IJPHCS
Open Access: e-Journal

International Journal of Public Health and Clinical Sciences
e-ISSN : 2289-7577. Vol. 6:No. 5
September/October 2019

EDUCATIONAL TRAINING INTERVENTION ON WORKPLACE VIOLENCE AMONG HEALTHCARE WORKERS

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https://doi.org/10.32827/ijphcs.6.5.56

ABSTRACT

Background: Workplace violence is defined as incidents where staff are abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being or health. In healthcare setting, it can bring serious consequences to the workers, organization and quality of patient care. Educational training is one of the methods to reduce the incident and prepare the workers in order to face this challenge. This manuscript aims to analytically analyse educational intervention on workplace violence among health workers.

Materials and Methods: Systematic review was conducted via Pubmed and ScienceDirect, using keywords of (aggression OR violence) AND healthcare workers) AND (education OR training). A total of 1914 articles from search engines and other sources were obtained. After screening, 12 articles were included in this manuscript.

Result: There are 12 studies in this review including two randomised controlled trials (RCTs), five quasi-experimental design and five before-after experimental design. Studies were conducted across various healthcare organizations and most of these were hospitals. Most of the studies include multiple modules including de-escalating techniques, assessing risk of violence, communication skills, workers responsibility, notification and post incident procedure, and legal aspect of workplace violence. Studies showed improvement in knowledges, attitude, confidence and coping.

Conclusion: Majority of this evidence were weak and more high-quality research is needed in this area of study. Sound methodology and controlled study design to avoid biases should be done to prove the effectiveness of educational learning in workplace violence.

Keywords: workplace violence, educational, intervention, review

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1.0 Introduction

1.1 Workplace Violence Definition

The U.S. Occupational Safety and Health Administration (OSHA) and the U.S. Centers for Disease Control National Institute for Occupational Safety and Health (CDC/NIOSH) define workplace violence as "violent acts (including physical assaults and threats of assault) directed toward persons at work or on duty" (Jenkins, 1996). More detail information is added in the definition by International Labour Office (ILO), International Council of Nurses (ICN), World Health Organization (WHO) and Public Services International (PSI) in which workplace violence is defined as "Incidents where staff are abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being or health" (ILO, ICN, WHO & PSI, 2002).

The University of Iowa Injury Prevention Research Center classifies most workplace violence into one of four categories based on relationship of the perpetrator and the victim as illustrated in Table 1.1 below to assist researchers and policy makers to design appropriate intervention (Loveless, 2001).

Table 1.1 Classification of Workplace Violence

No.	Type of Violence	Explanation
1.	Type I (Criminal Intent)	Results while a criminal activity (e.g., robbery) is being committed and the perpetrator has no legitimate relationship to the workplace.
2.	Type II (Customer/client)	The perpetrator is a customer or client at the workplace (e.g., health care patient) and becomes violent while being served by the worker.
3.	Type III (Worker-on-Worker)	Employees or past employees of the workplace are the perpetrators
4.	Type IV (Personal Relationship)	The perpetrator usually has a personal relationship with an employee (e.g., domestic violence in the workplace).

Even though healthcare workers may experience all four types during their routine work, most of threats and violence against them come from patients, or their families and visitors (Lipscomb et al., 2002; Spector et al., 2014; Loveless, 2001).

1.2 Prevalence of Workplace Violence Among Healthcare Workers

Workers in health sector are exposed to more workplace violence compare to workers in other sectors. The estimated rates of nonfatal workplace violence against health care workers in the United States in 2013 are from 5 to 12 times higher than the estimated rates for workers overall (Sherrill, 2016).

The prevalence of workplace violence among healthcare workers varies according to region and occupation. In a meta-analysis study, the prevalence of workplace violence among nurses was highest in Middle East region (61.3%) , followed by Anglo region (58.3%), Asia region (51.3%) and the

lowest prevalence is 38.3% in the Europe region (Spector et al., 2014). Meanwhile, a systematic review on workplace violence among emergency medical services personnel found that the prevalence ranges from 53 to 90% (Pourshaikhian, Gorji, Aryankhesal, Khorasani-Zavareh, & Barati, 2016).

