ABSTRACT

*Objectives:* This systematic review aims to identify studies that have assessed educational interventions in undergraduate nurse training regarding obesity, and to investigate the interventions’ effectiveness.

*Background:* Obesity is a prominent global issue and nurses have an increased role in weight management with patients. The literature has identified various theory-based behaviour change techniques that successfully assist weight management in patients. Thus, training nurses in obesity-related behaviour change techniques is appropriate in preparing them for their future professional role. However, effectiveness of these educational interventions has not yet been assessed.

*Methods:* The Centre for Reviews and Dissemination guidelines informed this systematic review. Four databases were systematically searched and articles were assessed against inclusion criteria. Data extraction and quality appraisal forms were developed and completed to identify salient features within the articles.

*Results:* Eight studies met inclusion criteria. Only two included both baseline and outcome measures, one of which was a randomised controlled trial. Additionally, only one study included an explicitly identified behaviour change technique. Interventions were delivered through a range of methods, however, quality appraisal indicated that all of the studies had poor methodologies and had high risks of bias.

*Conclusions:* Studies in this area of research are sparse and are not methodologically robust. Therefore, it is not possible to identify effective educational interventions for nursing students on weight management.

*Implications:* More robust research is needed to investigate how nurses can be trained to facilitate weight management. Greater transparency of intervention descriptions, particularly around what behaviour change techniques were taught, would allow for replication and appropriate evaluation. Until then, it is not known if current teaching adequately equips nurses to manage obese and overweight patients.

**Keywords:** *behaviour change, obesity, undergraduate nurses, education, interventions, systematic review*

INTRODUCTION

Overweight and obesity are included as leading risks for global deaths (The World Health Organisation; WHO, 2011) and 502 million adults are reported to be obese across 199 countries (Finucane et al, 2011). Overweight and obesity have increased in recent decades in various populations including the USA, the UK, China and Japan (Ogden, Fryar, Carroll, & Flegal, 2004; Rennie & Jebb, 2005; Wang, Du, Zhai, & Popkin, 2007; Yoshiike et al, 2002). Obesity causes around three million deaths per year worldwide (Prospective Studies Collaboration, 2009) and is accountable for a range of comorbid disorders including type 2 diabetes, cardiovascular disease and many cancers (Guh et al, 2009). Additionally, obesity-related illness has direct and indirect costs to the economy (Wang et al, 2011), with obese individuals having additional conditions associated with obesity that lead to 30% higher medical costs compared with their normal weight peers (Withrow & Alter, 2011).

The need to tackle obesity actively is reflected by recommendations from the National Institute for Health and Clinical Excellence (NICE; 2006) that require health professionals to be trained to provide support and advice to people around weight management. However research reveals that health professionals perceive many barriers to fulfilling this role successfully. Barriers include uncertainty about their role, not having faith in existing treatment options (Epstein & Ogden, 2005), and low personal self-efficacy and abilities in obesity management (Perrin et al, 2005). Health professionals report avoiding behaviour change talk during consultations due to feeling inadequately trained and fearful of damaging relationships (Chisholm, Hart, Lam, et al, 2012; Keyworth et al, 2012).

Nurses in particular have an increasing role in providing lifestyle interventions to support weight management (Department of Health, 2006) and graduate nurses are expected to be able to use behaviour change techniques (BCTs) to promote health in patients (American Association of Colleges of Nursing, 2008). Project 2000 was implemented in the early 90s and initiated the importance of course-based learning and linking theory with practice within nursing education (Crotty, 1993; UKCC, 1986). Rather than simply treating ill health, nurses were encouraged to promote health and prevent illness (Crotty, 1993). Research shows that nurses have the ability to successfully deliver behaviour change interventions to patients in relation to weight management. For example, Whittemore et al (2004) found that nurses delivered successful interventions in patients with type 2 diabetes.

However, previous studies demonstrate that the attitudes and perceptions of trainee and qualified nurses around obesity are not always positive (Clark & Maben, 1998; Howard, 2001; Jowett et al, 1994; Poon & Tarrant, 2009). Attitudes and skills are not developed with age and experience, but are developed at undergraduate level (Dunn & Hunsford, 1997). Hence targeting undergraduate nurse education is an opportunity to assist student nurses to develop their skills and confidence in working positively with overweight patients. However, university training can lack focus around providing student nurses with the techniques to facilitate behaviour change, and they feel ill-equipped with the skills to communicate effectively with patients around weight management (Brown & Thompson, 2007; Keyworth et al, 2012). It is important that training is evidence-based as students can perceive that theoretical aspects of their course as irrelevant to clinical practice and ‘common sense’ (Howard, 2001, p. 34).

