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RESEARCH ARTICLE

The Longitudinal Impact of an Internet Safety Decision Aid for Abused Women

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Introduction: Women experiencing intimate partner violence (IPV) navigate complex, dangerous decisions. Tailored safety information and safety planning, typically provided by domestic violence service providers, can prevent repeat IPV exposure and associated adverse health outcomes; however, few abused women access these services. The Internet represents a potentially innovative way to connect abused women with tailored safety planning resources and information. The purpose of this study was to compare safety and mental health outcomes at baseline, 6 months, and 12 months among abused women randomized to: (1) a tailored, Internet-based safety decision aid; or (2) control website (typical safety information available online).

Design: Multistate, community-based longitudinal RCT with one-to-one allocation ratio and blocked randomization. Data were collected March 2011–May 2013 and analyzed June–July 2015.

Setting/participants: Currently abused Spanish- or English-speaking women (N=720).

Intervention: A tailored Internet-based safety decision aid included priority-setting activities, risk assessment, and tailored feedback and safety plans. A control website offered typical safety information available online.

Main outcome measures: Primary outcomes were decisional conflict, safety behaviors, and repeat IPV; secondary outcomes included depression and post-traumatic stress disorder.

Results: At 12 months, there were no significant group differences in IPV, depression, or post-traumatic stress disorder. Intervention women experienced significantly less decisional conflict after one use (β= −2.68, p=0.042) and greater increase in safety behaviors they rated as helpful from baseline to 12 months (12% vs 9%, p=0.033) and were more likely to have left the abuser (63% vs 53%, p=0.008). Women who left had higher baseline risk (14.9 vs 13.1, p=0.003) found more of the safety behaviors they tried helpful (61.1% vs 47.5%, $p<0.001$), and had greater reductions in psychological IPV ((11.69 vs 7.5, p=0.001) and sexual IPV (2.41 vs 1.25, p=0.001) than women who stayed.

Conclusions: Internet-based safety planning represents a promising tool to reduce the public health impact of IPV.

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INTRODUCTION

Annually, an estimated 6.9 million U.S. women are raped, physically hurt, or stalked by an intimate partner/ex-partner.[1,2] Health sequelae of intimate partner violence (IPV) include depression; post-traumatic stress disorder (PTSD); suicidality; chronic fatigue; insomnia; headaches; gastrointestinal, respiratory, and gynecologic problems; traumatic brain injury[3,4]; and physical injury.[2] Globally, a third of female homicides are perpetrated by intimate partners, including an average of three U.S. women murdered each day.[5–7]

Foundational work in empowerment by Mary Ann Dutton[8] was used as the model for the intervention to increase safety and improve health outcomes with women in abusive relationships. Specifically, the empowerment model for the intervention addressed three key factors: (1) protection, a focus on increasing safety for women and their families; (2) enhancing decision making around safety; and (3) reducing exposure to violence to support healing of the health effects of IPV. Safety planning is an evidence- and empowerment-based intervention intended to support abused women's decision making around the relationship, relocation, and other safety issues for self and family, typically provided within clinic- and community-based formal services (e.g., healthcare settings and crisis services).[9,10] Safety planning that is individualized, with attention to abused women's priorities, level of risk, and resources, has been shown effective in reducing exposure to violence and, ultimately, in improving health. Abused women are often unaware of safety planning services[11] and the majority (48.7%–67.8%) never access them, navigating complex, dangerous, potentially fatal decisions alone.[12–14] However, many do have safe Internet access (e.g., at home, work, public library, or at family/friends' homes), representing a promising area for potential innovation to increase access to safety planning for abused women. Therefore, the purpose of this study was to examine the effectiveness of a previously developed Internet-based safety decision aid for abused women.[15]

Decision aids help people facing challenging decisions understand their options, consider possible benefits and harms, and participate in decision making.[16] Decision aids are well established as effectively supporting informed decision making regarding complex screening and treatment decisions (e.g., end-of-life choices) and reducing decisional conflict, a state of uncertainty stemming from feeling uninformed/unclear about personal priorities/values around a decision.[16,17] The safety decision aid in this study is designed to help abused women understand and feel more certain in decisions, more informed, more clear on priorities, and more supported in decisions, and therefore less conflicted in taking action to increase safety and improve health while reducing risk of repeat and near-lethal violence when planning to stay or end the relationship.