With high prevalence of workplace violence, the situation is become worst as the incident rate and total number of cases increase from time to time. The incident rate of intentional violent by other person in health and social services in United States increase from 6.4 per 10,000 in 2011 to 8 per 10,000 full-time workers in 2015 (BLS, 2015). In term of total number nonfatal workplace violence cases against health care workers reported, there is an increasing of 12 % cases from 22,250 reported cases in 2011 to 24,880 in 2013 (Sherrill, 2016).

1.3 Consequences of Workplace Violence

There are many effects of workplace violence on healthcare workers. The consequences of workplace violence can range from mild to severe. Consequences of workplace violence can be classified into 7 categories which are physically, psychologically, emotionally, work functioning, relationship with patients or quality of care, socially and financially (Lanctôt & Guay, 2014).

In the USA, billions of dollars spent each year on security costs, medical and legal expenses, lost time from work and other financial losses as a direct consequence of workplace violence (Federal Bureau of Investigation, 2002). Speroni et al (2014) in their study found out that based on the hospital record, the cost for 30 reported cases of violence which required treatment were $78,924 for treatment charges and $15,232 for indemnity charges. The emotional and psychological costs are a lot more difficult to quantify and are substantial compared to financial costs. Burnout, depression, fears, post-traumatic stress disorder (PTSD), lack of job satisfaction and reduced ability to perform job role are among the consequences of the workplace violence (American Psychiatric Nurses Association, 2008; Ferns & DipHe, 2005). In the year 2015, 63.7% of injury due to violence from other person at work in United States results in more than 5 days away from work (BLS, 2015). Moreover, most of nurses leave the health care profession as an issue of workplace violence (Emergency Nurses Association, 2008).

1.4 Educational Training

Education intervention in workplace violence can be defined as the process of transferring knowledge and comprehension of organisational policies and procedures, legal responsibilities, and risk assessment and control strategies, including specific techniques that may be applied to prevent and reduce the likelihood and consequences of exposure to workplace violence (Hills, et al., 2015). Meanwhile training intervention can be defined as the process of rehearsal and simulated or practice of, cognitive and behavioural skills aspect of the education itself (Hills, et al., 2015). Training in workplace violence focus on skills, knowledge, and attitudes, and these include self-defence, breakaway techniques, and physical restraint techniques (Beech & Leather, 2006; Wiskow, 2003). High quality evidence on the effect of workplace violence education training is very limited (Beech and Leather, 2006).

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2.0 Materials and Methods

This manuscript adopted the scoping systematic review for its methodology. Articles were searched based on Pubmed and ScienceDirect search engines. The keywords of (aggression OR violence) AND healthcare workers) AND (education OR training) were applied to obtain the literatures. Figure 1 PRISMA 2009 flow diagram illustrates the flow of literature search. 1872 articles were initially searched from the search engines and additional 42 articles were found from other sources. Duplication articles were removed, and 1574 articles underwent primary screening for relevance articles based on titles and abstract. After screening, 273 articles underwent secondary review for eligibility. transparency criteria included English articles published from 2000 to 2018, and accessible as free full texts. Reviewed articles were excluded as per the exclusion criteria. Those articles involving education or training intervention on healthcare workers including pre and post, quasi-experimental or randomized control trial were included. Finally, 12 articles were included as the final literature search as shown in figure 1 below.

