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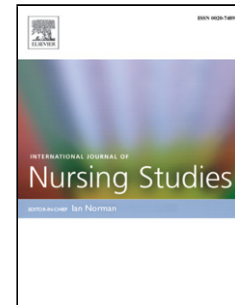
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Authors: Mieko Omura, Jane Maguire, Tracy Levett-Jones, Teresa Elizabeth Stone



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The effectiveness of assertiveness communication training programs for healthcare professionals and students: A systematic review

Author: Mieko Omura (Corresponding author)*

Qualifications: RN, BN(Hons1)

Current job title: PhD candidate

Institution: School of Nursing and Midwifery, The University of Newcastle

Member of the University of Newcastle Centre for Evidence Based Healthcare Informing
Research (CEBHIR): A Joanna Briggs Institute Centre of Excellence

Contact details: School of Nursing and Midwifery, The University of Newcastle
University Drive, Callaghan, NSW, 2308 Australia

Email: mieko.omura@uon.edu.au

Phone: +61 2 4921 6651

Author: Jane Maguire

Qualifications: RN, PhD, GradCert in Child & Adolescent Health, BA, BN(Hons)

Current job title: Professor of Nursing

Institution: Faculty of Health, University of Technology

Contact details: 235 Jones St, Ultimo, NSW, 2007 Australia

E-mail: jane.maguire@uts.edu.au

Phone: 0414 420 062

Twitter: @janemaguire9

Author: Tracy Levett-Jones

Qualifications: RN, PhD, MEd & Work, BN, DipAppSc(Nursing)

Current job title: Professor of Nursing Education

Institution: Faculty of Health, University of Technology

Contact details: 235 Jones St, Ultimo, NSW, 2007 Australia

E-mail: tracy.levett-jones@uts.edu.au

Phone: 0400 940 438

Twitter: @ProfTLJ

Author: Teresa Elizabeth Stone

Qualifications: RN RMN BA MHM PhD FACMHN

Current job title: Visiting Professor

Institution: Chiang Mai University,

Contact details: Chiang Mai University Faculty of Nursing

110 Intavaroros Road Sripum District, Muang

Chiang Mai 50200

THAILAND

Email: teriston@yamaguchi-u.ac.jp

Phone: 0413 647646

ABSTRACT

Background

Communication errors have a negative impact on patient safety. It is therefore essential that healthcare professionals have the skills and confidence to speak up assertively when patient safety is at risk. Although the facilitators to and barriers of assertive communication have been the subject of previous reviews, evidence regarding the effectiveness of interventions designed to enhance assertive communication is lacking. Thus, this paper reports the findings from a systematic review of the effectiveness of assertiveness communication training programs for healthcare professionals and students.

Objective

The objective of this review is to identify, appraise and synthesise the best available quantitative evidence in relation to the effectiveness of assertiveness communication training programs for healthcare professionals and students on levels of assertiveness, communication competence and impact on clinicians' behaviours and patient safety.

Data sources

The databases included: CINAHL, Cochrane library, EMBASE, Informit health collection, MEDLINE, ProQuest nursing and allied health, PsycINFO, Scopus and Web of Science. The search for unpublished studies included: MedNar, ProQuest Dissertations & Theses A&I. Studies published in English from 2001 until 2016 inclusive were considered.

Study eligibility criteria

The review included original quantitative research that evaluated (a) any type of independent assertiveness communication training program; and (b) programs with assertiveness training included as a core component of team skills or communication training for healthcare professionals and students, regardless of healthcare setting and level of qualification of participants.

Study appraisal and synthesis methods

Studies selected based on eligibility criteria were assessed for methodological quality and the data were extracted by two independent researchers using the Joanna Briggs Institute critical appraisal and data extraction tools.

Results

Eleven papers were critically appraised using the Joanna Briggs Institute critical appraisal checklists. Eight papers from the USA, Australia, Ireland, and Taiwan were included in the review.

Conclusions

Interventions to improve assertive communication were reported to be effective to some degree with all targeted groups except experienced anaesthesiologists. Face-to-face and multimethod programs, support from leaders, teamwork skills training and communication techniques adapted from the aviation industry were identified as appropriate approaches for optimising the effectiveness of assertiveness communication training programs. Behavioural change as the result of assertiveness interventions was evaluated by observer-based rating scales during simulation, whilst self-perceived knowledge and attitudes were evaluated using validated scales. Future research should consider evaluation of sustained effect on behaviour change and patient safety.

Keywords: assertiveness, communication, healthcare professional, healthcare student, patient safety, speaking up, systematic review, training

What is already known about the topic?

- Healthcare is increasingly focused on the development of non-technical skills such as assertive communication as a strategy to improve patient safety.
- Assertive communication or 'speaking-up' behaviours are viewed as essential components of teamwork and patient safety.
- There are cultural, professional, organisational and personal barriers that can impede healthcare professionals' assertive communication. Such barriers include fear of retribution, professional hierarchies, and lack of training.

What this paper adds

- Assertiveness communication training interventions were reported to be somewhat effective with all targeted groups except experienced anaesthesiologists.
- Face-to-face and multi-method interventions, support from leaders, teamwork skill training and communication techniques adapted from the aviation industry were positively evaluated.
- In addition to the evaluation of reaction and learning, behaviour change was evaluated by observer-based rating scales during simulation, but future studies should explore how assertiveness communication training can be designed to sustain behaviour change and improve patient safety.

1. Introduction

Communication errors have a negative impact on patient safety (Leonard et al., 2004, Lyndon et al., 2011). Several studies have demonstrated that inadequate information sharing due to healthcare professionals' hesitancy to 'speak up' leads to adverse patient outcomes (Greenberg et al., 2007, Rabøl et al., 2011, Sutcliffe et al., 2004). However, assertive communication has been shown to improve the performance of clinical teams (Kolbe et al., 2012). In recent years, assertiveness communication training programs have been implemented as a part of team training in healthcare but the effectiveness of these interventions is uncertain.

