational approaches. In particular, online training has gained increasing interest as a means of keeping health-care

providers informed of current best practices in DMCAs. To meet the need for flexibility and accommodate different learning styles, the original DMCA education program developed in 2006 was adapted into online modules in 2021. The four-hour workshop compares with 13 modules of 10 minutes each. The modules cover the didactic part of the workshop which takes two hours, with the remainder dedicated to cases. The content between the four-hour and online modules is identical. The legislation has not changed since 2008. The health-care professionals taking either the in-person or online modules are similar: social workers, occupational therapists, nurses, and physicians.

There is international proof of concept supporting the effectiveness of online DMCA training. For example, in the United Kingdom, an e-learning tool was developed to improve health-care providers' understanding of DMCAs.[3] This tool features a pretest to assess the provider's baseline knowledge, adaptive learning modules tailored to individual knowledge gaps, and a posttest to evaluate learning outcomes. Findings from its implementation showed a significant improvement in participants' knowledge of DMCAs following the online training.

While online education can offer numerous advantages, it is not without its challenges. In general, online learning is praised for its flexibility, cost-effectiveness, scalability, and broader accessibility compared to traditional in-person delivery.[4,5] However, common barriers can include inconsistent internet access, varying levels of digital literacy, limited opportunities for real-time interaction, and unequal access to necessary technology.[4,6,7] There is also an ongoing ethical debate regarding whether the responsibility for dedicating time and securing compensation for DMCA training should fall on individual health-care providers or their organizations.[8] Regardless, additional research has highlighted the need for online resources and self-directed learning opportunities for health-care professionals to maintain current knowledge on DMCAs.[9] Complicating this further, a systematic review of DMCA legislation and education further highlighted that some professionals are unwilling to engage in online training outside of work hours, as it adds to the burden on already under-resourced staff.[4,6,7]

Research in addressing online education for DMCAs remains limited; consequently, it is valuable to examine the broader context of virtual learning within the field of medicine. The article by Pike *et al*. examines both advantages and disadvantages of online learning in medicine.[10] Their findings support several benefits of online learning, including self-directed learning, reduced need for travel, cost and time savings, wider reach, increased factual knowledge acquisition, and high learner satisfaction.[11,12] Nonetheless, they also point to key limitations, such as the absence of face-to-face engagement, which can impede discussion and clarification, as well as ongoing concerns about academic integrity and equitable access. Overall, while acknowledging potential drawbacks, the existing body of evidence strongly supports online education as an effective and efficient alternative to traditional face-to-face training—one that is increasingly well-received by health-care learners.

This study evaluates the effectiveness of online DMCA modules in a Canadian health-care context, specifically in the province of Alberta. In particular, it will assess whether online modules improve clinicians' self-reported knowledge, confidence, and comfort with the 15 core DMCA concepts. A secondary objective is to compare outcomes between the online modules and the previously delivered face-to-face workshops, using pretest and posttest ratings. This study is novel to the body of literature of online learning in medicine, by comparing online and in-person DMCA training methods.

METHODS

The Online Modules

Thirteen self-paced online modules were offered through the Alberta Health Services (AHS; the regional health authority) and through continuing care learning platforms. At the outset of the modules, each learner completed a pretest administered anonymously on 15 core concepts of DMCAs, and upon conclusion, participated in a similar anonymous posttest. The 15 core concepts of DMCAs include: (1) understanding of "capacity," (2) relevant legislation, (3) DMCA triggers, (4) DMCA domains, (5) problem-solving techniques, (6) circumstances warranting a full DMCA, (7) potential pitfalls of DMCAs, (8) the role of functional assessments, (9) cognitive assessments, (10) standardized assessments, (11) discipline-specific roles, (12) interplay of all disciplines involved in the DMCA process, (13) system of organization and documentation, (14) confidence in DMCA knowledge and skills, and (15) level of comfort in conducting DMCAs.[2]

Due to the absence of identifying information, it was not possible to link individual pretest and posttest results, thereby precluding any direct comparison of individual progress. The group pretest and posttest data were collected from March to December 2021. We can still see the overall group effect.