To test the intervention's effectiveness on safety and mental health outcomes over 12 months, this research team conducted a longitudinal RCT (Internet Resource for Intervention and Safety). This study compared the intervention with a control condition (typical IPV information available through advocacy websites). The research team hypothesized the intervention would reduce decisional conflict, increase safety behaviors, and reduce repeat IPV exposure (primary outcomes) and that intervention group women would report greater reduced depression and PTSD symptoms (secondary outcomes).

METHODS

Four academic centers conducted this community-based RCT with a one-to-one allocation ratio (ClinicalTrials.gov identifier #NCT01312103). The research team recruited adult women in Arizona, Maryland, Missouri, and Oregon who were English/Spanish speaking, reported physical, sexual, or emotional abuse or threats of violence by a current male/female intimate partner in the past 6 months, were comfortable with computers, and had safe Internet and e-mail accounts the abuser could not access. As previous research has demonstrated that the majority of abused women never seek assistance from traditional resources such as shelter or crisis lines,[12–14] each multisite team recruited widely, with postings online (e.g., Craigslist) and flyers in community-based settings where women might seek health and social services (e.g., health clinics) and other community locations (e.g., college campuses, women's bathrooms in coffee shops). To increase enrollment of monolingual Spanish speakers, multisite teams also employed additional multiple recruitment strategies using Spanish-language recruitment materials in online and community venues targeted toward this population (e.g., Spanish-language radio, websites, community agencies). All recruitment materials referred to a woman's health study about unsafe relationships and a requirement for access to a safe computer with Internet and provided an e-mail address/toll-free number for study inquiries. The majority of participants (82.8%) reported that they learned about the study from an online advertisement.

Sample size calculation assumed 20% attrition and provided 0.90 power to detect a significant group by time interaction regarding a primary outcome (increasing safety behaviors) using a medium effect size (0.58) from a previous intervention.[18,19] Computerized blocked randomization provided intrastate stratification and for participants with children (aged <18 years) at home, ensuring each state's groups remained relatively balanced. The randomization sequence (concealed from research assistants [RAs]) was programmed into a secure tracking database separate from the study website by the study programmer, who had no participant contact. Participants were blinded to group assignment.

Study Sample

Potential participants contacted RAs via telephone for eligibility screening, verbal informed consent, and enrollment. RAs entered

participants' safe contact information into the tracking database, which randomized participants and immediately sent the secure, password-protected study website URL, study ID/password, RA contact information, and computer safety guidance to their safe e-mail. Participants logged into the website, completing study sessions when convenient and safe, and were automatically routed to the intervention or control websites (available in English/Spanish). Each screen had an emergency exit button. Participants were encouraged to complete sessions immediately, but received telephone/e-mail reminders at reasonable intervals until completed or the enrollment window expired (6 weeks). Participants were compensated up to $180 by electronic or mailed gift card (e.g., Amazon, Walmart) over the study year.

Participants who completed baseline (n=725) were contacted 6 and 12 months later for follow-up sessions. Reminders were sent until the session was completed, the participant withdrew from the study, or the 6-week completion window expired. Participants who missed the 6-month follow-up but did not withdraw were re-contacted at 12 months.

The RAs received standardized training addressing safety assessment, IPV resource referrals, technology safety, and suicidality protocols adapted from previous IPV research.[15] A data safety monitoring board of external IPV experts met regularly to review safety outcomes. The trial ended when the last participant completed 12-month follow-up (May 2014).

Intervention development and content has been described previously.[15,20] It has three main components:

Intervention women made ten pairwise comparisons, via a sliding bar (Figure 1), of well-known and previously identified drivers of women's IPV safety decisions[15]: having resources, privacy, feelings for their partner, concerns for safety, and children's well-being (for those with children). Priority weights were computed for each priority, ranging from 0 to 100, summing to 100X.[20] Participants received feedback about their priorities and could make changes if desired.