This review focused on studies of assertiveness communication training conducted to improve healthcare professionals' and students' failure to speak up when concerns are raised about patient safety. The aim was to identify, appraise and synthesise the best available quantitative evidence in relation to the effectiveness of assertiveness communication training programs for healthcare professionals and students on levels of assertiveness and communication competence, and the impact of such programs on clinicians' communication behaviours and patient safety. For the purpose of this review, assertiveness refers to the ability to respectfully express concerns about issues that have the potential to impact patient safety and share opinions with other staff, including those in authority (Omura et al., 2016). 'Speaking up' is one form of assertive communication and refers to communicating specific

observations, requesting clarification or challenging the decision of someone with positional power or authority to act (Kolbe et al., 2012, Sayre et al., 2012).

Communication competence refers to “knowledge of appropriate communication practices as well as effectiveness at adapting to the surroundings in a communication situation” (Steele and Plenty, 2015. p. 297). Patient safety is defined as “freedom, for a patient, from unnecessary harm or potential harm associated with health care” (World Health Organization, 2009. p.79).

2. METHODS

2.1. Protocol and registration

This review was conducted according to the Joanna Briggs Institute’s (JBI) systematic review protocol and reported according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009). The review protocol (Omura et al., 2016) is available from the JBI Database of Systematic Reviews and Implementation Reports. It is registered in PROSPERO, the International prospective register of systematic reviews (No. CRD42016053000).

2.2. Eligibility criteria

The review included quantitative research that evaluated (a) any type of independent assertiveness communication training program; and (b) programs with assertiveness training included as a core component of team skills or communication training for healthcare professionals and students, regardless of healthcare setting and level of qualification of participants.

Quantitative studies eligible for the review included randomised controlled trials (RCT), quasi-experimental, and before and after studies that examined levels of assertiveness and/or the levels of communication competence, and how this affected clinicians’ communication behaviours and/or patient safety.

2.3. Search strategy

Keywords were located by a search of CINAHL and MEDLINE. Next, the search was conducted across all databases using the identified keywords. Finally, the references

of key identified papers were searched. Only studies published in English from 2001 to 2016 were considered.

The databases included: CINAHL, Cochrane library (including CENTRAL), EMBASE, Informit health collection, MEDLINE, ProQuest nursing and allied health, PsycINFO, Scopus and Web of Science. The search for unpublished studies included: MedNar, ProQuest Dissertations & Theses A&I.

Keywords were: 1) asserti*, speak* up, silence, 2) communicat*, train*, teach*, educat*, (staff or professional) development, 3) health (profession* or personnel*), physician*, doctor*, resident*, intern*, nurs*, midwi*, pharmacist*, allied health, student*

2.4. Study selection process

Studies selected based on eligibility criteria were assessed by two independent reviewers (MO, JM) for methodological quality before they were included in the review using the JBI Critical Appraisal Checklist for Randomised Controlled Trials (Table 1) and JBI Critical Appraisal Checklist for Quasi-Experimental Studies (non-randomised experimental studies) (Table 2). Disagreements were resolved through discussion or with a third reviewer (TLJ).

2.5. Data collection and synthesis process

Two reviewers (MO, JM) independently extracted data from included studies using the standardised data extraction tool from the JBI Meta-Analysis of Statistics Assessment and Review Instrument (MAStARI). Discrepancies were resolved through discussion. The extracted data included; population, type of intervention, type of comparator, study design and outcome relevant to the review aims. Due to variation in intervention methods and outcome measures, it was not possible to conduct a meta-analysis.

3. RESULTS

3.1. Study selection

After removing duplicates 5296 studies were screened and 79 assessed for eligibility using the PICOS criteria (Participants, Interventions, Comparisons, Outcomes, and Study design). Eleven papers were critically appraised using the JBI critical appraisal checklists for Randomised Controlled Trials and Quasi-Experimental Studies. Eight papers were included in the review. A flow chart adapted from the PRISMA diagram illustrating the selection process is presented in Figure 1.