However, a systematic review conducted on medical students identified that effective training around obesity management is scarce (Chisholm, Hart, Mann, et al, 2012). Only 12 studies met inclusion criteria and intervention content tended to be poorly reported and measures to control for the risk of bias were rarely utilised. Other research has also highlighted that medical educators encounter difficulties implementing and delivering obesity management education in accordance with the General Medical Council’s guidelines to medical students (Chisholm et al, 2013). Qualitative interviews with medical educators described these difficulties as being due to a lack of Faculty support and available guidance about *what* behaviour change education include (Chisholm et al, 2013). Together this may explain reports of insufficient medical education in this area (Moser & Stagnaro-Green, 2009). It remains unknown if the situation is similar for nurse training.

Addressing the obesity epidemic is complex and it has been argued that public interventions are likely to have the greatest effect compared with the small gains achieved through individual lifestyle interventions (Jain, 2005; Loveman et al, 2011). However, given the opportunities that nurses consistently encounter with patients, it is important that they are able to and are confident enough to intervene where obesity is a relevant issue to patients’ health. Hence it is relevant to investigate whether interventions regarding obesity are being implemented into undergraduate nursing courses.

The present study sought to conduct a systematic review to identify studies that have assessed educational interventions in undergraduate nurse training on obesity management. It aimed to address the following: Are obesity-related educational interventions present in undergraduate nursing curricula? If so, how effective are they and what is the quality of these interventions? The PICOS (Population, Intervention, Comparators, Outcomes, Study Design) criteria guided this review and inclusion criteria were developed alongside it in order to determine relevant articles for review. This systematic review should identify what makes up effective obesity management education for student nurses, thus informing better preparation of nurses for practice and would allow for the synthesis of evidence regarding effective educational interventions in this area.

METHOD

Search strategy

A systematic review was undertaken in order to collate literature that evaluates obesity-related educational interventions within undergraduate nursing curricula. The following databases were systematically searched (final search on 13th September 2011): PsycInfo, OvidMedline, British Nursing Index and Embase (guided by The Centre for Reviews and Dissemination, CRD; 2009). The PICOS criteria were used to develop the search terms and inclusion criteria. Search terms referred to the target population (undergraduate nursing students), intervention (educational methods used) and outcomes. The inclusion criteria aimed to retrieve research published in English that included undergraduate nursing students. Studies had to include an educational or training program that related, explicitly or implicitly, to obesity (e.g. topics such as weight loss or increasing exercise). The outcomes of the research needed to contain at least one qualitatively or quantitatively measured outcome. Therefore, research that contained no measured outcomes was excluded due to the focus of the review being to establish the effectiveness and quality of interventions. The comparator and study design components of the PICOS criteria were not considered during the selection of studies since it is common within educational research tend not to include a comparison or control group (Cook et al, 2007). Additionally, studies were included if they involved other populations (for example, undergraduate midwives) provided that some proportion of the sample comprised undergraduate nurses. Table 1 provides a list of the search terms. Search terms were combined from these three sets using ‘AND’ whilst the truncation function ($) was used to explode the search terms and the ‘.mp’ function was used to search titles, abstracts and full texts. To limit results, an advanced search was applied: ‘English 1990- Present’. It was appropriate to search from 1990 as this was when Project 2000 (UKCC, 1986) was being implemented and nurses’ roles were becoming more focused on health promotion. This search strategy was applied to all databases that were used within the review. Only published data were included to ensure the findings would be replicable.

[Table 1 about here]

Study selection

Initially, titles and abstracts were screened (by AF) in order to assess whether they were relevant to the review’s aims: did they include a reference to nurse education and an obesity-related topic? Potentially relevant full-text articles were then retrieved and systematically assessed (by AF) against the inclusion criteria (see Table 2) and duplicates were removed. Articles not meeting the PICOS criteria (e.g. not including undergraduate nursing students or not implicitly or explicitly refer to obesity) were omitted and those that were eligible were held for review (a list of excluded full-text articles and reasons for exclusion is available from the authors).

