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Research

Assessing readiness to manage intimate partner violence 12 months after completion of an educational program in fracture clinics: a pretest–posttest study

The EDUCATE Investigators*

Abstract

Background: The aim of the EDUCATE study was to determine whether an intimate partner violence educational program for health care providers working in fracture clinics increased their knowledge about intimate partner violence and their preparedness to discuss this topic with their patients. Here, we present the long-term (12-mo) follow-up data from the EDUCATE study to determine whether improvements in knowledge were maintained.

Methods: For this pretest–posttest study, we enrolled 140 health care providers from 7 academic fracture clinics in Canada and the United States. Training took place between October 2016 and June 2017. We administered the Physician Readiness to Manage Intimate Partner Violence Survey before participants completed the educational program (baseline), immediately after training, and at 3 months and 12 months after training. We used the actual knowledge subscale as the primary outcome for the planned 12-month analyses; we also report on the other subscales of the survey (perceived preparation to manage intimate partner violence, perceived knowledge about the issues, practice issues, preparation, legal requirements, workplace issues, self-efficacy, alcohol or drugs, and victim understanding). We used linear regression models to compare mean 12-month scores with mean baseline scores for each subscale of the survey.

Results: Among the 109 participating health care providers for whom 12-month assessment data were available, we found statistically significant improvements in the actual knowledge about intimate partner violence subscale of the survey (mean difference [MD] 2.50, 95% confidence interval [CI] 1.69 to 3.32). Statistically significant improvements from baseline to 12 months were also observed for 8 of the 9 other subscales of the survey: perceived preparation (MD 2.06, 95% CI 1.88 to 2.24), perceived knowledge (MD 2.14, 95% CI 1.96 to 2.31), practice issues (MD 6.12, 95% CI 4.97 to 7.27), preparation (MD 1.10, 95% CI 0.94 to 1.26), legal requirements (MD 1.57, 95% CI 1.36 to 1.78), workplace issues (MD 1.19, 95% CI 1.04 to 1.35), self-efficacy (MD 0.56, 95% CI 0.46 to 0.67) and alcohol and drugs (MD 0.11, 95% CI 0.02 to 0.21). Improvements relative to baseline were not observed for the victim understanding subscale.

Interpretation: The EDUCATE program led to significant improvements in health care providers' readiness to manage intimate partner violence, with positive changes being observed 12 months after training. These findings indicate that health care providers who receive this training may be better equipped to manage the care of patients who have experienced intimate partner violence.

Intimate partner violence is defined by the World Health Organization as "any behaviour within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship."[1] Intimate partner violence can include acts of physical violence, sexual violence, emotional or psychological abuse, controlling behaviours and stalking.[2] Previous research has shown that although there is a high prevalence of intimate partner violence among female patients visiting fracture clinics,[3] health care providers working in such clinics often do not feel prepared to talk to potential victims about intimate partner violence.[4–6] To combat this lack of preparedness, an educational program, EDUCATE, was implemented at fracture clinic sites across Canada and the United States, and a study of the same name was conducted to determine the impact of this educational program.

More specifically, the aim of the EDUCATE study was to determine whether the educational program increased health care providers' knowledge about intimate partner

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violence and their preparedness to discuss this topic with their patients, as assessed by the Physician Readiness to Manage Intimate Partner Violence Survey.[7] The primary outcome of the first phase of the EDUCATE study was a change in score for the actual knowledge subscale of the survey from before training to 3 months after training. Comparison of the immediate post-training and 3-month evaluations for the primary outcome showed significant improvement on the actual knowledge subscale at 3 months after the training (mean difference [MD] 2.44, 95% confidence interval [CI] 1.79 to 3.09).[8] Additionally, there were statistically significant improvements on 7 other subscales at 3 months after training.[8]

Educational research suggests that in comparison with short-term knowledge retention, long-term retention is a more accurate indicator of actual learning.[9] Therefore, a secondary objective of the EDUCATE study was to determine whether improvements in knowledge were maintained at 12 months after completion of the EDUCATE training. To address this secondary objective, the current paper presents the long-term (at 12 mo) follow-up data from the EDUCATE study.