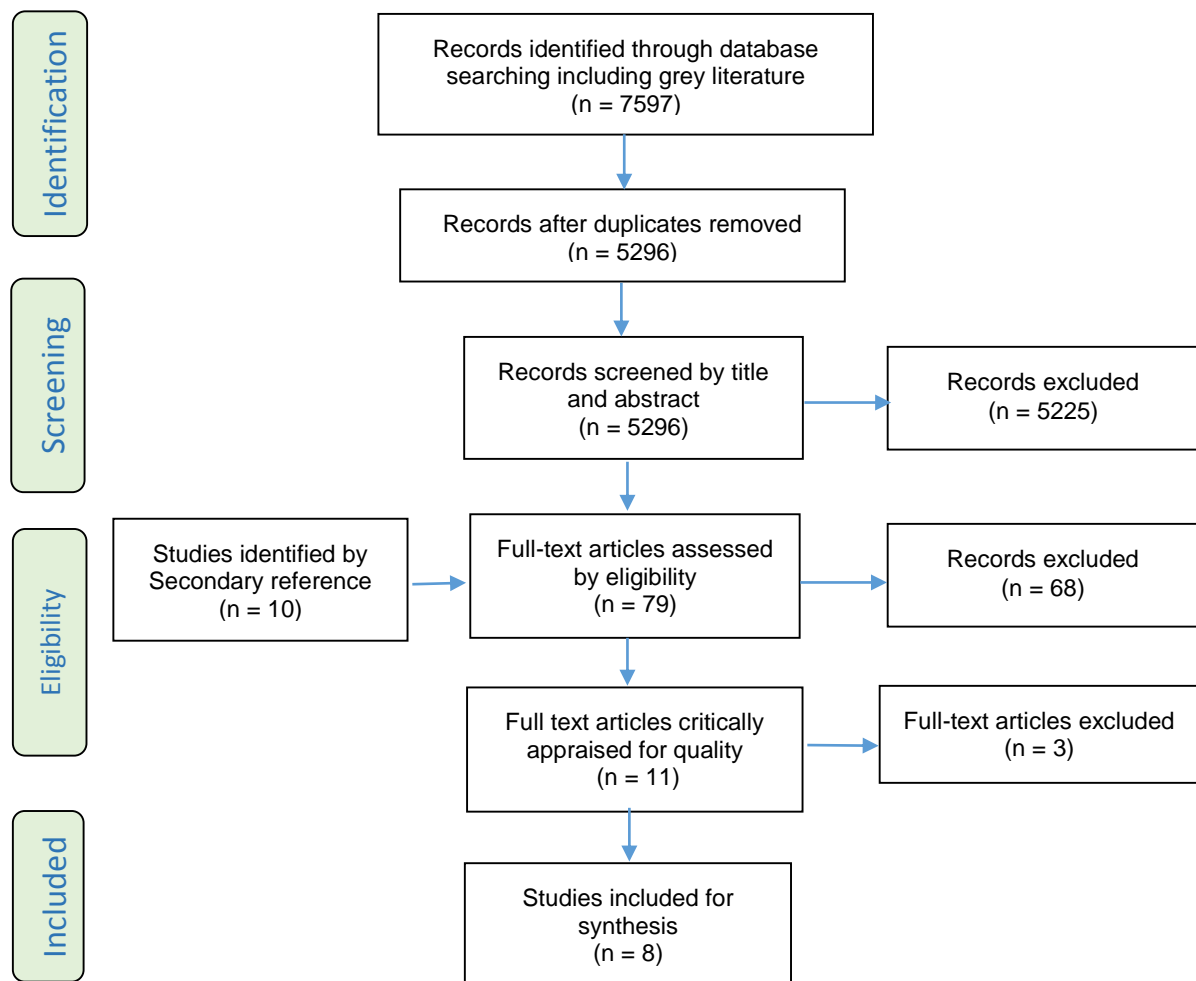


Figure 1 Systematic review flow diagram adapted from Moher et al. (2009)

3.2. Study characteristics

The majority of studies were conducted in the USA (n=5), whilst the remaining three were conducted in Australia (n=1), Ireland (n=1), and Taiwan (n=1). Assertiveness

communication training programs were found to have some degree of effectiveness with the all target groups including medical interns (O'Connor et al., 2013, Thomas et al., 2007), residents (Pian-Smith et al., 2009), registered nurses (Sayre et al., 2012) and students from the disciplines of nursing (Lin et al., 2004), midwifery (Warland et al., 2014) and medicine (Barzallo Salazar et al., 2014, Lin et al., 2004), with the exception of experienced anaesthesiologists (Raemer et al., 2016). Only one of the training programs targeted interdisciplinary participants (Lin et al., 2004). Details of the characteristics of selected studies including study design, participants, setting, interventions and outcome measures are presented in Table 1.

Table 1
Characteristics of included studies

| Author Year | Study Design | Participants Setting | Interventions | | | Outcome measures |
|-------------------------------|------------------------------------|--|------------------|---------------|--|--|
| | | | Delivery mode | Duration | Content | Impact on clinician's communication behaviours / Level of assertiveness |
| Thomas et al. (2007) | Post intervention RCT | USA, Interns in paediatrics, combined internal medicine/ paediatrics, family medicine, obstetrics /gynaecology | Face-to-face | 2.5 hours | Team training plus human factor instruction to practice the team behaviours at skill stations in addition to existing Neonatal Resuscitation Program | Frequency of team behaviours by observing video recordings of simulated resuscitations using low-fidelity mannequins |
| Raemer et al. (2016) | Post intervention RCT | USA, Practicing anaesthesiologists participating in a mandatory simulation-based crisis management course | Face-to-face | 50 minutes | An interactive didactic presentation that included a patient safety rationale, a rubric for speaking up modified from aviation (the two-challenge rule), conversational skills (advocacy plus inquiry), and role-play exercise | Video analysis of three scenarios for speaking up to a surgeon, a circulating nurse and a colleague in a simulated operating room. Incidence of subject speaking up during each event was counted and compared |
| Bazallo Salazar et al. (2014) | Prospective RCT | USA, Medical students | Face-to-face | N/S* | Encourage vs Discourage by senior surgeons | In simulated operating room, students were considered to have spoken up if they questioned and did not proceed due to a mistake made by a senior surgeon |
| Pian-Smith et al. (2009) | Single group pre/post intervention | USA, Anaesthesiology trainee (residents) from hospital residency and fellowship programs affiliated Harvard Medical School | Face-to-face | 30-45 minutes | The two-challenge rule with advocacy-inquiry technique (CRM training) taught during debriefing between the simulations | Pre and post intervention video-recorded obstetric operation simulation was coded by two blinded anaesthesiologists and compared |
| O'Connor et al. (2013) | Pre/post intervention study | Ireland, Interns who attended mandatory curriculum | Face-to-face | 90 minutes | Small-group teaching consisted of human factors and errors in health care, nontechnical skills, communication techniques adapted from | Reaction: post-training questionnaire Learning: pre and post questionnaires for knowledge and attitudes Behaviour: 2 patient scenarios from Program for Medical Education |

| | | | | | | |
|-----------------------|--|--|--------------|-------------------|--|--|
| | | | | | aviation, and filmed challenging situations | Innovations and Research observed by a psychologist |
| Sayer et al. (2012) | Pre/post intervention study | USA, Registered Nurses from 2, 300-bed acute care hospitals that belonged to the same health care system | Face-to-face | 5-6 hours | A video of support from nurse and physician leader, followed by a discussion of organizational and individual obstacles, action plan, and peer support in small groups | Speaking-Up Measure by Premeaux & Bedeian (2003) List of individual nurse behaviours |
| Lin et al. (2004) | Pre/post intervention study with time1 and time2 post-test | Taiwan, Nursing and medical students with low level of assertiveness (Assertive Scale < 50%) | Face-to-face | 2 hours x 8 weeks | Multiple components with proper assertive behaviour, individual's fundamental rights, confronting criticism, refusal and requests, and expressing dissatisfaction | Assertive scale revised by Yang (1977). Score range from 35 to 210 with a higher score indicate a higher degree of assertiveness |
| Warland et al. (2014) | Single group pre/post intervention | Australia, Undergraduate midwifery students | Face-to-face | 1 day | Workshop when they returned to university after a clinical placement 3-4 month later | Validated assertiveness questionnaire by Begley and Glaken (2004) |

*N/S: Not specified

3.3. Risk of bias within studies

According to the JBI criteria for the effectiveness of experimental designs, evidence that three RCTs reported was assessed at Level 1.c (JBI, 2013). The results of the critical appraisal and risk of bias of each RCT are presented in Table 2.