[Table 2 about here]

To minimise bias in the selection of the studies, an independent researcher (MN) repeated the selection process of the full-text articles against the inclusion criteria and good inter-rater reliability was established (n=24; Cohen’s k = 0.68). Disagreements about inclusion were resolved through discussions between AF and MN where reasons for including or excluding an article in relation to the inclusion criteria were noted and a decision mutually agreed upon. Figure 1 depicts the process of study selection from each database.

[Figure 1 about here]

Tools for analysis

Data extraction and quality appraisal tools were created according to CRD (2009) recommendations and other standardised forms used in previous studies (Effective Public Health Practice Project, 1998; Public Health Resource Unit, 2006). This enabled us to extract descriptive data and to assess the quality of the studies based on their methodological characteristics. The headings used for data extraction were study aim, study design, participants, intervention content, intervention structure, outcome data, reported findings and reported conclusions. Using these, key design features and characteristics of each study were consistently extracted for comparison. This enabled us to assess study quality by examining the same information about methods and intervention design across all studies. Quality appraisal forms sought the adequacy of: 1) the reported content of the intervention; 2) measures used to control for risk of bias; 3) whether reported conclusions were supported by reported findings. See Appendix 1 and Appendix 2 for data extraction and quality appraisal forms.

Data extraction

Data extraction forms were completed by AF for all eight articles, and were then split and given to two other members of the research team (SP & JH). These researchers completed forms for four articles each. In order to promote reliable coding, guidelines were created for researchers to use when completing the quality appraisal forms. This aimed to reduce ambiguity by explicitly describing what was considered to be included. The percentage of agreements for each component of the data extraction forms can be found in Table 3 below. For quality appraisal there was 80% agreement. Disagreements were subsequently discussed and resolved during a team meeting.

[Table 3 about here]

RESULTS

A total of 558 articles were retrieved by initial searches and screened for relevance. Of these, 24 (4%) full-text articles were deemed relevant and were assessed against inclusion criteria, resulting in eight articles (1%) being selected for review. Due to the diversity within the methodologies, a narrative synthesis was undertaken (CRD, 2009). Results are presented under the following five headings: (1) Characteristics of the studies; (2) Intervention implementation; (3) Intervention content; (4) Intervention outcome measures and reported findings; (5) Quality of the studies and risk of bias.

Study characteristics

The eight articles reviewed were published in seven countries between 2002 and 2011 (five of these published within the last five years). Study details were generally poorly reported. Six (75%) studies reported sample size, four (50%) of which reported attrition rates, and two (25%) studies reporting no sample size. Gender and age was only reported in four studies (50%, are range 16-50 years). Ethnicity was only reported in one (13%) study. Regarding research designs, five (63%) studies were cross-sectional, two (25%) were longitudinal and the remaining study employed a qualitative design. Only two (25%) studies included both baseline and outcome measures, with only one (13%) of these employing a ‘randomised controlled trial’, whilst the other was a ‘before and after study’. The remaining six (75%) studies were classified as ‘intervention studies’ which only obtained outcome measures after the implementation of the intervention and did not contain a control group. Further details of study characteristics are provided in Table 4.

[Table 4 to be placed here]

Intervention implementation

The interventions were delivered via a range of methods and varied largely in terms of where they were delivered within the nursing curricula. Interventions were implemented as part of a health promotion module in four (50%) studies (Healy & McSharry, 2011; Hsaio et al, 2005; Reising et al, 2008; Tarrant & Chan, 2002), whilst one (13%) study integrated the intervention into a module titled ‘Children’s Nursing’ (Ben-Sefer, 2009). One (13%) study developed the ‘Community Partnership Model’ in order to frame nursing students’ service-learning (Brosnan et al, 2005), whilst another (13%) integrated three mentoring programs based on adolescent health (Shin & Rew, 2010). The final study (13%) did not implement the intervention into the course directly: nursing and midwifery students who were attending education lectures on nutrition counselling were recruited to take part in a study based on a planning intervention (Luszczynska & Haynes, 2009).

A range of educational methods were used including lectures, seminars, group work, group discussion, oral presentations, written assessments, reflective diaries and practical work including literature reviews and group projects. In two (25%) studies, the methods used to deliver the interventions were inadequately reported. Table 4 includes further details about the intervention.