Methods

Study design and procedures

A description of the EDUCATE program and study methodology has been previously published.[8] The 2-hour educational program was delivered to participants at fracture clinics in academic centres using a train-the-trainer model. We used a pretest–posttest study design to assess the retention, defined as maintenance over time of the increment between baseline and immediate post-course assessments, of knowledge, attitudes, beliefs and self-reported behaviours.

We administered the Physician Readiness to Manage Intimate Partner Violence Survey tool[7] to participants before, immediately after, and at 3 months and 12 months after training, and generated scores for each of the survey's 10 subscales: actual knowledge, perceived preparation to manage intimate partner violence, perceived knowledge of important intimate partner violence issues, practice issues, preparation, legal requirements, workplace issues, self-efficacy, alcohol or drugs, and victim understanding. The subscales were used to determine the effectiveness of intimate partner violence training programs by assessing health care providers' level of preparedness to assist patients who are experiencing intimate partner violence.

Setting and participants

Using a train-the-trainer model, we delivered the EDUCATE program in 6 fracture clinics in Canada (Hamilton Health Sciences–General Site, University of Calgary, Memorial University of Newfoundland, St. Michael's Hospital [Toronto], London Health Sciences Centre and St. Joseph's Healthcare Hamilton) and 1 clinic in the US (The CORE Institute [Phoenix, Arizona]). Participants included orthopedic surgeons, surgical trainees, nonphysician health care providers, and research and administrative staff at the participating fracture clinics. Participants were enrolled between Oct. 24, 2016, and May 24, 2017, and they completed the 2-hour educational program between Oct. 24, 2016, and June 28, 2017.

Statistical analysis

As for the previously published 3-month analyses,[8] we used the actual knowledge subscale as the primary outcome for