Table 2
Results of critical appraisal for Randomised Controlled Trials

| Questions (potential bias) | Barzallo Salazar et al | Raemer et al | Thomas et al |
|---|------------------------|--------------|--------------|
| 1. Was true randomisation used for assignment of participants to treatment groups? (selection bias) | Yes | Yes | Yes |
| 2. Was allocation to treatment groups concealed? (selection bias) | No | Unclear | Unclear |
| 3. Were treatment groups similar at the baseline? (selection/design bias) | Yes | Unclear | Unclear |
| 4. Were participants blind to treatment assignment? (performance bias) | Yes | Yes | Unclear |
| 5. Were those delivering treatment blind to treatment assignment? (performance/detection bias) | No | Unclear | No |
| 6. Were outcomes assessors blind to treatment assignment? (ascertainment bias) | No | Yes | Yes |
| 7. Were treatments groups treated identically other than the intervention of interest? (systematic difference/contamination bias) | Yes | Yes | Yes |
| 8. Was follow-up complete, and if not, were strategies to address incomplete follow-up utilized? (attrition bias) | Yes | Yes | Yes |
| 9. Were participants analysed in the groups to which they were randomized? (Intention to analysis) | Yes | No | No |

| | | | |
|---|-----|-----|-----|
| 10. Were outcomes measured in the same way for treatment groups? (instrumentation / testing effects threats) | Yes | Yes | Yes |
| 11. Were outcomes measured in a reliable way? (measurement bias) | Yes | Yes | Yes |
| 12. Was appropriate statistical analysis used? (performance/detection bias) | Yes | Yes | Yes |
| 13. Was trial design appropriate, and any deviations from the standard RCT design accounted for in the conduct and analysis of the trial? (design bias) | Yes | Yes | Yes |

There are three quasi-experimental controlled studies that reported level 2.c evidence, and two pre-test and post-test studies that reported Level 2.d evidence for effectiveness of experimental designs according to JBI Levels of Evidence criteria (JBI, 2013). The results of the critical appraisals and risks of bias of each quasi-experimental study are presented in Table 3.

Table 3
Results of critical appraisal for quasi-experimental studies

| Questions (potential bias and threat) | Lin et al | O'Connor et al | Sayre et al | Pian-Smith et al | Warland et al |
|--|-----------|----------------|-------------|------------------|---------------|
| 1. Is it clear in the study what is the 'cause' and what is the 'effect'? (causation/reverse causation) | Yes | Yes | Yes | Yes | Yes |
| 2. Were the participants included in any comparisons similar? (selection bias) | Yes | Unclear | No | Unclear | No |
| 3. Were the participants included in any comparisons receiving similar treatment/care, other than the intervention of interest? (history threat/ systematic difference/contamination bias) | Yes | Unclear | Unclear | Yes | Yes |
| 4. Was there a control group? (measurement bias) | Yes | Yes | Yes | No | No |
| 5. Was there multiple measurements of the outcome both pre and post the intervention? (maturation threat, regression to the mean) | Yes | Yes | Yes | No | No |
| 6. Was follow-up complete, and if not, was follow-up adequately reported and strategies to deal with loss to follow-up employed? (attrition bias) | Yes | Yes | No | Unclear | Unclear |
| 7. Were the outcomes of participants included in any comparisons measured in the same way? (instrumentation / testing effects threats) | Yes | No | Yes | Yes | Yes |
| 8. Were outcomes measured in a reliable way? (detection / instrument / measurement bias) | Yes | Yes | Yes | Yes | Yes |
| 9. Was appropriate statistical analysis used? (performance / detection bias) | Yes | Yes | Yes | Yes | Yes |

3.4. Results of individual studies

Assertiveness communication training programs demonstrated some degree of impact on clinicians' level of assertiveness and communication behaviours. The summary data for individual studies are presented in Table 4.

Table 4
Results of individual studies

| | n Exp: Cntrl* | Model or test used | Result of test or measure of effect | P value | 95% CI |
|----------------------------------|---|--|---|---|---|
| Thomas et al.2008 RCT | n=32 17:15 | Mann-Whitney rank sum, Binomial method, Cohen's k | Exp 1.80 Cntrl 0.64 Assertion k = 0.87 | P<0.001 | Exp(1.21, 2.25) Cntrl(0.26, 0.91) † |
| Raemer et al.2016 RCT | n=62-65 ‡ 31-32 : 31-33 | Mann-Whitney U tests, chi-square § | NS for all scenarios tested | p=0.45 p=0.51 p=0.38 | NR |
| Barzallo Salazar. et al.2014 RCT | n=55 28:27 | Mann-Whitney U test, Fisher exact test, un-paired t test QC: adjusted personality bias | Encouraged group more likely to speak up 82% vs 30% | P<0.001 | NR |
| Pian-Smith et al.2009 Quasi | n=36 single group | Wilcoxon signed rank test Pre vs post mean (SD) | Faculty anaesthesiologist 2.3(1.3) vs 3.6(1.2) Faculty surgeon 3.1(1.0) vs 3.9(1.0) Circulating nurse 2.7(1.2) vs 2.8(1.4) | P=0.0004 P=0.002 P=0.84 | NR |
| O'Connor et al.2013 Quasi | Repeated measures Knowledge n=45 Attitude ¶ Speaking up to seniors n=46 Between subjects Knowledge (pre: post: control 47:66:17) Attitude ¶ Speaking up to seniors (46:67:17) Behaviour Admitting error (11:23:14) Breaking bad news (19:20:8) | Repeated measures Pre vs post mean (SD) Paired-subjects t-tests. Cohen's d Between subjects Pre vs post vs control Mean (SD),F statistic ANOVA QC: Reliability tested with Cronbach Cohen's d | Repeated measures 43.83(16.37) vs 63.84(14.44) t=6.97(df=44) 2.97(0.74) vs 3.20(0.68) t=1.40(df=45) Effect size between pre and post group: Cohen's d=0.33 Between subjects 44.68(16.61) vs 59.22(14.81) vs 43.85(9.22), F _(2, 127) =15.91 2.79 (0.68) vs 3.27 (0.64) vs 2.98 (0.69), F _(2, 127) =7.2 Effect size between control and post: Cohen's d=0.47 23.45(1.51) vs 21.04(2.85) vs 21.07(3.69), F _(2, 45) =2.9 27.63(2.79) vs 27.65(3.33) vs 25.37(3.07), F _(2, 44) =1.8 | p<0 .05 NS p< 0.05 p< 0.05 NS NS NS | NR |
| Sayre et al. 2012 Quasi | n=104 53:51 | Exp pre vs post mean (SD) Cntrl pre vs post mean (SD) QC: Cronbach alpha 0.81 #p controlled for group mean differences at baseline | Speaking-up measure 9.40(2.97) vs 21.00(2.28) 20.53(2.51) vs 20.39(2.43) Individual nurse behaviours 15.33(3.74) vs 17.24(4.38) 14.94(4.21) vs 15.19(4.44) | P<0.0001 P=0.68 #p<0.001 P<0.0001 P=0.27 #p=0.0015 | NR |
| Lin et al. 2004 Quasi | n=69 33:36 | Exp/Cntrl Mean (SD) Pre vs post vs follow-up | 119.58(12.56) vs 137.61(17.66) vs 147.70(15.33) | | NR |

