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ICT-Based Interventions for Women Experiencing Intimate Partner Violence: Research Needs in Usability and Mental Health

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Abstract. The aim of this systematic review is to summarize studies in different settings that used Information and Communication Technologies (ICT) to address intimate partner violence (IPV). We've conducted a systematic review using PRISMA guidelines using the following databases: PubMed, CINAHL, PsycINFO, and Web of Science. Inclusion criteria were ICT-based interventions addressing IPV, focused on women. 21 studies were identified in which ICT was found to be a suitable low-cost option for screening and disclosure of IPV, as well as for preventing IPV. More research is needed to use ICT for prevention and treatment of IPV, taking consideration new ICT environments such as virtual communities.

Keywords. Women, Intimate Partner Violence (IPV), Information Communication Technology (ICT), Virtual Communities, Public Health

1. Introduction

Violence against women (VAW) has been described a "Global Pandemic" by the United Nations (UN News Center, 2014); it is considered both as a human rights (Human Rights Council, 2006) and public health issue (Garcia-Moreno & Watts, 2011). Informatics tools for IPV promotion and prevention are important to take into consideration and use, especially that Information and Communication Technologies (ICT) are expanding their reach in developed and developing countries. This paper presents an analysis of a systematic review of the available literature on the effectiveness of ICT for IPV interventions.

2. Methods

A standard systematic review was conducted employing a digital search of bibliographic databases including PubMed, the National Center for Biotechnology Information (NCBI), PsycINFO, and Web of Science. The literature was systematically screened by titles, abstracts, and by applying key search terms that included ehealth, violence against

women, mobile health, email, online support, technology, computerized intervention, women, intimate partner violence, online, cellphone, web-based, digital, health, information communication technology, computer-based, electronic screening, and domestic violence. We only searched articles that were written in English. Several quantitative studies that addressed ICT use, level of IPV and/or abuse, changes in safety behaviors, depression scores, and level of IPV disclosure by women with past, current, and/or at risk of experiencing partner violence, were eligible for inclusion in the review. The most current search was completed on May 30, 2018.

3. Results

In total, 171 articles were identified among which 72 articles were duplicates. Out of the 99 unique articles 74 were excluded based on the content of their abstracts. After reading the full text of the remaining 25 articles 4 articles were excluded, and 21 articles were maintained for analysis (Ahmad et al., 2009; Bacchus et al., 2016; Braithwaite & Fincham, 2014; Chang et al., 2012; Constantino et al., 2015; Eden et al., 2015; Fincher et al., 2015; Fiorillo, McLean, Pistorello, Hayes, & Follette, 2017; Gilbert et al., 2016; Glass, Eden, Bloom, & Perrin, 2010; Hassija & Gray, 2011; Humphreys, Tsoh, Kohn, & Gerbert, 2011; Koziol-McLain et al., 2018; MacMillan, 2006; Renker & Tonkin, 2007; Rhodes et al., 2006; Rhodes, Lauderdale, He, Howes, & Levinson, 2002; Scribano, Stevens, Marshall, Gleason, & Kelleher, 2011; Sprecher, Muelleman, & Wadman, 2004; Thomas, Miller, Hartshorn, Speck, & Walker, 2005; Trautman, McCarthy, Miller, Campbell, & Kelen, 2007)

Many common themes were similar across articles. Table 1 presents the common themes of focus across the included studies. These themes depict the objectives of the study interventions. ICT was used in 2 articles and 13 articles used ICT for screening and disclosure, while 5 articles assessed the ICT suitability to address IPV. Some articles targeted many objectives; hence, the total number of themes is 21.

Table 1. Common Themes in the Studies

Common Themes	Article
IPV Prevention	(Braithwaite & Fincham, 2014; Gilbert et al., 2016)
Screening and Disclosure	(Ahmad et al., 2009; Bacchus et al., 2016; Chang et al., 2012; Constantino et al., 2015; Gilbert et al., 2016; Humphreys et al., 2011; MacMillan, 2006; Renker & Tonkin, 2007; Rhodes et al., 2006; Rhodes et al., 2002; Scribano et al., 2011; Sprecher et al., 2004; Trautman et al., 2007)
ICT Suitability	(Ahmad et al., 2009; Bacchus et al., 2016; Chang et al., 2012; Fiorillo et al., 2017; MacMillan, 2006)

3.1. IPV Screening and Disclosure: ICT vs paper or face-to-face

In two studies, IPV screening was found to be equally effective using ICT or usual face-to-face/paper method (Chang et al., 2012; MacMillan, 2006). One study reported high

disclosure of IPV using computers (Chang et al., 2012). One study found that women were less likely to disclose IPV using the computerized intervention, one study included African American women in a Women, Infants, and Children (WIC) services setting (Fincher et al., 2015). A study that used a tablet during perinatal home visitation for disclosure, found the tablet to be perceived as a conduit through which the interpersonal connection between women and home visitors (Bacchus et al., 2016). One study found that women were more likely to disclose IPV using ICT lead to higher rates of screening and disclosure (Trautman et al., 2007).