Women completed the Danger Assessment (DA) for male abusive partner, and DA-Revised (DA-R) for female partner. Both are well validated, assessing risk factors for severe or lethal violence (e.g., severity/frequency of violence, extreme controlling behavior/jealousy, threats to kill, forced sex).[6,10,21–25] Participants were provided scores (DA range, 0–38; DA-R range, 0–26), visual feedback, and messages regarding danger level memorable and understandable to abused women.[26]

The intervention provides emergency safety plans, modeled after resources available on domestic violence websites. It also provides tailored safety action plans with recommended strategies based on participant input (demographics, relationship characteristics, previous safety behaviors, priorities and DA/DA-R score) and national, state, and local websites/phone resources regarding IPV, housing, health, legal, substance abuse treatment, and batterer intervention programs. Participants chose tailored strategies to add to their safety plan and could print their DA/DA-R feedback, priority feedback, and safety plans or access them anytime through the secure website.

Control group participants were not provided the priority-setting activity or visual feedback/message to their DA/DA-R score. All received the same emergency safety plans as intervention women, printable or accessible anytime online, but did not receive tailored safety action plans based on their input.

Measures

All participants completed measures via the secure website at baseline, 6 months, and 12 months. All were self-reported, widely used in prior IPV research (where possible), and available in Spanish.

The Decision Conflict Scale discriminates between people who make (versus delay) decisions and measures constructs underlying overall decisional conflict, with four subscales: feeling uncertain, uninformed, unclear about priorities or values, and unsupported. The scale was administered at baseline, before the study session (pre) and again after (post), using a tailored, low-literacy version of the Decision Conflict Scale with excellent internal consistency (α=0.86).[27]

Safety behaviors were measured as actions the survivor takes (under her control), for example, obtaining a restraining order, talking to an advocate, opening a separate savings account, with participants asked about specific safety behaviors they used and

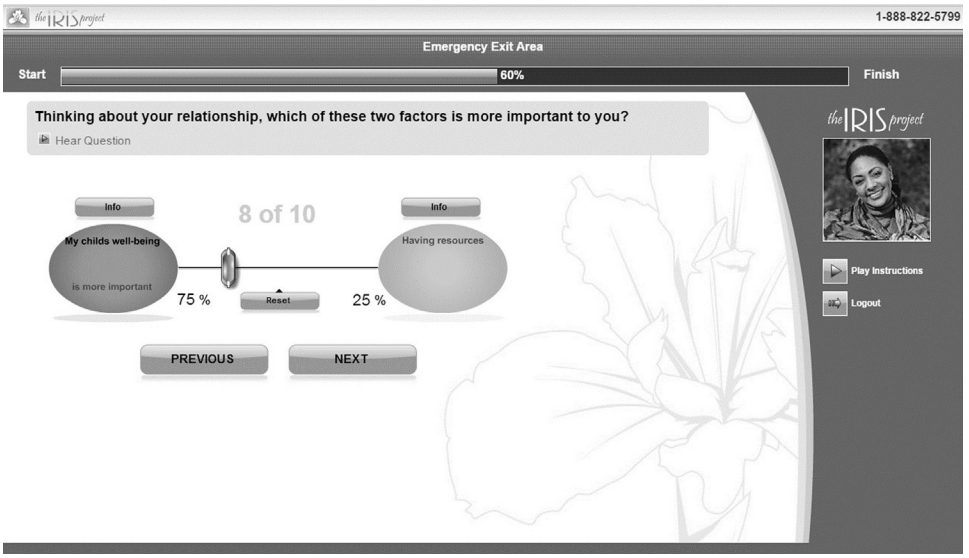

Figure 1. Screen shot of priority setting activity.

how helpful they were to safety over 12 months, using an adapted 35-item safety behaviors list from prior research.[28,29] Five categories were emergency safety planning (removing a gun/ammunition from the home, making emergency escape plans), informal help seeking (family/friends), formal help seeking (shelters, healthcare), legal help seeking (restraining orders), placating (avoiding arguments), and resistance (fighting back). The score was calculated by summing the number of safety behaviors a woman found helpful and dividing this by the total number tried, cumulative across 6- and 12-month assessments.