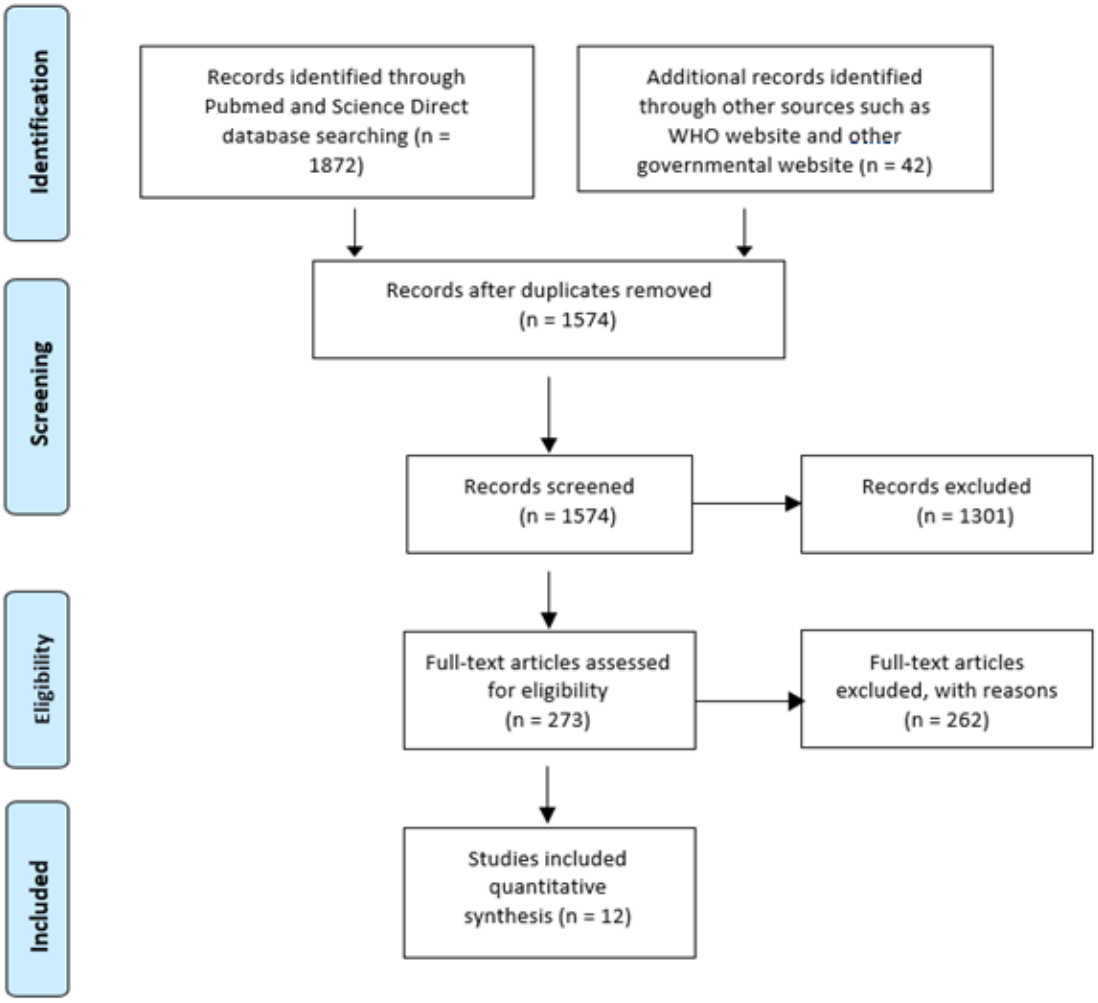

Figure 1 PRISMA 2009 Flow diagram of Educational Training Intervention on Workplace Violence Among Healthcare Workers

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3.0 Result

There are many previous educational interventions done on workplace violence. The summary of educational intervention is listed in the table 2.1 below. There are 12 studies in this review including two randomised controlled trials (RCTs), five quasi-experimental design and five before-after experimental design. Studies were conducted across various healthcare organizations and most of these were hospitals. Seven of the 12 interventions reviewed were conducted in hospital care, two in emergency departments, two in community care. Three of the studies were conducted in the United States, three in Australia, two in the UK, and one each in Netherland, Finland, Canada and Jordan.

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Table 3.1 Educational Training Intervention on Workplace Violence Among Healthcare Workers

No.	Title	Author, year, and country	Study design	Intervention	Finding
1.	Computer-based training (CBT) intervention reduces workplace violence and harassment for homecare workers	Glass, N., Hanson, G. C., Anger, W. K., Laharnar, N., Campbell, J. C., Weinstein, M., & Perrin, N. (2017), United States	Randomized community-based trial among female homecare workers (129 CBT group and 128 CBT plus peer group)	CBT and CBT plus peer group training (additional activities related to calming exercises, assertive speaking exercises, body language exercises, role playing in different scenarios with feedback)	Increase in knowledge mean ($P < 0.001$) Confidence level: 1) CBT plus peer group showed greater increase in confidence to respond workplace violence ($P = 0.012$) than the CBT only group 2) All participants had significant increase in confidence to respond to workplace aggression ($P < 0.001$)
2.	An Educational Program to Prevent, Manage, and Recover from Workplace Violence	Gillespie, G. L., Gates, D. M., & Mentzel, T. (2012), United States	Quasi-experimental study to evaluate learning outcomes of 315 employees from 3 Emergency departments	Educational web-based learning program and a web-based/classroom-based hybrid program	Knowledge: 1) Significant different between pre and post test in all respondent ($p < 0.001$). 2) Significant different between pre and post test in web learning group ($p < 0.001$) 3) Significant different between pre and post test in hybrid group ($p < 0.001$). 4) No significant difference in knowledge attainment between the two groups ($p = 0.136$).
3	The impact of training program on nurses' attitudes toward workplace violence in Jordan	Al-Ali, N. M., Al Faouri, I., & Al-Niarat, T. F. (2016), Jordan	One group before–after design	One day educational training based on "The Framework Guidelines for addressing workplace violence in the health sector", jointly produced by the Labour Office (ILO), the International Council of Nurses (ICN), the World Health Organization (WHO) and Public Services International (PSI)	Significant improvement on nurses' attitudes towards workplace violence ($p < 0.001$)
4	The effectiveness of	Dean, C. (2004), Australia	A non-experimental, one	One day training program	1) Improved knowledge ($p = 0.001$)