The Pretest and Posttest Questionnaires

The questionnaires used for this study have been previously published by Charles *et al*.[1] (see Appendix S1 in the supplemental material). The pretest and posttest questionnaires inquired about respondents' level of agreement with the same set of 15 Likert-like items. Agreement with these items served as a self-reported measure of the respondents' understanding, comfort, and confidence of key DMCA concepts addressed in the modules. A 4-point Likert-type scale was utilized, ranging from strongly disagree through disagree, agree, to strongly agree. The pretest and posttest questionnaires were identical, except for the fact that the former also included items on demographics and past training.

Data Elements and Analysis

Participants' demographics were analyzed using descriptive statistics. As previously noted, the pretest and posttest ratings were analyzed at the group level due to the anonymity of the

assessments. Each Likert-type item had four points: Strongly Disagree (value=1), Disagree (value=2), Agree (value=3), Strongly Agree (value=4). For each Likert-like item, the group-level mean rating was compared before and after the modules using two-sample *t*-tests (unequal variance, two-tailed).

Comparison with Historical Data

Additionally, participants' ratings from the online modules were compared with historical data derived from four-hour, in-person workshops (n=835 participants) conducted in Alberta, Canada between 2008 and 2012; this historical data was previously reported in literature.[1] Group-level means in the online modules were compared with the group-level means in the historical data, using two-sample *t*-tests (unequal variance, two-tailed). Descriptive statistics were generated using Microsoft Excel 2019. All statistical tests were conducted in Stata (17.0, StataCorp LLC, College Station, TX).

This pretest/posttest study received ethics approval from the Health Research Ethics Board of the University of Alberta (Study ID Number: Pro00110551).

RESULTS

A total of 683 pretests were completed, with the number of responses per question ranging from 606 to 683. In all, 241 posttests were submitted, with the number of responses per question ranging from 225–241.

Demographics

Of those who completed the pretest, most practiced in an urban environment with approximately 72% from Edmonton (48.7%; 331/679 respondents) or Calgary (23.1%; 157/679). The majority had previously attended workshops (24.1%; 163/676) or talks and presentations (30.8%; 208/676); however, a large portion of respondents (45.1%; 305/676) had no prior training of DMCAs. These findings are further illustrated in Table 1. For occupation, 77% of respondents worked as social workers (44.7%; 301/673), nurses (21.2%; 143/673), or occupational therapists (11.4%; 77/673), while the physicians only made up 0.6% (4/673) of the respondents. In comparison, in the historical group (n=835), 79% of participants consisted of nurses (28.8%), social workers (26.1%), occupational therapists (24.1%); physicians (4.2%) were a minority.[1]

TABLE 1.
Characteristics of respondents to the pretests, March to December 2021

	n	%
Location of Work (679 responses)		
Edmonton	331	48.7%
Calgary	157	23.1%
Central	95	14.0%
North	56	8.2%
South	37	5.4%
Provincial	3	0.4%
Work Assignment (676 responses)		
Acute Care	210	31.1%
Home Living	115	17.0%
Addiction and Mental Health	69	10.2%
Community	56	8.3%
Facility Living	35	5.2%
Rehabilitation	34	5.0%
Transition Services	31	4.6%
Outpatient Services	29	4.3%
Supportive Living	20	3.0%
Primary Care	17	2.5%
Emergency medicine	12	1.8%
Cancer Care	4	0.6%
Other	44	6.5%
Profession (673 responses)		
Social Worker	301	44.7%
RN	143	21.2%
Occupational Therapist	77	11.4%
LPN	44	6.5%
Clinical Nurse Educator	12	1.8%
Nurse Practitioner	11	1.6%
Unit Supervisor	9	1.3%
Program Manager	7	1.0%
Physician	4	0.6%
Other	65	9.7%
Training in Capacity Assessment (676 responses)		
No training	305	45.1%
Talks/presentations	208	30.8%
Educational workshops	163	24.1%

Self-reported Pretest and Posttest Ratings

Across all items assessing participants' understanding, comfort, and confidence in performing DMCAs, mean posttest ratings were significantly higher than pretest ratings ($p < .001$). The observed increases in mean ratings from pretest to posttest ranged from 0.49 to 0.97, indicating consistent positive shifts in self-reported competence, which can be seen Table 2.