The 46-item Severity of Violence Against Women Scale assesses exposure to/severity of IPV, with good reliability (α=0.72).[30] The 10-item Women's Experience of Battering scale measures women's IPV experiences and the meaning they attach to these, with high internal consistency (α=0.95).[31]

The well-validated 20-item Center for Epidemiologic Studies Depression Scale, Revised measures past-week depressive symptoms, reflecting DSM-IV criteria for clinical depression.[32]

The 6-item PTSD Checklist, Civilian Version reflects DSM-IV criteria for PTSD, adequately capturing the original form's variance with good psychometrics.[33]

Participants were asked at 12 months: *Several months ago we asked you a series of questions about your abusive partner. Are you currently in a relationship with the same partner that we talked about then? (yes/no).*

Statistical Analysis

Analyses were conducted June–July 2015, using SPSS, version 22.0 and an intent-to-treat approach including generalized estimating equations to test for differences in change over time between groups. Analyses used a Gaussian distribution with an identity link function, with an exchangeable working correlation matrix. Time had three levels (baseline, 6 months, 12 months) for IPV severity, and mental health outcomes had four levels (baseline pre-test, baseline post-test, 6 months, and 12 months) for decisional conflict and two levels (baseline, and 6+12 months) for safety behaviors. In addition, chi-square analyses tested group differences in the number of women who left the abuser by 12 months. For all women, independent sample *t*-tests tested differences in safety behaviors and IPV between women who left (n=390) and stayed (n=283).

All available data were included in analyses (generalized estimating equations do not require complete data at each time point). At baseline, 0.8% of the intervention and 1.4% of the control group were missing data on one or more outcomes due to incomplete responses. Missing data for intervention and control groups (accounting for attrition and incomplete responses) was 9.0% and 5.3% (6 months) and 8.5% and 9.2% (12 months), respectively.

The protocol was approved by IRBs at Johns Hopkins University, Oregon Health & Science University, Arizona State University, and University of Missouri and consistently applied.

RESULTS

Participants were recruited from March 2011 to April 2013. Of those screened (N=1,072; Figure 2), 80.70% (n=865) were eligible. Of these, 97.22% (n=841) consented and were randomized (n=418 intervention, n=423 control); 725 completed baseline measures (n=365 intervention, n=360 control), and 720 completed intervention (n=361) or control (n=359) sessions. Six- and 12-month retention rates were 93.93% (n=681) and 92.69% (n=672) respectively, with no significant differences between groups.

Participants were young and diverse (Table 1); 57.7% lived with their abuser at baseline (mean co-residence, 5.7 [SD=5.9] years); 43.6% had children aged <18 years at home. Most abusers were male (89%) and a current spouse/partner (71.5%). Participants reported accessing the study website from home (53.1%), work (12.3%), friend/family home (17.1%), public library (11.3%), or other (6.2%; campuses, coffee shops, community resource centers, and others, and though the website was not optimized for smartphones, some reported accessing from a phone). The DA/DA-R were transformed into z-scores; the average score reflected severe danger, with means of 14.36 (SD=7.73) and 15.85 (SD=4.77) for male and female abusers, respectively.

Although both groups experienced reduced decisional conflict over time (Wald χ^2=798.70, $p<0.001$; Table 2), the time X intervention group interaction was significant (Wald χ^2=13.09, p=0.004). The intervention group experienced a greater decline from baseline pre-test to baseline post-test than controls (β= –2.68, 95% CI= –5.08, –0.277, p=0.042; previously reported for English speakers only[20]). The rate of change between groups from baseline to 6 or 12 months was not significantly different.

At baseline, both groups had tried ten to 11 safety behaviors, finding about half helpful. By 12 months, the percentage of safety behaviors found helpful increased 12% in the intervention group, versus 9% for control (β=0.05, 95% CI=0.003, 0.097, p=0.037).

Both groups reported a significant decrease over time on all three Severity of Violence Against Women subscales (Table 2): psychological (Wald χ^2=387.61, $p<0.001$), physical (Wald χ^2=276.61, $p<0.001$), and sexual IPV (Wald χ^2=140.06, $p<0.001$), and on the Women's Experience of Battering scale (Wald χ^2=161.79, $p<0.001$). However, there was no significant difference between groups over time on psychological (Wald χ^2=2.20, p=0.333), physical (Wald χ^2=0.75, p=0.687), or sexual IPV (Wald χ^2=1.07, p=0.585), or the Women's Experience of Battering scale (Wald χ^2=0.41, p=0.813; Table 2).