| | | | | | | |
|-----------------------|----------|---------|--|--|---------|----|
| | | | Generalized estimated equation (GEE) QC: Adjusted internal or external locus of control, sex role, time, group–time interaction | 124.28(7.51) vs 133.33 (12.76) vs 34.64(11.84) Z=2.53–4.71 | p<0.05 | |
| Warland et al.2014 | Overall | n=39-29 | Manne-Whitney U | 68.8: 75.5 | p=0.002 | NR |
| | under 25 | n=23-17 | pre : post mean | 68.15: 75.49 | p=0.005 | |
| Quasi | over 25 | n=14-12 | | 68.8: 73.5 | p=0.171 | |

* Exp: experimental, Cntrl: control; † graphical display; ‡ n varied depending on scenario; § two-tailed Fisher exact test; ¶ only data relevant to assertiveness is reported here; # p controlled; QC: quality control; NS: not significant; NR: not reported; SD: standard deviation

3.5. Risk of bias across studies

Methods taken to address risk of measurement, detection, attrition or selective bias are reported in Tables 2, 3 and 4. The risk of selection bias was addressed through randomisation of participants to intervention or other in three RCTs. Randomisation procedures included random numbers generation (Barzallo Salazar et al., 2014, Thomas et al., 2007), the use of a random number table (Raemer et al., 2016) or sequential oblique envelopes (Barzallo Salazar et al., 2014), and/or the roll of a die (Raemer et al., 2016). Instructors delivering interventions were not blinded due to the nature of educational intervention studies. Two studies used a single-blinded design, one with participants (Barzallo Salazar et al., 2014), and another with outcome assessors (Thomas et al., 2007). One study randomly designated courses as experimental and control groups and outcome assessors were trained and blinded (Raemer et al., 2016).

Although randomisation reduces risks of selection bias, differences in demographic variables such as gender and age can still be confounding factors if participants are not evenly distributed across allocation. Two studies only reported some part of participants' demographics (Raemer et al., 2016, Thomas et al., 2007) so the degree of confounding could not be ascertained on those variables. In addition, in one study (Barzallo Salazar et al., 2014), the potential for personality bias was adjusted at baseline to counteract confounding as a result of personality characteristics observed in their pilot study. There was no statistically significant difference between groups in personality bias, training level or gender.

Two studies (Raemer et al., 2016, Thomas et al., 2007) indicated loss to follow-up but the intention-to-treat analysis based on initially assigned groups was not reported. All RCTs used a simulation based outcome evaluation. In a study with an observer-based rating scale (Thomas et al., 2007), two trained observers were blinded to allocation and inter-rater reliability was tested. Thus, the quality of the RCTs was not high and did not satisfy all the JBI critical appraisal criteria.

Of the five quasi-experimental studies without random allocation, three studies were pre and post intervention studies with a control group (Lin et al., 2004, O'Connor et al., 2013, Sayre et al., 2012), and two used a single group (Pian-Smith et al., 2009, Warland et al., 2014). In one study, groups were matched by gender and grade; and other possible confounding factors such as internal/external locus of control were controlled for using a generalised estimated equation. Sustained impact was evaluated by a follow up measurement (Lin et al., 2004). Another study controlled for group mean differences at baseline using a regression analysis (Sayre et al., 2012). Although not randomised, these design and statistical approaches addressed possible bias.

4. DISCUSSION

4.1. Strength of evidence

The JBI level of evidence for effectiveness for this review is Level 1.b – systematic review of RCTs and other study designs (JBI, 2013). Due to variation in intervention methods and outcome measures, it was not possible to conduct a meta-analysis. The strength of the evidence is suggestive but hampered by the complexity of the topic and the design heterogeneity of all included studies. Therefore, the findings are presented as a narrative review.

This review reports outcomes according to the first three levels of Kirkpatrick's model of evaluation of educational outcomes (Frye and Hemmer, 2012, Kirkpatrick, 2009), namely Level 1 - reactions, Level 2 - knowledge and attitude, and Level 3 - behaviour change. The two main outcomes were impact on communication behaviours (level 3) in six of the studies; and level of assertiveness (level 2) in three of the studies. Sayre et al. (2012) evaluated both individual behaviours and level of

assertiveness. All of the RCTs (Barzallo Salazar et al., 2014, Raemer et al., 2016, Thomas et al., 2007) and two of the quasi-experimental studies (O'Connor et al., 2013, Pian-Smith et al., 2009), which were conducted with medical participants, attempted to go beyond level 2 of Kirkpatrick's model, with behaviour change assessed by observer-based rating scales using simulations conducted in operating rooms or resuscitation settings. All but one study of anaesthesiologists (Raemer et al., 2016) were effective. O'Connor et al's (2013) results demonstrated improved knowledge, and there was some evidence of effectiveness for attitudes, but not for behaviours (Kirkpatrick levels 2 and 3).

The use of simulation-based outcome assessment has become prominent in healthcare research (Ryall et al., 2016). Although simulation approximates the reality of clinical practice, the actions taken or behaviours demonstrated in a simulated environment may differ from those in a real clinical context due to the lack of perceived responsibility and sense of urgency in simulation setting. Additionally, the unfamiliarity of the scenario setting and the time compression evident in a simulated scenario might influence participants' behaviours (Pian-Smith et al., 2009, Raemer et al., 2016). Reliability of the results of simulation also depends upon observer's training and inter-rater reliability. Despite evidence of behavioural change during simulation (Pian-Smith et al., 2009, Thomas et al., 2007), transfer of skills to clinical practice was not evaluated. Thus, sustained effects on assertive behaviour, the third level of the Kirkpatrick Model (2009) were not completely achieved. Nevertheless, it is evident that observer-based outcome measures with simulation can evaluate not only, reaction, knowledge and attitudes, but also behaviour change.