Self-reported Comparison to Self-reported Ratings in a Historical Group

Participants in the online modules provided higher ratings pretest and posttest across the majority of items compared to those attending the face-to-face workshops. This pattern was evident in 13/15 items on the pretest (questions 1–6 and 9–15), with a higher average rating of 0.11 (range: 0.03–0.23). A similar trend emerged in the post-test, where higher ratings for the online cohort were observed in 13/15 items (questions 1–6 and 9–15), with a higher mean difference of 0.10 (range: 0.01–0.25) (see Tables S1 and S2 in the supplemental material). Although the online modules had higher ratings as compared to the face-to-face workshops, the change in mean ratings from pretest to posttest did not significantly differ between the two instructional modalities ($p = .8621$) (see Table 2).

DISCUSSION

Most participants in this study who completed the online education to update their knowledge of current DMCA best practices

were social workers working in acute care settings. This is consistent with the participant profile in previous face-to-face DMCA workshops.[1] The workshops were given to interdisciplinary groups during the day where the majority of attendees were non-physicians, even though physicians are integral to DMCAs. The workshops have been adapted for physicians, accredited by the College of Family Physicians Canada and Royal College of Physicians and Surgeons Canada, and offered attached to conferences and evenings to increase uptake.[13]

The following core DMCA concepts did not show statistically significant differences in pretest ratings between the face-to-face and online formats: (7) potential pitfalls of DMCAs, (8) the role of functional assessments, (9) cognitive assessments, (10) standardized assessments, and

TABLE 2.
Change in self-reported ratings on core DMCA concepts in the online modules and the historical face-to-face workshops

Likert-like Items	*Online Modules*			*Face-to-Face Workshops (n=794-828 respondents)*		
	Pretest Mean (SD, n) (a)	*Post-test Mean (SD, n) (b)*	*Difference in Means[a] (b) - (a)*	*Pretest Mean (SD, n) (c)*	*Posttest Mean (SD, n) (d)*	*Difference in Means[a] (d) - (c)*
I understand the concept and definition of "capacity".	3.11 (0.50, 683)	3.60 (0.49, 241)	0.49[b]	2.95 (0.56, 826)	3.52 (0.53, 826)	0.57[b]
I am aware of the possible pitfalls of capacity assessments.	2.86 (0.66, 683)	3.45 (0.50, 241)	0.60[b]	2.77 (0.68, 822)	3.44 (0.54, 822)	0.67[b]
I am aware of the legislative acts pertinent to assessments of capacity	2.52 (0.72, 63)	3.45 (0.52, 241)	0.93[b]	2.32 (0.70, 794)	3.20 (0.50, 794)	0.88[b]
I understand the concept of "trigger" and would be able to apply it in practice.	2.49 (0.75, 683)	3.44 (0.51, 241)	0.94[b]	2.27 (0.76, 818)	3.37 (0.59, 818)	1.11[b]
I am familiar with the domains of decision-making.	2.71 (0.70, 682)	3.53 (0.52, 241)	0.82[b]	2.61 (0.69, 828)	3.44 (0.53, 828)	0.82[b]
I am aware of problem-solving techniques to diffuse the need for capacity assessments.	2.51 (0.69, 681)	3.45 (0.50, 241)	0.94[b]	2.38 (0.68, 818)	3.40 (0.54, 818)	1.02[b]
I understand the role of functional assessments in assessments of capacity.	2.78 (0.63, 681)	3.46 (0.50, 241)	0.68[b]	2.83 (0.63, 827)	3.47 (0.53, 827)	0.63[b]
I understand the role of cognitive assessments in assessments of capacity.	2.93 (0.57, 681)	3.46 (0.50, 241)	0.53[b]	2.93 (0.60, 826)	3.48 (0.53, 826)	0.54[b]
I understand my discipline's role in the capacity assessment process.	2.75 (0.64, 681)	3.49 (0.52, 241)	0.74[b]	2.70 (0.70, 826)	3.43 (0.57, 826)	0.73[b]
I understand the interplay of roles of all disciplines involved in the capacity assessment process.	2.67 (0.66, 681)	3.46 (0.51, 241)	0.80[b]	2.64 (0.67, 825)	3.39 (0.56, 825)	0.76[b]
I am aware of a standardized approach to capacity assessment.	2.58 (0.68, 681)	3.45 (0.51, 241)	0.87[b]	2.41 (0.67, 823)	3.34 (0.54, 823)	0.93[b]
I am aware of a system of organization and documentation of information pertinent to assessments of capacity.	2.52 (0.69, 681)	3.40 (0.52, 241)	0.88[b]	2.31 (0.67, 812)	3.28 (0.54, 812)	0.97[b]
I am confident in my knowledge and skill-set in regard to capacity assessments.	2.37 (0.73, 681)	3.34 (0.52, 241)	0.97[b]	2.17 (0.69, 811)	3.09 (0.55, 811)	0.92[b]
I am aware of circumstances that would require a full, formal assessment of capacity, including application for Guardianship / Trusteeship.	2.63 (0.72, 671)	3.39 (0.56, 241)	0.75[b]	2.56 (0.69, 825)	3.25 (0.52, 825)	0.69[b]
I would feel comfortable being involved in an assessment of capacity.	2.44 (0.75, 606)	3.32 (0.58, 225)	0.87[b]	2.41 (0.75, 812)	3.14 (0.58, 812)	0.74[b]