Intervention content

Three (38%) different interventions in three separate studies were found to explicitly relate to obesity, however took different perspectives: one referred to obesity alongside smoking and sedentary lifestyle (Tarrant & Chan, 2002); one referred to obesity alongside hypertension and type 2 diabetes (Brosnan et al, 2005); one was explicitly linked to childhood obesity independent of other factors (Ben-Sefer, 2009). The remaining five (63%) studies were found to be implicitly related to obesity and referred to exercise, diet/nutrition and obesity-related disorders such as diabetes and hypertension (Healy & McSharry, 2011; Hsaio et al, 2005; Luszczynska & Haynes, 2009; Reising et al, 2008; Shin & Rew, 2010).

In general, authors focused on reporting the method of delivery rather than the content of the intervention. Therefore, extracting the intervention content from within the articles was challenging. For each intervention the content was scrutinised for any description of a technique directed to change behaviour. Due to the inadequate reporting of the content, behaviour change techniques (BCTs) used within the interventions could only be identified in one study (Luszczynska & Haynes, 2009). The BCT ‘action planning’ (Michie et al, 2011) was used as the intervention group were given a planning form in which to make their own plans about fruit and vegetable (F&V) intake and physical exercise. This study also described the Social Cognitive Theory (Bandura, 1997), however, this was not considered to be related to the intervention content, but instead a rationale for developing the ‘model’s’ behaviours. Therefore, from the information provided by the reviewed articles it would appear that none of the papers explicitly used theory to inform their intervention.

Intervention outcome measures and reported findings

Seven (88%) studies assessed student reflection or evaluation of the intervention by questionnaire as their primary outcome measure. In the only study where baseline data were obtained (Luszczynska & Haynes, 2009), significant differences were found between pre- and post-test questionnaires indicating that the intervention had an effect on their reported health behaviours. Course evaluations consistently yielded positive comments from students by indicating that they had enjoyed the module and had been able to develop various skills. This was reported across the eight studies. Skills that were reported to have developed through student reflection and course evaluations included the ability to link theory with practice, an increase in communication skills and confidence in health promotion and clinical skills, and the ability to perceive the reality of nursing as a profession. Other measures included measures of knowledge via assessment (method used in three studies, [38%]). Two of these studies included assessment of written assignments as a by-product of the intervention, whilst one study included multiple-choice questions (MCQs) within the intervention, however, the outcomes of this were not reported in the article. Additionally, one study measured participants’ self-efficacy beliefs on fruit and vegetable consumption and found that higher self-efficacy ratings were related to BMI reduction. The study also assessed the effects of the planning intervention in the experimental group and found that the intervention had a medium effect on fruit and vegetable consumption (Cohen’s d = 0.51). Table 5 displays details of outcome measures used and reported outcomes of each study.

[Table 5 to be placed here]

Quality of the studies and risk of bias

Quality of the studies was assessed by three members of the research team (AF, SP & JH). Quality appraisal seeked to identify the following: 1) adequacy of the reported content of the intervention; 2) control for risk of bias; 3) if reported conclusions were supported by reported findings.

*1) Reported content of intervention*

Of the eight studies none were judged to have reported the content of the intervention adequately. Content topics were well defined in six (75%) studies (Ben-Sefer, 2009; Brosnan et al, 2005; Healy & McSharry, 2011; Hsaio et al, 2005; Lusczcynska & Haynes, 2009; Tarrant & Chan, 2002), however, they did not clearly report who delivered the intervention and the duration by which it was delivered. In one (13%) study (Shin & Rew, 2010), the aims of the Health Promotion module were stated but the description of how, and for how long, the mentoring programme was administered was unreported. Additionally, two (25%) studies (Ben-Sefer, 2009; Reising et al, 2008) provided an adequate outline of what the intervention comprised of but reports of the teaching methods used were lacking. All studies were deemed to have inadequately reported content of intervention, including delivery methods and could not be replicated.

*2) Controlling for risk of bias*

Methods such as randomisation of participants, control groups, baseline measures and an attempt to identify possible confounders were deemed to actively control for a risk of bias within studies. Of the eight studies, only one attempted to control for risk of bias (Lusczcynska & Haynes, 2009). This study included a control group, randomisation of participants to conditions and baseline measures of self-efficacy beliefs, BMI, F&V intake and amount of physical activity. One (13%) study included baseline measures but not a control group (Hsaio et al, 2005). The remaining six (75%) studies (Ben-Sefer, 2009; Brosnan et al, 2005; Healy & McSharry, 2011; Reising et al, 2008; Shin & Rew, 2011; Tarrant & Chan, 2002) did not use any of the above controls for risk of bias.