In three quasi-experimental studies with participants in nursing, midwifery and interprofessional settings (Lin et al., 2004, Sayre et al., 2012, Warland et al., 2014), researchers used validated assertive scales including the assertiveness questionnaire by Begley and Glacken (2004), the speaking-up measure by Premeaux and Bedeian (2003) and the assertive scale by Yang (1997) adapted from the Rathus Assertive Schedule (Rathus, 1973), which has been used in similar studies (Ibrahim, 2011, Nishina and Tanigaki, 2013). These self-report questionnaires are designed to evaluate assertive attitudes but do not indicate actual

changes in assertive communicative behaviours. The level of communication competence was not measured in any of the included studies.

4.2. Interventions

Assertiveness communication training programs targeting groups regarded as being low in hierarchical status were found to be effective. Conversely, a training program for experienced anaesthesiologists, a high status group, was ineffective (Raemer et al., 2016), possibly because assertiveness is deeply rooted in this discipline and therefore unlikely to change as a result of a relatively short, stand-alone 50-minute session. It should be noted that hierarchical status may not be the only reason for the ineffectiveness of this training program; program content and design are also likely to have contributed to the outcomes. Therefore, it cannot be concluded that assertiveness communication training programs were ineffective for high status groups.

Multi-method interventions were commonly used and effective in all but one of the included studies (Barzallo Salazar et al., 2014). Most programs used interactive rather than didactic approaches and lectures/presentations were reinforced by small group discussions and/or role plays. Video sessions were utilised by both RCTs and non-RCTs. In the RCT they were used to illustrate key concepts and skills (Thomas et al., 2007), whilst the two non-RCTs used videos of challenging situations in healthcare (O'Connor et al., 2013), and to share support messages from leaders (Sayre et al., 2012). Opportunities to exercise learnt skills were provided using role plays (Raemer et al., 2016, Warland et al., 2014) and when practicing clinical skills on manikins (Thomas et al., 2007). Other methods described in the studies included development of action plans and peer support (Sayre et al., 2012). However, it is not possible to determine whether all or some components of multiple-method interventions led to these positive outcomes, because all components were analysed inclusively. Nevertheless, using multiple educational formats was recommended as a strategy to maintain learners' interest and focus (Wilson and Korn, 2007).

Healthcare professionals and educators have recognised similarities between high-risk industries such as healthcare and aviation in terms of human errors such as

communication being the root cause of the majority of incidents and accidents. However, the aviation industry has well advanced strategies for addressing this problem (Brindley and Reynolds, 2011, Kapur et al., 2016). Four studies conducted in the USA, two RCTs and two non-RCTs, were informed by aviation industry approaches such as Crew (cockpit/crisis) Resource Management (CRM) techniques, teamwork skills training and communication techniques such as the 'two-challenge rule' and 'advocacy-inquiry technique' (O'Connor et al., 2013, Pian-Smith et al., 2009, Raemer et al., 2016, Thomas et al., 2007). Pian-Smith et al. (2009) combined the 'two-challenge rule' and 'advocacy-inquiry technique' to emphasise the shared responsibility for safety and the obligation to speak up when concerned. To reduce defensiveness residents were encouraged to challenge others by making an advocacy statement to describe their own opinions, followed by inquiry about the other person's thinking and opinions. The residents' performance improved significantly when communicating with anaesthesiologists and obstetricians, but not when communicating with nurses (Pian-Smith et al., 2009). This is noteworthy and is in accord with Maxfield et al.'s (2005) finding that physicians were unlikely to confront nurses and other healthcare professionals even they have clinical authority. This may possibly reflect the hierarchical status mentioned previously and may be one of the reasons that assertiveness communication training in interprofessional settings is optimal. Nevertheless, integrating the approaches adapted from aviation industries to healthcare communication training is becoming common and reported to be effective, especially in the medical discipline. Additionally, Thomas et al. (2007) incorporated team training into an existing neonatal resuscitation program and attributed the positive result to the intervention being embedded in a speciality area. This result is in accord with previous studies (Healey et al., 2006, Yule et al., 2006), but it may not be relevant to training for students who have yet to specialise.

In three of the non-RCTs conducted with participants in nursing, midwifery and interprofessional settings (Lin et al., 2004, Sayre et al., 2012, Warland et al., 2014), assertiveness communication training programs were not embedded into a speciality area but were more general in nature. Researchers implemented conventional assertiveness training informed by cognitive behaviour therapy and included understanding of assertive rights, how to provide criticism, refusal and requests (Lin

et al., 2004, Warland et al., 2014) and discussion about obstacles (Sayre et al., 2012).

The workshops for interdisciplinary (medical and nursing) and midwifery students were integrated into curricula and were of long duration (8 to 16 hours a week for eight weeks) (Lin et al., 2004; Warland et al., 2014), in comparison to shorter sessions (30-45 minutes to 2.5 hours) for medical interns and residents (O'Connor et al., 2013, Pian-Smith et al., 2009, Thomas et al., 2007), possibly due to the time constraints associated with training practicing clinicians (Gerard, 2011). However, despite the difference in duration, they were each effective, with the exception of program for anaesthesiologists. Therefore, it is not possible to make recommendations about the most appropriate duration for assertiveness training programs.

4.3. Implications for nursing researchers and educators

In all included studies training was delivered face-to-face. Although easy to access and cost effective, no e-learning programs were used as either the primary or supplementary intervention in any of the included studies. The underlying assumption for face-to-face approaches may be that communication training, including assertive communication, is more effective when participants are given opportunities for deliberate practice with the provision of immediate feedback (Sinclair et al., 2017). However, the potential for e-learning approaches has not been adequately explored and therefore, there are opportunities for this approach to be trialled and evaluated.

Although scenarios used for observer-based outcome measures were situated in an interdisciplinary team-setting in two studies (Pian-Smith et al., 2009, Raemer et al., 2016), only one quasi-experimental study targeted medical and nursing students in the experimental group and demonstrated a significant improvement in assertiveness skills with a sustained effect compared to the control group (Lin et al., 2004). Given the interdisciplinary nature of contemporary healthcare, there is a need for more studies that include participants from different disciplines and that evaluate the outcomes of interprofessional assertiveness communication training programs.