3.2. ICT Suitability

ICT was found suitable, in terms of confidentially, usefulness, and satisfaction in three studies (Bacchus et al., 2016; Fiorillo et al., 2017; Renker & Tonkin, 2007); however, some participants in one study expressed skepticism about the ability of ICT-based interventions to empathize, retain privacy, provide support, and deliver meaningful feedback (Ahmad et al., 2009). Additionally, three studies reported that women found ICT-intervention suitable for IPV disclosure (Ahmad et al., 2009; MacMillan, 2006; Scribano et al., 2011).

3.3. IPV Prevention and Treatment

Two studies addressed IPV prevention (Braithwaite & Fincham, 2014; Gilbert et al., 2016). One study showed that most participating women were less likely to report experiencing physical IPV at follow-up (12 months); less likely to report IPV with injury; and less likely to report severe sexual IPV (Gilbert et al., 2016). The study by Braithwaite et al. that targeted both male and female reported - less physical aggression committed by females at post-treatment, as well as less physical aggression committed by males and females at 1-year follow up; also, the study showed large reduction in expected counts for female and male perpetrated physical aggression at the 1-year follow-up (Braithwaite & Fincham, 2014).

4. Discussion

4.1. Need of Usability Studies

Our systematic review shows that ICT-based tools were found acceptable and suitable by women experiencing IPV. This is encouraging given the fact that software usability was consistently overlooked in the included studies. Usability research is needed in the field as it can enhance drastically the adoption and effective use of ICT-based tools. Usability is even crucially needed given the mental health and cognitive challenges faced by women experiencing IPV. Indeed, literature in the IPV field suggests that women facing IPV experience intense mental health challenges (Simmons, Lindsey, Delaney, Whalley, & Beck, 2015); this suggests that studying the usability of the ICT tools developed for women experiencing IPV is paramount; however, the articles did not address usability issues. This is a significant oversight given that the lack of usability testing is known to facilitate errors (Fairbanks & Caplan, 2004) and decrease effectiveness (Hashim & Ahmad, 2016), especially in situations of extreme stress.

Moreover, it is well-known that the perceived usability of an eHealth tool influences attitude towards its adoption and use (Lindblom, Gregory, Wilson, Flight, & Zajac, 2012); therefore, overlooking usability constitutes a major oversight in developing ICT solutions for women experiencing IPV.

Three other factors indicate that usability is important in projects addressing IPV: Computer self-efficacy, computer anxiety and mental workload. Computer self-efficacy and computer anxiety were found to be predictors of a user's perception of a software tool (Lindblom et al., 2012) and mental workload is also a factor influencing task performance(Longo, 2018); given that women experiencing IPV are prone to face mental health challenges (Flanagan, Jaquier, Overstreet, Swan, & Sullivan, 2014; Simmons et al., 2017) it becomes imperative to investigate software usability in interventions addressing IPV.

4.2. Need for ICT-based Mental Health components

Our findings indicate that there is lack of IPV studies addressing mental health challenges. Given the prevalence of mental health illnesses including depression (Bhandari et al., 2012; Kastello et al., 2016), anxiety (Karakula Juchnowicz, Lukasik, Morylowska-Topolska, & Krukow, 2017) and stress among women experiencing IPV, there is a definite need for research addressing their mental health challenges. These studies can make use of ICT based mental health interventions. Indeed, many ICT-based approaches to mental health challenges emerged recently, including the use of Apps and web-based platforms (Connolly et al., 2018; El Morr, Maule, Ashfaq, Ritvo, & Ahmad, 2017; Mak et al., 2018) for Cognitive Based Therapy (Acosta et al., 2017; Beatty, Koczwara, & Wade, 2016), Acceptance and Commitment Therapy(Pots, Trompetter, Schreurs, & Bohlmeijer, 2016), and mindfulness (Ahmad, El Morr, & Ritvo, 2018). IPV research can benefit from a research agenda that uses ICT to address mental health challenges for women experiencing IPV.

4.3. IPV prevention

Finally, more research is needed around IPV prevention as most of the work in the field addresses challenges that women face after they have experienced IPV.

4.4. Limitations of the study

An important limitation of this review is the lack of homogeneity between studies considered, as different methods and varying measurement scales were used. Considering this situation, studies could not effectively be compared.

5. Conclusion

ICT-based IPV screening, prevention, awareness, and action tools show promise of reducing decisional conflict, improving knowledge and IPV risk assessment, and motivating women to disclose and discuss IPV. Data suggests that ICT-based screening tools for IPV are best used as a supplement to face-to-face screening allowing for more in depth and tailored advice from healthcare providers(Chang et al., 2012). The use of

ICT-based interventions can be a low-cost option, especially in disseminating awareness and IPV prevention (Hegarty et al., 2015), due to the wide availability of ICTs for most women, especially in more developed countries. However, usability is overlooked in most studies and it is vital to consider usability in ICT-based interventions addressing IPV given the complexity of the situation and the impact usability have on adoption, reduction of errors and effectiveness.

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