[a]The differences in means in the online modules (column b - column a) were not statistically different from those in the face-to-face workshops (column d - column c; p=.8621, two-sample t-test, unequal variance, two-tailed); each Likert-type item had four points: Strongly Disagree (1), Disagree (2), Agree (3), Strongly Agree (4).

[b]The differences in means were all statistically significant (p<.001, two-sample t-test, unequal variance, two-tailed).

(15) level of comfort in conducting DMCAs; the reasons for these differences remain unclear. Posttest ratings were again higher in the online modules compared to the face-to-face workshops, but these differences were not statistically significant for the following concepts: (2) relevant legislation, (4) DMCA domains, (6) circumstances warranting a full DMCA, (7) potential pitfalls of DMCAs, (8) the role of functional assessments, (9) cognitive assessments, and (10) standardized assessments. Some of these differences may be partially explained by the lack of statistical significance in the pretest ratings for (7) potential pitfalls of DMCAs, (9) cognitive assessments, and (10) standardized assessments. However, the lack of significant differences in posttest ratings for (2) relevant legislation, (4) DMCA domains, and (6) circumstances warranting a full DMCA remain unclear.

Overall, the study indicates that participants in both face-to-face and online workshops reported significant gains in knowledge, comfort, and confidence across 15 core DMCA concepts after completing training in general, with there being comparable overall learning gains across formats. Additionally, participants in the online format had the option to choose their preferred learning mode as face-to-face workshops were also an option, which may have contributed to its greater effectiveness in accommodating different learning styles. In contrast, no online option was available during the face-to-face workshops. Other research similarly shows significant improvement with a global capacity e-tool, with average pretest ratings of 19.1 and posttest ratings of 21.7, reflecting a mean improvement of 2.55 (SD = 1.31; 95% CI: 2.07-3.03) post-test.[3]

As previously discussed, an additional study from the United Kingdom reinforces the benefits of online learning and highlights the need for more DMCA training, particularly for those with less experience in this area.[14] The study found that well-designed online learning can enhance knowledge and confidence, often matching the effectiveness of traditional teaching methods; and those findings align with the results of this study conducted in Alberta, Canada. In broader medical education, online learning has demonstrated effectiveness in a range of topics: electroconvulsive therapy, appropriate use of antipsychotics in long-term care, malnutrition in older adults, dementia management, pain assessment, Emotion-Focused Communication Training for long-term care staff, elder abuse, and telemedicine-specific patient safety and communication skills.[15-22] Key aspects of online learning—such as accessibility, legal considerations, financial implications, and sustainability challenges—are essential for medical professionals to address when developing effective, inclusive, and enduring online content. These considerations are particularly important in the context of virtual training for DMCAs.[23]

An important consideration in online education is the optimal duration required to complete training. Research examining a self-paced online educational program found that posttest knowledge ratings improved across all participants, regardless of the pace at which they completed the training. This suggests that online modules can effectively support busy clinicians in improving clinical knowledge, even when learning is intermittent due to competing responsibilities.[24]

The length of individual modules is another key factor for online education. There is a strong argument for using short educational modules as efficient supplements to meet staff learning needs. These modules provide informative, accessible, and actionable content, offering immediate, evidence-based information while guiding learners to more comprehensive resources.[25] This format is particularly effective for time-constrained professionals and supports the development of DMCA-related knowledge. Module length was a critical factor in the decision to divide the content into 13 shorter modules in this study, with the average module taking 10 minutes to complete.