Culture may also influence the effectiveness of assertiveness communication training. The studies in this review were all conducted in Western countries including the USA, Ireland and Australia, with the exception of one non-RCT study conducted in Taiwan (Lin et al., 2004). The effectiveness of assertiveness training in Asian healthcare settings may not be transferable to Western healthcare settings and vice versa for several reasons including cultural differences and participants' baseline assertiveness levels.

Although it was noted in some studies that training approaches had the potential to enhance patient safety, none of the included studies measured the impact of interventions on patient safety using validated patient safety tools or in the form of tangible evidence such as the reduction of clinical errors or complications. Healthcare researchers have raised concerns about lack of patient-related outcomes (Abraham et al., 2014). Thus, future studies should endeavour to measure sustained impact on patient safety as well as healthcare professionals' behaviour change.

4.4. Implications for healthcare leaders and policy makers

Healthcare leaders play an important role in supporting less experienced staff to speak up when patient safety is threatened. In one RCT in a laparoscopic simulation setting, trainees who were encouraged to speak up by senior surgeons were more likely to express their concerns compared to those who were discouraged from doing so (Barzallo Salazar et al., 2014). Another study included medical and nursing leaders providing support for assertive communication and demonstrated a significant impact on participants' assertiveness scores (Sayre et al., 2012). Previous research has also emphasised the importance of support from hospital leadership on healthcare professionals' assertiveness (Churchman and Doherty, 2010, Okuyama et al., 2014, Rainer, 2015, Simpson and Lyndon, 2009). Expressions of support for open and assertive communication from key leaders in the organisation may further enhance the effectiveness of assertiveness communication training programs.

4.5. Limitations of the review

Due to heterogeneity in intervention methods and outcome measures between studies, it was not possible to synthesise the results using meta-analysis. Only papers written in English were included in this review but it is acknowledged that there may be relevant studies in other languages. Additionally, although this review was conducted using a rigorous protocol, the risk of overlooking a relevant recent paper was not completely eliminated. Only three RCTs were included, and the remainder were quasi-experimental studies. Quasi-experimental studies without random allocation are subject to selection bias and tend to overestimate intervention effects, however, they still provide a rigorous methodology and relevant data.

5. Conclusions

This review has identified that interventions to improve assertive communication demonstrated some effectiveness with all target groups except experienced anaesthesiologists. Face-to-face and multi-methods programs in which didactic instructions reinforced by discussions and role-play, team training, and support from leaders optimised the effectiveness of assertiveness communication training programs. What is less well understood is which component/s of multi-method interventions had the most impact on outcomes. Safety communication strategy adapted from aviation industries to healthcare are reported to have an impact on novice medical clinicians' behaviours. Conventional assertiveness training in non-RCTs for nurses and students also resulted in significant improvements in the level of assertiveness using self-perceived validated scales, however, impact on behaviours was not examined. There is also evidence of effectiveness of discipline specific assertiveness training programs, but there is a need for more research focusing on evaluating the effectiveness of interprofessional assertiveness communication training programs. The evidence presented by this review, although limited, was suggestive of positive outcomes and identified the need for well-designed RCTs to continue expanding this valuable and emerging field of research. Future research should therefore focus on more rigorous designs, endeavour to identify the component/s of multi-method interventions that have maximal and sustained effect particularly on behaviour change and ultimately on patient safety.

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REFERENCES

- Abraham, J., Kannampallil, T., Patel, V.L., 2014. A systematic review of the literature on the evaluation of handoff tools: implications for research and practice. *Journal of the American Medical Informatics Association : JAMIA* 21 (1), 154-162.
- Barzallo Salazar, M.J., Minkoff, H., Bayya, J., Gillett, B., Onoriode, H., Weedon, J., Altshuler, L., Fisher, N., 2014. Influence of surgeon behavior on trainee willingness to speak up: a randomized controlled trial. *Journal of the American College of Surgeons* 219 (5), 1001-1007 1007p.
- Begley, C.M., Glacken, M., 2004. Irish nursing students' changing levels of assertiveness during their pre-registration programme. *Nurse Educ Today* 24 (7), 501-510.
- Brindley, P.G., Reynolds, S.F., 2011. Improving verbal communication in critical care medicine. *Journal of Critical Care* 26 (2), 155-159.
- Churchman, J.J., Doherty, C., 2010. Nurses' views on challenging doctors' practice in an acute hospital. *Nursing standard (Royal College of Nursing (Great Britain) : 1987)* 24 (40), 42-47.
- Frye, A.W., Hemmer, P.A., 2012. Program evaluation models and related theories: AMEE Guide No. 67. *Medical Teacher* 34 (5), e288-e299.
- Gerard, J.C., 2011. The effect of a communication protocol implementation on nurse/physician collaboration and communication. *University of Louisville, Ann Arbor*, pp. 357.
- Greenberg, C.C., Regenbogen, S.E., Studdert, D.M., Lipsitz, S.R., Rogers, S.O., Zinner, M.J., Gawande, A.A., 2007. Patterns of communication breakdowns resulting in injury to surgical patients. *J Am Coll Surg* 204 (4), 533-540.