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e-ISSN : 2289-7577. Vol. 6:No. 5
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	training program for emergency department nurses in managing violent situations.		group, pre-test post-test research design		2) Improved skills (p = 0.006) 3) Improved confident (p value not showed) 4)Improved attitude (p value not showed)
5.	An Evaluation of an Aggression Management Training Program to Cope with Workplace Violence in the Healthcare Sector	Oostrom, J. K., & van Mierlo, H. (2008), Netherlands	Non-randomized control community trial among 42 health workers	3 parts training programs: 1) Communication 2) Dealing with conflict situations 3) Behavior practices through role-playing	In intervention group, significant effect on assertiveness and aggression ($F[2,20]= 5.67$, $p = .01$, Wilks' $\lambda = .64$, $\eta 2 = .36$) and ability to cope with adverse working situations ($F[2,22] = 22.82$, $p < .01$, Wilks' $\lambda = .33$, $\eta 2 ¼ .67$). The increase in the experimental variables of insight and ability to cope was significantly larger than the nonsignificant increase in team functioning (for insight, $t[19]= 2.33$, $p = .03$; for ability, $t[21]= 4.54$, $p < .01$).
6.	Sign of the times or the shape of things to come? A 3-day unit of instruction on 'aggression and violence in health settings for all students during pre-registration nurse training'	Beech B. (2001), United Kingdom	Pre and post evaluation of training program among 58 preregistered nurses student	3 days training program	13 statements out of 20 statements on attitude showed significant positive changes ($p < 0.05$)
7.	Safer at work: development and evaluation of an aggression and violence minimization program	Grenyer, B. F., Ilkiw-Lavalle, O., Biro, P., Middleby-Clements, J., Comninos, A., & Coleman, M. (2004), Australia	Pre and post evaluation of training program among 48 health staff	4 modules training programs	The significant differences between pre- and post-measurement for four items measuring attitudes ($p<0.05$) Increase in confidence (pre-training mean = 69.85, SD = 13.99; post-training mean = 82.15, SD = 9.2, $t = 4.38$, $p = 0.00$.)
8	Evaluation of an education and training program to prevent and manage patients' violence in a mental health setting: a pretest-posttest intervention study.	Guay, Goncalves, & Boyer, (2016), Canada	Non-controlled pre, post and follow up evaluation of an education and training program among 89 mental health workers	4 days training using Omega program to teach participants the skills and intervention methods necessary to ensure their safety and that of their patients in situations of aggression	Confidence in coping with patient aggression increased significantly across time ($p<0.01$)
9.	The effects of staff	McDonnell et al., (2008),	Quasi-experiment among	A 3-day training course in the	Experimental group had significantly higher