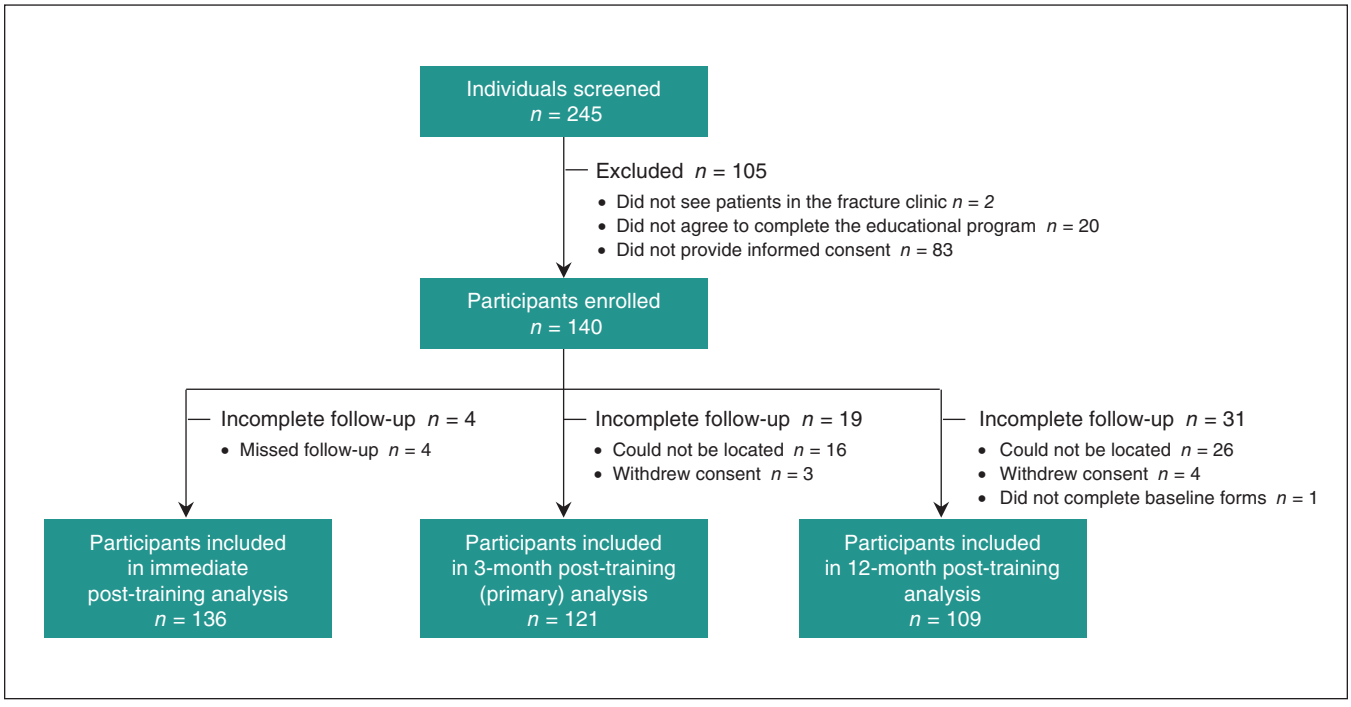

Figure 1: Participant flow diagram.

the planned 12-month analyses, and we also report on the other subscales of the Physician Readiness to Manage Intimate Partner Violence Survey. Although no minimal clinically important difference (MCID) has been determined for the subscales of this survey, we estimated each MCID as half the standard deviation (SD), based on all 139 participants who completed the survey at baseline.[8] We based our sample size upon this approximation because it has been found in previous research that half the SD is a reliable substitute for health-related quality of life measures.[10] We scored each subscale of the Physician Readiness to Manage Intimate Partner Violence Survey according to the algorithm published by the developer.[7]

We entered the change in score on all subscales of the Physician Readiness to Manage Intimate Partner Violence Survey as the dependent variable in multivariable linear regression models. We included baseline score, age, sex, profession (orthopedic surgeon v. student or resident or fellow v. allied health care professional v. research personnel) and previous intimate partner violence training (none v. any) as independent variables. We centred all covariables, so that the model intercept would represent the mean change for the average participant. For each subscale, we calculated the MD, with 95% CI, which reflected the scores of all participants who completed the survey at baseline and 12 months after training. We present here the mean scores from each subscale at baseline, immediately after training, and at 3 months and 12 months after training. All of the tests conducted were 2-tailed and used an α level of 0.05. We did not adjust the overall level of significance for multiple testing because all analyses were exploratory. We used SAS software, version 9.4 (SAS Institute Inc.), to conduct all analyses.

Ethics approval

The study was reviewed and approved by the ethics committee at McMaster University and at each participating institution.

Results

Of the 140 health care providers who consented to participate in the EDUCATE training and corresponding study, 109 (77.9%) completed the 12-month follow-up Physician Readiness to Manage Intimate Partner Violence Survey (Figure 1). The mean age of the participants who completed the 12-month follow-up was 36.7 (SD 10.9) years, and 73 (67.0%) of participants were male (Table 1). Almost two-thirds of these participants were either orthopedic surgeons (23.9%) or orthopedic surgery residents (41.3%).

We found statistically significant improvements in the actual knowledge about intimate partner violence subscale of the Physician Readiness to Manage Intimate Partner Violence Survey at 12 months after training among participating health care providers (MD 2.50, 95% CI 1.69 to 3.32). Across the 7 participating sites, the mean actual knowledge score at 12 months was 29.09 (SD 4.66), ranging from 23.83 (SD 6.52) to 30.67 (SD 3.93).