- Healey, A.N., Undre, S., Vincent, C.A., 2006. Defining the technical skills of teamwork in surgery. *Qual Saf Health Care* 15 (4), 231-234.
- Ibrahim, S.A.E.A., 2011. Factors affecting assertiveness among student nurses. *Nurse Education Today* 31 (4), 356-360.
- Kapur, N., Parand, A., Soukup, T., Reader, T., Sevdalis, N., 2016. Aviation and healthcare: a comparative review with implications for patient safety. *JRSM Open* 7 (1), 2054270415616548.
- Kirkpatrick, D.L., 2009. Implementing the Four Levels: A Practical Guide for Effective Evaluation of Training Programs: Easyread Super Large 24pt Edition. ReadHowYouWant. com.
- Kolbe, M., Burtscher, M.J., Wacker, J., Grande, B., Nohynkova, R., Manser, T., Spahn, D.R., Grote, G., 2012. Speaking up is related to better team performance in simulated anesthesia inductions: an observational study. *Anesth Analg* 115 (5), 1099-1108.
- Leonard, M., Graham, S., Bonacum, D., 2004. The human factor: the critical importance of effective teamwork and communication in providing safe care. *Quality & Safety in Health Care* 13, I85-I90.
- Lin, Y., Shiah, I., Chang, Y., Lai, T., Wang, K., Chou, K., 2004. Evaluation of an assertiveness training program on nursing and medical students' assertiveness, self-esteem, and interpersonal communication satisfaction. *Nurse Education Today* 24 (8), 656-665 610p.
- Lyndon, A., Zlatnik, M.G., Wachter, R.M., 2011. Effective physician-nurse communication: a patient safety essential for labor and delivery. *American Journal of Obstetrics and Gynecology* 205 (2), 91-96.
- Maxfield, D., Grenny, J., McMillan, R., Patterson, K., Switzler, A., 2005. Silence Kills: The seven crucial conversation in healthcare. The American Association of Critical-Care Nurses.
- Moher, D., Liberati, A., Tetzlaff, J., Altman Douglas, G., 2009. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine* 151 (4), 264-269.
- Nishina, Y., Tanigaki, S., 2013. Trial and Evaluation of Assertion Training Involving Nursing Students. *Yonago Acta Medica* 56 (3), 63-68.

- O'Connor, P., Byrne, D., O'Dea, A., McVeigh, T.R., Kerin, M.J., 2013. 'Excuse Me:' Teaching Interns to Speak Up. *Joint Commission Journal on Quality & Patient Safety* 39 (9), 426-431 426p.
- Okuyama, A., Wagner, C., Bijnen, B., 2014. Speaking up for patient safety by hospital-based health care professionals: A literature review. *BMC Health Services Research* 14.
- Omura, M., Maguire, J., Levett-Jones, T., Stone, T.E., 2016. Effectiveness of assertive communication training programs for health professionals and students: a systematic review protocol. *JBIM Database of Systematic Reviews and Implementation Reports* 14 (10), 64-71.
- Pian-Smith, M.C.M., Simon, R., Minehart, R.D., Podraza, M., Rudolph, J., Walzer, T., Raemer, D., 2009. Teaching Residents the Two-Challenge Rule: A Simulation-Based Approach to Improve Education and Patient Safety. *Simulation in Healthcare* 4 (2), 84-91.
- Premeaux, S.F., Bedeian, A.G., 2003. Breaking the Silence: The Moderating Effects of Self-Monitoring in Predicting Speaking Up in the Workplace. *Journal of Management Studies* 40 (6), 1537-1562.
- Rabøl, L.I., Andersen, M.L., østergaard, D., Bjørn, B., Lilja, B., Mogensen, T., 2011. Descriptions of verbal communication errors between staff. An analysis of 84 root cause analysis-reports from Danish hospitals. *BMJ Quality & Safety* 20 (3), 268-274 267p.
- Raemer, D.B., Kolbe, M., Minehart, R.D., Rudolph, J.W., Pian-Smith, M.C.M., 2016. Improving Anesthesiologists' Ability to Speak Up in the Operating Room: A Randomized Controlled Experiment of a Simulation-Based Intervention and a Qualitative Analysis of Hurdles and Enablers. *Academic medicine : Journal of the Association of American Medical Colleges* 91 (4), 530-539.
- Rainer, J., 2015. Speaking Up: Factors and Issues in Nurses Advocating for Patients When Patients Are in Jeopardy. *Journal of Nursing Care Quality* 30 (1), 53-62 10p.
- Rathus, S.A., 1973. A 30-item schedule for assessing assertive behavior. *Behavior Therapy* 4 (3), 398-406.
- Ryall, T., Judd, B.K., Gordon, C.J., 2016. Simulation-based assessments in health professional education: a systematic review. *Journal of multidisciplinary healthcare* 9, 69.

- Sayre, M.M., McNeese-Smith, D., Leach, L.S., Phillips, L.R., 2012. An educational intervention to increase 'speaking-up' behaviors in nurses and improve patient safety. *Journal of Nursing Care Quality* 27 (2), 154-160 157p.
- Simpson, K.R.P.R.F., Lyndon, A.P.R.C., 2009. Clinical Disagreements During Labor and Birth: How Does Real Life Compare to Best Practice? *MCN, American Journal of Maternal Child Nursing* January/February 34 (1), 31-39.
- Sinclair, P.M., Levett-Jones, T., Morris, A., Carter, B., Bennett, P.N., Kable, A., 2017. High engagement, high quality: A guiding framework for developing empirically informed asynchronous e-learning programs for health professional educators. *Nurs Health Sci* 19 (1), 126-137.
- Steele, G.A., Plenty, D., 2015. Supervisor–Subordinate Communication Competence and Job and Communication Satisfaction. *International Journal of Business Communication* 52 (3), 294-318.
- Sutcliffe, K.M., Lewton, E., Rosenthal, M.M., 2004. Communication Failures: An Insidious Contributor to Medical Mishaps. *Academic Medicine* 79 (2), 186-194.
- The Joanna Briggs Institute Levels of Evidence and Grades of Recommendation Working Party. 2013. New JBI levels of evidence. The Joanna Briggs Institute. Retrieved July 20, 2017 from https://joannabriggs.org/assets/docs/approach/JBI-Levels-of-evidence_2014.pdf
- Thomas, E.J., Taggart, B., Crandell, S., Lasky, R.E., Williams, A.L., Love, L.J., Sexton, J.B., Tyson, J.E., Helmreich, R.L., 2007. Teaching teamwork during the Neonatal Resuscitation Program: a randomized trial. *Journal of Perinatology* 27 (7), 409-414.
- Warland, J., McKellar, L., Diaz, M., 2014. Assertiveness training for undergraduate midwifery students. *Nurse Education in Practice* 14 (6), 752-756 755p.
- Wilson, K., Korn, J.H., 2007. Attention During Lectures: Beyond Ten Minutes. *Teaching of Psychology* 34 (2), 85-89.
- World Health Organization, 2009. WHO Patient safety curriculum guide for medical schools.
- Yang, H.C., 1997. A study of case cognitive process for college students with high and low assertive tendency. In: Thesis. University of National Taiwan Normal, Taipei.

Yule, S., Flin, R., Paterson-Brown, S., Maran, N., Rowley, D., 2006. Development of a rating system for surgeons' non - technical skills. *Medical education* 40 (11), 1098-1104.