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e-ISSN : 2289-7577. Vol. 6:No. 5
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	training on staff confidence and challenging behavior in services for people with autism spectrum disorders	United Kingdom	for 43 staff who received training and a contrast group of 47 community staff who had previously received training.	management of aggressive behaviour in services for people with autism spectrum disorders	scores than the contrast group for; confidence (F[1,83] = 12.99, P < 0.01) and practical coping (F[1,83]=4.51,P<0.037)
10.	Breakaway technique training as a means of increasing confidence in managing aggression in neuroscience nursing	Lamont, S., Brunero, S., Bailey, A., & Woods, K. (2012), Australia	A quasi experimental design was used in a sample of 31 neuroscience nursing staff	Two times,1 hour breakaway technique workshops.	Substantial increases in perceived confidence (P = 0.002) and safety (P < 0.001) Validated Self developed questionnaire
11.	The Effect of ACT-SMART on Nurses' Perceived Level of Confidence Toward Managing the Aggressive and Violent Patient	Cahill, D. (2008), United States	Quasi-experimental study using a pretest–posttest design with 65 nurses in experimental group and 9nurses in control group.	8-hr educational training workshop, addressing the skills and techniques for recognizing, assessing, intervening, and de-escalating potentially volatile situations	Significantly improved scores on confidence in managing the aggressive situations (p = .007) Statistically no difference in the mean scores on attitudes toward managing the aggressive situations after participating in the ACT-SMART program (p = .298)
12.	Impact of eLearning course on nurses' professional competence in seclusion and restraint practices: a randomized controlled study	Kontio, R., Lahti, M., Pitkänen, A., Joffe, G., Putkonen, H., Hätönen, H., ... & Välimäki, M. (2011), Finland	Randomized controlled study, 12 wards were randomly assigned to ePsychNurse.Net (intervention) or education as usual (control)	120hours e-learning course consist of: 1) legal issues 2) ethical issues 3) behaviour-related internal and external factors 4) therapeutic relationship and self-awareness 5) teamwork 6) integrating knowledge with practice.	Knowledge of physical restraint improved in both intervention and control groups Between-group comparisons of change after the intervention revealed no differences in knowledge

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e-ISSN : 2289-7577. Vol. 6:No. 5
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3.1 Intervention

The interventions in the articles were carried out in various modules, contents and mode of delivery. Most of the studies include multiple modules and modes of deliveries. The modules used in these studies were de-escalating techniques or other preventive techniques, recognizing the early sign of violence, communication skills, responsibility or the workers, notification and post incident procedure, and also legal aspect of workplace violence. De-escalating techniques and preventive techniques were used in 10 out of 12 studies (Glass et al., 2017; Gillespie et al., 2012; Dean, C., 2004; Oostrom, J. K., & van Mierlo, H., 2008; Beech B., 2001; Grenyer et al., 2004; Guay et al., 2016; McDonnell et al., 2008; Lamont et al., 2012; Cahill, D., 2008).

Recognizing the early sign of violence module was used in 8 out of 12 studies (Glass et al., 2017; Gillespie et al., 2012; Al-Ali et al., 2016; Oostrom, J. K., & van Mierlo, H., 2008; Beech B., 2001; Grenyer et al., 2004; Guay et al., 2016; Cahill, D., 2008). Nine out of 12 studies include communication skill training in their intervention (Glass et al., 2017; Gillespie et al., 2012; Dean, C., 2004; Oostrom, J. K., & van Mierlo, H., 2008; Beech B., 2001; Grenyer et al., 2004; Guay et al., 2016; Cahill, D., 2008)

Responsibility of workers aspect were included in 3 of the studies intervention (Gillespie et al., 2012; Dean, C., 2004; Grenyer et al., 2004). Notification and post violence incident aspect were also included in 3 of the studies intervention (Gillespie et al., 2012; Al-Ali et al., 2016; Guay et al., 2016). Legal issues were included in the intervention by Al-Ali et al. (2016), Beech (2001), Grenyer et al. (2004), McDonnell et al., (2008), Cahill (2008) and Kontio et al. (2011) in their intervention.

Majority of the studies used combined mode of delivery to deliver the intervention to the participants. Some mode of delivery of the training are given in computer-based learning (Glass et al., 2017; Gillespie et al., 2012; Kontio et al., 2011). Other studies used lecture and discussion (Al-Ali et al., 2016; Oostrom, J. K., & van Mierlo, H., 2008; Beech B., 2001; Grenyer et al., 2004; Guay et al., 2016; Cahill, D., 2008). Majority of the studies include role play method of intervention used in their mode of delivery (Glass et al., 2017; Gillespie et al., 2012; Al-Ali et al., 2016; Oostrom, J. K., & van Mierlo, H., 2008; Beech B., 2001; Grenyer et al., 2004; Guay et al., 2016; McDonnell et al., 2008; Lamont et al., 2012; Cahill, D., 2008).