Table 1: Participant characteristics

Characteristic	No. (%) of participants* n = 109
Demographic	
Age, yr, mean ± SD	36.7 ± 10.9
Sex	
Female	36 (33.0)
Male	73 (67.0)
Race or ethnicity	
White	86 (78.9)
Black	1 (0.9)
South Asian	12 (11.0)
Middle Eastern	2 (1.8)
East Asian	6 (5.5)
Multiracial	2 (1.8)
Professional	
Health care profession	
Orthopedic surgeon	26 (23.9)
Physician/surgical assistant	5 (4.6)
Nurse	8 (7.3)
Orthopedic technician	7 (6.4)
Orthopedic surgery resident	45 (41.3)
Orthopedic surgery fellow	1 (0.9)
Student	1 (0.9)
Physiotherapist	5 (4.6)
Occupational therapist	1 (0.9)
Booking clerk	1 (0.9)
Research personnel	9 (8.3)
Time in practice, yr, median (IQR)	4 (2–12)
Time at current fracture clinic, yr, median (IQR)	3 (1.5–6)
No. of patients treated per year, median (IQR)	1500 (725–3000)
Previous IPV training	
Time spent, h	
0	50 (45.9)
1–5	52 (47.7)
6–15	7 (6.4)
Type of training†	
Watched a video	21 (19.3)
Attended a lecture or talk	50 (45.9)
Attended skills-based training workshop	7 (6.4)
Completed online training	7 (6.4)
Other	5 (4.6)
Setting of training	
Medical or professional school	28 (25.7)
Residency or placement or internship	13 (11.9)
Workplace	14 (12.8)
Professional education	11 (10.1)
Other	6 (5.5)

Note: IPV = intimate partner violence, IQR = interquartile range, SD = standard deviation.
*Except where indicated otherwise.
†Participants could report more than 1 type or setting of previous IPV training, if applicable.

Table 2: Change in scores on subscales of the Physician Readiness to Manage Intimate Partner Violence Survey from baseline to 12 months after training

Subscale	Timing of survey; score, mean ± SD*		MD (95% CI)†
	Baseline	12 mo	
Actual knowledge	26.59 ± 4.92	29.09 ± 4.66	2.50 (1.69 to 3.32)
Perceived preparation	2.60 ± 1.08	4.66 ± 1.15	2.06 (1.88 to 2.24)
Perceived knowledge	2.70 ± 1.12	4.84 ± 1.05	2.14 (1.96 to 2.31)
Practice issues	5.81 ± 6.46	11.94 ± 7.26	6.12 (4.97 to 7.27)
Opinion subscales			
Preparation	3.73 ± 1.25	4.83 ± 0.90	1.10 (0.94 to 1.26)
Legal requirements	3.38 ± 1.52	4.94 ± 1.16	1.57 (1.36 to 1.78)
Workplace issues‡	3.04 ± 0.95	4.24 ± 0.88	1.19 (1.04 to 1.35)
Self-efficacy	3.56 ± 0.46	4.12 ± 0.61	0.56 (0.46 to 0.67)
Alcohol and drugs	4.22 ± 0.57	4.34 ± 0.52	0.11 (0.02 to 0.21)
Victim understanding	4.97 ± 0.70	4.92 ± 0.70	–0.05 (–0.16 to 0.07)

Note: CI = confidence interval, IPV = intimate partner violence, MCID = minimally important clinical difference, MD = mean difference, SD = standard deviation.
*For each subscale, the potential range of scores and the estimated MCID (where MCID was estimated as half the SD for that subscale at baseline,[10] based on the 139 participants who responded to the survey at baseline[8]) were as follows: actual knowledge, potential range of scores 0 to 38, MCID 2.42; perceived preparation to manage IPV, potential range 1 to 7, MCID 0.55; perceived knowledge of important IPV issues, potential range 1 to 7, MCID 0.55; practice issues, potential range 0 to 58, MCID 3.06; preparation, potential range 1 to 7, MCID 0.59; legal requirements, potential range 1 to 7, MCID 0.77; workplace issues, potential range 1 to 7, MCID 0.45; self-efficacy, potential range 1 to 7, MCID 0.22; alcohol and drugs, potential range 1 to 7, MCID 0.28; and victim understanding, potential range 1 to 7, MCID 0.35.
†MD was based on multivariable linear regression model comparing baseline score with 12-month score.
‡Data for the workplace issues domain are based on 108 responses (1 participant missed all questions that were part of the workplace issues domain).