Both groups reported significant improvements in depression (Wald χ^2=153.43, $p<0.001$) and PTSD symptoms (Wald χ^2=197.94, $p<0.001$) over time, but there was no difference between groups over time in depression (Wald χ^2=1.82, p=0.403) or PTSD symptoms (Wald χ^2=0.58, p=0.750).

Intervention group participants were significantly more likely to have ended their abusive relationship at 12 months (63.0% vs 53.0% for control, p=0.008; Table 2). Importantly for safety, compared with women who

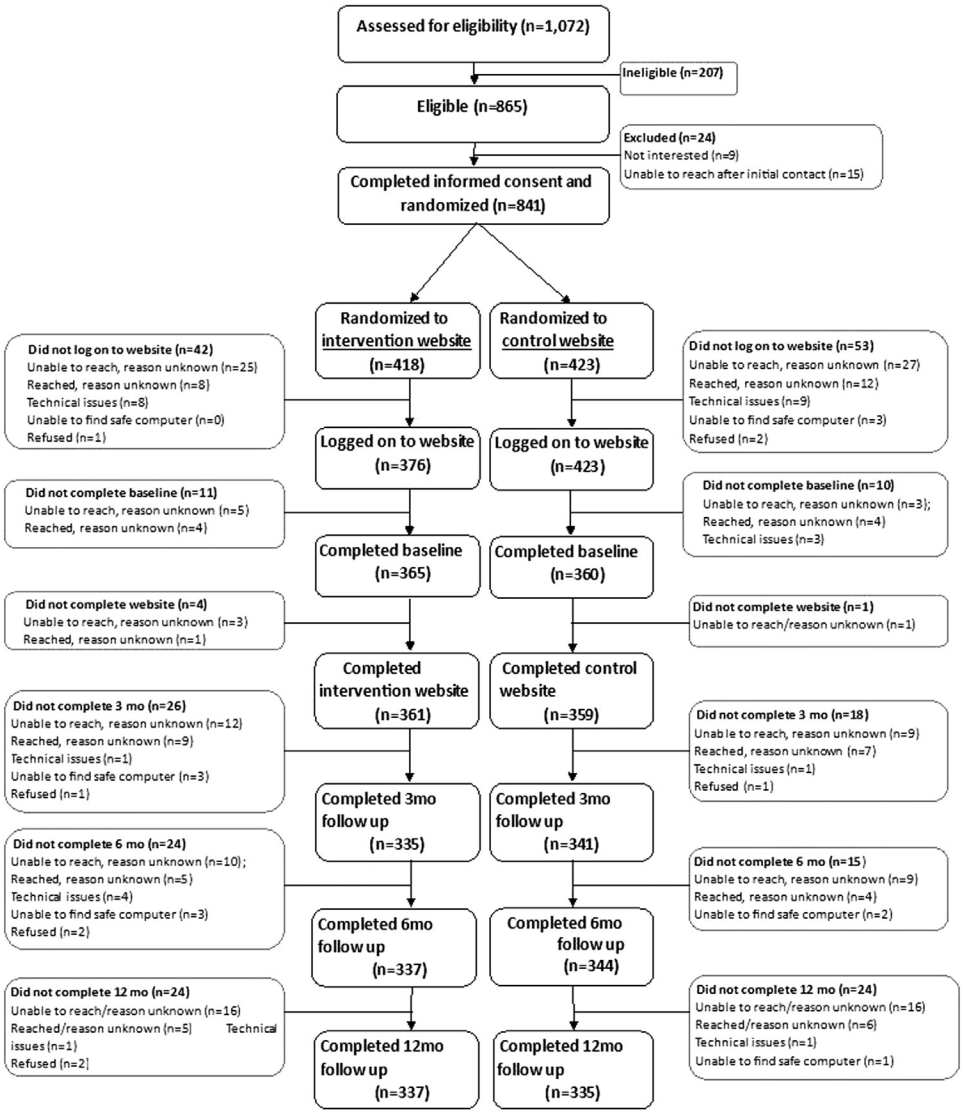

Figure 2. Participant flow (CONSORT diagram).

stayed in the relationship, women in either group who ended the relationship by 12 months had reported baseline higher DA/DA-R scores (14.9 vs 13.1, p=0.015), found a greater percentage of safety behaviors they tried helpful (61.1% vs 47.5%, $p<0.001$), and reported significantly greater reduced psychological (11.69 vs 7.5, p=0.001) and sexual IPV (2.41 vs 1.25, p=0.001).