Length of intervention varies from one article to another. The interventions were given in 2 to 3 hours in studies by Glass et al. (2017), Gillespie et al. (2012) and Lamont et al., (2012). Al-Ali et al. (2016), Dean (2004) used one day intervention in their studies. Oostrom, and van Mierlo (2008) in their studies conducted the intervention in 3 parts of 4hours programs every 2 to 3 weeks apart. Three to four days training were done in studies by Guay et al. (2016) and McDonnell et al. (2008). The longest training was 120 hours training over 3 months by Kontio et al. (2011).

3.2 Outcome Measures

Knowledge outcome was measured in 4 of the studies (Glass et al., 2017; Gillespie et al., 2012; Dean, C., 2004; Kontio et al., 2011). There were improved in knowledge outcome in all

four of the studies (Glass et al., 2017; Gillespie et al., 2012; Dean, C., 2004; Kontio et al., 2011).

Attitude outcome was measured in 4 out of 12 studies (Al-Ali et al., 2016; Beech B., 2001; Grenyer 2004; Cahill, D., 2008). There were improved in attitude outcome in 3 out of 4 studies (Al-Ali et al., 2016; Beech B., 2001; Grenyer 2004). However, there is no significant changes in attitude in experimental group as compared to control group in study by Cahill, D. (2008). Cahill (2008) mentioned that it may be difficult to change the attitudes through a short 8hours educational program because attitudes consist a person's deeply held values and beliefs.

Workers' confidence in managing workplace violence outcome was measured in 8 out of 12 studies (Glass et al., 2017; Dean, C., 2004; Grenyer 2004; Guay et al., 2016; McDonnell et al., 2008; Lamont et al., 2012; Cahill, D., 2008; Kontio et al., 2011). All of the studies showed improvement in confidence outcome post intervention (Glass et al., 2017; Dean, C., 2004; Grenyer 2004; Guay et al., 2016; McDonnell et al., 2008; Lamont et al., 2012; Cahill, D., 2008; Kontio et al., 2011).

Other outcomes measure by the studies were coping, number of violence and health effect outcomes of the workers. In studies by Oostrom, and van Mierlo (2008) and McDonnell et al. (2008), there is significant improvement in ability to cope with aggression post intervention. In term of incident of violence, the number of violence reduced over time after the intervention being conducted by Glass et al. (2017), Dean (2004). There were no changes in the workers health outcomes at the end of the intervention and follow up by Glass et al. (2017)

Computer based learning intervention was found to be no different with classroom or roleplay intervention in term of knowledge improvement after intervention (Gillespie et al., 2012). However, in another study with similar design, it is found that classroom or roleplay group achieved greater confidence level when compared to computer-based learning intervention group (Glass et al. (2017). Computer based learning is relatively are convenience, less costs, and flexible but does require participants to be computer literate and self-motivated to complete the course. On the other hand, the other method increased confidence and allowed two-way communication to increase understanding of the program content.

Only two randomization control study was found in this review. One of it was conducted by Glass et al. (2017a) using computer cased learning intervention. However, one of the author has financial conflict of interest with one company that may have a commercial interest in the outcome of this research (Glass et al., 2017b). Another randomized control study was done by Kontio et al. (2011) which compared e-learning based and standard education group. There were no advantages of intervention over control group and there was limitation such as inability to prevent the control group data from seclusion and restraint focused education which is part of the organization program (Kontio et al., 2011).

Other studies were in the form of pre and post, single group or quasi experimental studies. Most of the studies show that educational intervention improved in workers' knowledge, attitude, confidence and coping (Al-Ali et al., 2016; Dean, 2004; Glass et al., 2017a;

Gillespie, Gates, & Mentzel, 2012; Oostrom, & van Mierlo, 2008). More study with controlled experimental design should be carried out to strengthen this evidence.

4.0 Conclusion and Recommendations

The evidence from this review varies from strong to weak. Majority of this evidence were weak with only 2 were in the form of randomized controlled trials. The authors agree that more high-quality research is needed in this area of study. Sound methodology and controlled study design to avoid biases should be done to prove the effectiveness of educational learning in workplace violence.

Acknowledgement

We thank the Director General of Health Malaysia for permission of paper publication. Our deepest gratefulness for those assisted both directly and indirectly in this research.

Declaration

Authors declare that this manuscript has never been published in any other journal.

Authors' contribution

Author 1: information gathering, preparation and editing of manuscript
Author 2: review of manuscript and final editing

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