Considering these factors and in light of the evolving landscape of health-care and medical education, online learning presents a timely and valuable opportunity to modernize traditional educational modalities. Online learning enables the continuous development of health-care providers' knowledge and clinical competencies, ensuring they remain aligned with current best practices in patient care. As part of a broader commitment to lifelong learning and professional excellence, the methods by which education is delivered must also advance to reflect contemporary needs and technologies. To this end, the design and implementation of online education should be guided by established best practices that prioritize a learner-centred approach. This includes tailoring content to diverse learning styles, incorporating emerging educational technologies, and enhancing the virtual learning environment to facilitate engagement, accessibility, and knowledge retention.[26]

Despite the many advantages of online education and the ability to implement changes to known limitations—such as providing technology to those without access—one commonly noted limitation remains ever-present and inherent to online education: the lack of face-to-face interaction.[10] To address this, participants who complete the online DMCA modules can be offered an optional face-to-face workshop. This provides an opportunity to apply knowledge through interactive case-based learning and to ask questions or seek clarification.

This study contributes to the growing body of literature supporting the efficacy of online DMCA training. In this particular study, online education was equal to face-to-face learning. Participants have reported significant gains in self-perceived knowledge, comfort, and confidence across 15 core DMCA concepts. Furthermore, the study offers comparative insights between online and face-to-face DMCA education formats. Significant proportions of DMCAs are performed in the elderly, making this valuable to the discipline of geriatric medicine. Given the growing need for DMCA training, targeted efforts should ensure that physicians and other clinicians involved in managing geriatric syndromes receive appropriate education.[27] It has been recommended that physicians undergo ongoing DMCA training through mandatory education programs.[13] Self-paced, short-format online modules make

such training more feasible and accessible. However, since individuals have varied learning preferences, face-to-face workshops should remain available for those who benefit more from in-person instruction. Additional strategies to reach busy physicians could include targeted articles for both trainees and practicing clinicians.[28,29]

Limitations

This study employed a self-reported rating scale to assess participants' perceived knowledge across core DMCA concepts. While this approach provides valuable insight into learners' perceived knowledge gains, it does not directly measure clinical impact or behaviour change in practice. Furthermore, the analysis focused on aggregate pretests and posttest ratings at the group level, rather than tracking changes at the individual participant level. The study is also limited by poorer posttest completion. As a result, individual variations in learning outcomes could not be fully captured.

CONCLUSION

Virtual DMCA training represents an innovative educational approach. In this study, online learning of DMCA concepts has been shown to produce significant gains in self-reported knowledge, with improvements comparable to those observed in traditional face-to-face workshops. These findings support the integration of virtual training as a viable and effective option for expanding access to essential DMCA education.

ACKNOWLEDGEMENTS

None to declare.

CONFLICT OF INTEREST DISCLOSURES

We have read and understood the *Canadian Geriatrics Journal*'s policy on conflicts of interest disclosure and declare we have none.

FUNDING

This study was funded by the Northern Alberta Academic Family Medicine Fund, an internal grant in the Department of Family Medicine, University of Alberta.

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SUPPLEMENTARY MATERIALS

Supplemental material linked to the online version of the paper (https://doi.org/10.5770/cgj.29.934):

- **Table S1:** Comparing Pretest ratings between the Online Modules and the Historical Face-to-Face Workshops.
- **Table S2:** Comparing Posttest ratings between the Online Modules and the Historical Face-to-Face Workshops.
- **Appendix S1:** Questionnaire

Correspondence to: Lesley Charles, MBChB, Division of Care of the Elderly, Department of Family Medicine, University of Alberta, 6-10 University Terrace, University of Alberta, 8303 112 St. NW, Edmonton, AB T6G 2T4
E-mail: Lcharles@ualberta.ca