DISCUSSION

This study represents the first-ever longitudinal trial of an Internet-based safety decision aid for abused women. Abused women accessing the safety decision aid intervention had significantly reduced decision conflict after one use of the intervention compared with those in the control group. At 12 months, there were no significant group differences in IPV, depression, or PTSD, but intervention women had a greater increase in safety behaviors they rated as helpful from baseline to 12 months and were more likely to have left the abusive partner. Those who ended the relationship had higher baseline risk scores than those who did not, found more of the safety behaviors they tried helpful, and had greater reductions in exposures to psychological IPV and sexual IPV compared with those women who had not ended the abusive relationship at 12 months.

These findings begin to illuminate how, over time, abused women process decisional conflict regarding their safety decisions—which involve complex factors, risk, and unclear outcomes[9] and are not previously well described. As noted in the Methods section, the decision

Table 1. Sample Characteristics by Intervention Group at Baseline

	Total		Control		Intervention	
Characteristics	**N**	**M (SD) or %**	***n***	**M (SD) or %**	***n***	**M (SD) or %**
Age	721	33.41 (10.64)	357	33.46 (10.81)	364	33.37 (10.49)
Length of relationship (years)	720	5.55 (5.85)	357	4.93 (4.74)	363	6.15 (6.71)
Danger assessment (z-score)	721	−0.01 (1.00)	358	−0.06 (1.00)	363	0.03 (1.00)
Danger assessment (raw scores)						
Male partner	642	14.25 (7.73)	323	13.85 (7.72)	319	14.66 (7.73)
Female partner	79	15.78 (4.78)	35	15.87 (5.03)	44	15.70 (4.63)
Race	687		336		351	
White		63.76		66.07		61.54
Black		24.89		22.32		27.35
Asian		3.49		3.27		3.70
Native American		1.60		1.49		1.71
Hawaiian or Pacific Islander		0.29		0.30		0.28
Other		0.87		0.60		1.14
Multi-racial		5.09		5.95		4.27
Hispanic/Latina	723		358		365	
No		88.66		88.27		89.04
Yes		11.34		11.73		10.96
Relationship	722		357		365	
Husband/Wife		18.7		17.1		20.3
Ex-husband/Ex-wife		2.6		2.2		3.0
Separated/Estranged spouse		4.0		4.2		3.8
Boyfriend/Girlfriend		52.8		56.0		49.6
Ex-boyfriend/Ex-girlfriend		12.3		11.5		13.2
Common law ex		4.4		4.2		4.7
Common law		0.7		0.8		0.5
Other		4.4		3.9		4.9
Partner's gender	721		357		364	
Female		9.8		12.1		11.0
Male		90.2		87.9		89.0
Live with partner	717		355		362	
No		42.26		43.10		41.44
Yes		57.74		56.90		58.56
Live with children under 18	724		359		365	
No		56.22		56.82		55.62
Yes		43.78		43.18		44.38
Employed	723		358		365	
No		56.15		58.66		53.70
Yes		43.85		41.34		46.30
Education	720		356		363	
No high school diploma		5.69		5.62		5.77
High school diploma or equivalent		15.56		16.29		14.84
Some college		40.14		40.45		39.84
Associate's degree		14.31		14.89		13.74
Bachelor's degree		17.50		17.70		17.31
Graduate degree		6.81		5.06		8.52

conflict scale does not measure "good" or "bad" decision making, which is impossible to define for IPV survivors; a good safety decision for one survivor may be a poor safety decision for another. In general, decisional conflict increases as people consider options, but drops as decisions are made.[34] Reduced decisional conflict