We also found statistically significant improvements at 12 months after training in 8 of the 9 other subscales of the survey as compared with baseline: perceived preparation, MD 2.06 (95% CI 1.88 to 2.24); perceived knowledge, MD 2.14 (95% CI 1.96 to 2.31); practice issues, MD 6.12 (95% CI 4.97 to 7.27); preparation, MD 1.10 (95% CI 0.94 to 1.26); legal requirements, MD 1.57 (95% CI 1.36 to 1.78); workplace issues, MD 1.19 (95% CI 1.04 to 1.35); self-efficacy, MD 0.56 (95% CI 0.46 to 0.67); and alcohol and drugs, MD 0.11 (95% CI 0.02 to 0.21). We did not find a statistically significant improvement in the victim understanding subscale after 12 months of training, relative to baseline (Table 2).

Interpretation

The statistically significant improvements in health care providers' knowledge, attitudes and behaviours related to intimate partner violence that were observed 3 months after completion of the EDUCATE training program[8] were also observed 12 months after training (Appendix 1, available at www.cmajopen.ca/content/8/4/E731/suppl/DC1). These findings suggest that health care providers working in fracture clinics who completed the EDUCATE program may have felt more prepared at 3 months and at 12 months after training to identify and support women who visit the clinic having experienced intimate partner violence than they felt before receiving the training. For 8 of the 10 subscales of the Physician Readiness to Manage Intimate Partner Violence Survey (actual knowledge, perceived preparation, perceived knowledge, practice issues, preparation, legal requirements, workplace issues, self-efficacy, and alcohol and drugs), the improvement from baseline (as illustrated by the MD in scores) was greater at 12 months after training than at 3 months after training.

One study that evaluated the effectiveness of an intimate partner violence educational program in an orthopedic setting was conducted as preliminary work for the current EDUCATE study.[11] In that study, the educational intervention delivered to 33 health care providers at a single centre significantly improved their knowledge from baseline to immediately after completion of training (MD 16%, 95% CI 7% to 25%). These improvements in knowledge were retained at the 3-month follow-up (MD relative to baseline 11%, 95% CI 1% to 19%). A previously conducted scoping review of 62 studies that evaluated the effectiveness of different intimate partner violence education programs for health care providers in various settings found 34 studies (54.8%) that reported positive program effectiveness, 22 studies (35.5%) that reported neutral or mixed results and 6 studies (9.7%) in which the results were not specified.[12] None of the studies included in the review reported negative program outcomes.

To further expand the reach of the program, the EDUCATE team has now partnered with the Canadian Orthopaedic Association to make the educational material available to health care providers across Canada (http://www.IPVeducate.com). Future research should be conducted to assess whether the EDUCATE program changes the behaviour of health care providers and how this in turn may affect patients' experiences.

Limitations

The strengths and limitations of the overall EDUCATE program and the corresponding study have been previously published.[8] Briefly, although an experimental design would produce higher-quality evidence, the pretest–posttest design is time-efficient, maximizes the number of trained health care providers and, in this case, had no risk of contamination through interactions between members of experimental and control groups.

One limitation of the EDUCATE study is that we did not assess whether the participants completed all components of the training (although the in-person component was mandatory). There is also the potential for testing bias, given that the same Physician Readiness to Manage Intimate Partner Violence Survey was administered at each assessment point; however, participants were never given the correct answers to the survey questions. There are no established criteria for determining the MCID for each subscale of the Physician Readiness to Manage Intimate Partner Violence Survey. We did not capture whether additional training was obtained after the EDUCATE training and therefore cannot comment on whether the scores would improve in the absence of additional training.

There was notable loss to follow-up, with only 77.9% of the participants completing the 12-month assessment upon which this analysis is based. Most participants who were lost to follow-up were orthopedic surgery residents and fellows.

Conclusion

We found that health care providers working in a fracture clinic setting who completed the EDUCATE program retained and, on some subscales, improved their knowledge, beliefs and opinions about intimate partner violence over the long term. Although we cannot assume causality, these findings suggest that the health care providers were more prepared to address and assist victims of intimate partner violence who visit their clinics.

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