Table 2. Means for Primary and Secondary Outcomes Over Time

Measure	Control			Intervention			Group x Time, *p*-value
	Baseline, M (SD)	6 months, M (SD)	12 months, M (SD)	Baseline, M (SD)	6 months, M (SD)	12 months, M (SD)	
Decisional conflict[a]							
Pre-test	30.01 (19.72)			28.75 (18.44)			
Post-test	18.99 (17.99)	12.18 (14.84)	8.93 (12.80)	15.05 (16.38)	13.05 (15.68)	7.97 (12.57)	0.042
SVAWS[b]							
Psychological abuse	45.62 (12.20)	36.97 (14.40)	35.43 (15.07)	47.72 (12.30)	37.89 (14.72)	37.85 (15.75)	0.333
Physical abuse	40.08 (13.90)	32.03 (13.05)	31.65 (14.04)	41.83 (14.30)	33.07 (13.95)	33.83 (15.65)	0.687
Sexual abuse	10.51 (4.95)	8.92 (4.39)	8.73 (4.58)	10.94 (5.03)	9.03 (4.49)	8.98 (4.74)	0.585
WEB[c]	46.30 (10.50)	41.36 (15.11)	39.33 (16.88)	46.27 (10.19)	41.79 (14.74)	38.98 (16.96)	0.813
CESD-R[d]	38.73 (19.91)	30.97 (21.94)	26.73 (22.82)	37.00 (19.74)	31.36 (22.28)	26.82 (22.75)	0.403
PCL-C[e]	19.53 (5.51)	17.25 (6.57)	16.06 (6.61)	19.06 (5.55)	17.09 (6.28)	15.83 (6.49)	0.750
	Baseline		**6–12 Months**	**Baseline**		**6–12 Months**	
Safety behaviors[f]	0.43 (0.27)		0.52 (0.27)	0.43 (0.25)		0.55 (0.26)	
Left abusive partner by 12 months			53%			63%	

[a]Decisional conflict scoring ranges from 0 (no decisional conflict) to 100 (extremely high decisional conflict).
[b]Severity of Violence Against Women Scale (SVAWS): psychological abuse scoring ranges from 19–76 with higher scores indicating more abuse. SVAW: physical abuse scoring ranges from 21–84 with higher scores indicating more abuse; sexual abuse ranges from 6–24 with higher scores indicating more abuse.
[c]Women's Experiences of Battering (WEB) scoring ranges from 10–60 with higher scores indicating a more severe experience with battering.
[d]Center for Epidemiologic Studies Depression Scale, Revised (CESD-R) scoring ranges from 0–80 with higher scores indicating greater depression.
[e]Post-traumatic Checklist, Civilian (PCL-C) scoring ranges from 6–30 with higher scores indicating greater PTSD.
[f]Safety behaviors range from 0–1 with higher scores indicating a great use of helpful safety behaviors.
CESD-R, Center for Epidemiologic Studies Depression Scale, Revised; PCL-C, Post-traumatic Checklist, Civilian; PTSD, post-traumatic stress disorder; SVAWS, Severity of Violence Against Women Scale; WEB, Women's Experiences of Battering.

indicates survivors feel more certain in decisions, more informed, more clear on priorities, and more supported in decisions.

All participants had high baseline decisional conflict, suggesting they were already considering their options. As found previously,[15] the intervention group—which was explicitly asked to consider options and set safety priorities—had significantly greater initial reductions in decisional conflict. However, there were no significant decision conflict differences between groups over 1 year. This suggests women worked through their own decision-making process (weighed options, set priorities) over time. Although control group women did not complete priority-setting activities or receive feedback on severe/repeat violence risk, emergency safety plans may have encouraged them to make safety decisions, but at a slower pace.

It is well documented that abused women substantially underutilize safety planning services.[12–14] Many abused women seek information online,[11,15] but information typically available is not tailored to their individual circumstances (e.g., risk, priorities). The intervention group received tailored safety action plans based on their priorities, violence severity, and plans to stay or end the relationship. Safety behaviors were measured as actions the survivor takes (under her control), for example, obtaining a restraining order, talking to an advocate, and opening a separate savings account. Participants in this study were asked what safety behaviors they used and how helpful they were to safety over 12 months. Over time, the intervention group reported a larger proportion of safety behaviors they used as helpful. The safety strategies intervention women engaged in were likely more helpful precisely because they were personalized to

their situations.[9] Reducing decisional conflict may also promote engagement in safety processes and help women identify the most useful strategies.

Ending the abusive relationship was not a pre-specified outcome, but is an important exploratory analysis, as ending an abusive relationship is particularly dangerous.[5,6,9] Among all women, those who ended the relationship by 12 months were more likely to be in the intervention group, had more risk factors for severe or lethal IPV at baseline, reported a greater percentage of the helpful safety strategies used, and experienced significantly greater reductions in psychological and sexual IPV compared with those who had not ended the relationship. Overall, these findings suggest tailored Internet-based information may help high-risk women safely navigate ending the abusive relationship and reduce IPV exposure in the future.

There were no significant group differences found in overall IPV reduction, which includes physical and sexual violence and psychological abuse. Similarly, depression and PTSD symptoms decreased in both groups over time but were not significantly different, unsurprising given reduced IPV exposure overall and the well-documented influence of IPV on mental health. All women completed extensive study measures, potentially providing an opportunity for reflection; and all received potentially empowering safety planning strategies. Women may have sought out the study when violence and mental health symptoms were high, contributing to regression to the mean. However, it is likely that, without intervention, abused women will again experience violence. A longer follow-up period may have elucidated intervention effects more clearly. It is also worth noting repeat IPV exposure is a measure of the partner's behaviors and therefore may not be the most sensitive outcome measure. Conversely, safely ending the relationship is a behavior she potentially controls and can be facilitated with appropriate, timely, tailored safety strategies and access to resources.

Increasing survivors' use of helpful safety behaviors is likely important in its own right. Even adding one helpful behavior tailored to her safety priorities may be lifesaving. For, example, she may not have control of her abusive partner's gun ownership and threats with the weapon, but she could hide the ammunition (a suggested safety behavior tailored on her report of partner's gun ownership), increasing her chances of safely escaping a potentially lethal situation.

Finally, it is important to note that this large sample of diverse, community-dwelling abused women were able to safely participate in online research, with >90% retention over 1 year and no reported adverse events. This suggests tailored safety planning online can be an empowering and accessible tool, providing tailored, evidence-based help and potentially complementing in-person advocacy services to reduce IPV.

Limitations

No safety planning intervention is accessible or appropriate for all abused women. Safety-related eligibility criteria and study procedures (e.g., requiring telephone enrollment, safe computer access) likely excluded some women. This potentially represents a limit in generalizability, as women without safe computer access likely did not contact the researchers; indeed, of total participants screened (N=1,072) only one was screened out as ineligible owing to discomfort using computers. However, nearly half of participants used a safe computer outside their home, reducing the potential bias of this requirement; this also demonstrates the resourcefulness of abused women and their ability to safely access online resources. Further, the average DA/DA-R score at baseline reflected severe danger, and study retention exceeded 90% at all measurement points, with no adverse events related to the study reported. Very few (0.4%–2.7%) were lost to follow-up at any measurement period owing to reported technical difficulty or an inability to find a safe computer (Figure 2). These findings generally suggest this intervention was accessible to many abused women who had access to a safe computer, even those experiencing severe IPV.

An important limitation is that very few monolingual Spanish-speaking women participated in this study; specifically, although approximately 11% of the participants identified as Hispanic/Latina, very few (n=11) chose to complete the study in Spanish. The research team used multiple and concerted recruitment strategies to increase enrollment of monolingual Spanish-speakers (e.g., Spanish-language radio, websites, community agencies). Monolingual Spanish-speaking women are less likely than English-speaking women to engage in formal IPV services.[35] The findings of this study suggest safe Internet access and knowledge of online services may be limited among this population of abused women and that additional research on tailoring recruitment or intervention approaches is critically needed.

CONCLUSIONS

Intimate partner violence is common and has tremendous implications for women's health and safety.[1,2] This multisite RCT demonstrates an interactive, Internet-based safety decision aid is effective at reducing abused women's decisional conflict immediately after use, increases use of helpful safety strategies, and effectively supports women to safely end an abusive relationship,

with no reported adverse events. This represents an advancement in safety planning and addresses key factors (e.g., protection, decision making for safety, and health) outlined by Dutton's empowerment model,[8] by connecting abused women—who rarely access formal IPV services—with tools to assess risk, weigh safety priorities, develop a safety plan tailored to their priorities and needs, and access clinical and community-based services.

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SUPPLEMENTAL MATERIAL

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