*3) Reported conclusions*

Of the eight studies, authors’ conclusions for three (38%) (Hsaio et al, 2005; Luszczynska & Haynes, 2009; Reising et al, 2008) were deemed to be supported by the reported findings. Reasons why the remaining five (63%) studies’ (Ben-Sefer, 2009; Brosnan et al, 2005; Healy & McSharry, 2011; Shin & Rew, 2011; Tarrant & Chan, 2002) conclusions were inadequate relative to the reported findings was due to the inability to control for risk of bias and the lack of clarity in reporting the intervention content.

DISCUSSION

This systematic review identified eight studies containing educational interventions for nursing students aimed at improving nurses’ abilities in facilitating lifestyle change within obese/overweight patients. The number of studies relevant to this review was low. Due to the poor methodologies of all studies, the effectiveness of the interventions could not be established.

Nursing students’ feedback of the interventions tended to be positive. Comments generally indicated that students gained the ability to link theory with practice and developed confidence in communicating with others and with other institutions. However, content and duration of interventions, as well as who delivered the intervention, were inadequately reported, thus preventing other researchers replicating the studies. Another issue concerning replication and also transparency was that information was missing regarding the characteristics of participants. The number and age of participants was missing in two (25%) and four (50%) studies, respectively, whilst ethnicity was only reported in one study. Again, replication would be limited as it is difficult to establish who underwent the intervention and to draw conclusions about the reported findings, particularly regarding generalisability.

All studies had poor methodological rigor with only a quarter including both baseline and outcome measures, enabling the effects of the interventions to be assessed. Moreover, only one of these included a control group. The remaining seven studies did not contain any method to control for risk of bias. Consequently, it is impossible to draw conclusions about the effectiveness of the interventions as other factors that may have influenced the findings were not highlighted.

These findings provide evidence that obesity-related educational interventions may be being implemented into undergraduate nursing courses, yet their effectiveness cannot be established due to the poor reporting of the interventions and study methodology. These conclusions fit with previous research (Chisholm, Hart, Mann, et al, 2012; Cook et al, 2007). Chisholm, Hart, Mann, et al’s (2012) systematic review of obesity training for undergraduate medics found that only four of the 12 studies reviewed had controlled for risk of bias, with none including a randomised controlled group. Similarly, participant characteristics and intervention content were generally underreported. Unlike the current review where studies were published across seven countries, studies on medical students were mainly published in the USA (75%), with none published in the UK (Chisholm, Hart, Mann, et al, 2012). This suggest that research on obesity management training is more globally delivered in undergraduate nursing education as opposed to undergraduate medical education which appears restricted to the USA. In the current study, quality appraisal highlighted unreliable study designs through poor methods of control such as lack of control groups. Additionally, studies lacked transparency around intervention content and limited reporting around participant characteristics, thus resulting in low methodological quality and difficulties associated with replication. Together the results indicate that the methodologies and evaluations of training in both undergraduate nurse and medical education are poor.

Importantly, these findings are also in line with other research highlighting that studies do not adequately report the specific details of the intervention they are assessing, thus preventing replication (Michie, Ashford, et al, 2011). This was found in the current review, with BCTs being identified in just one study. The current study’s review methods can be discussed with regards to the data extraction and quality appraisal forms used. These analytic tools were not standardised, but were developed alongside previously used standardised forms (Effective Public Health Practice Project, 1998; Public Health Resource Unit, 2006). They were developed in this way due to the methodological diversities of the included studies so that the most appropriate components of other standardised forms could be tailored to the aims of the present review. Additionally, it is worth noting that the lowest agreement amongst quality appraisal components was found to occur among the ‘intervention structure’ (69% agreement), whereas other components showed high agreement. This was discussed and resolved within the research team. It was concluded that poor reporting on behalf of authors resulted in details often being difficult to interpret, thus affecting the extraction of information regarding intervention structure.

A possible limitation of the current review is that relevant articles may have been missed due to the search strategy being limited to ‘English; 1990-present’ and only four databases being searched. Therefore, articles published before 1990 and in another language other than English that assessed the effectiveness of an obesity-related educational intervention in undergraduate nursing training will not have been included. Additionally, the grey literature was not examined. Therefore, it is advised that these findings should not be generalised beyond the parameters set within this review.

Implications

The current findings have several implications for future nursing education research. The studies reviewed indicate that nurses are highlighted as having an important role in health promotion, particularly with regards to weight management. However, it is clear that research body needs to be improved in terms of their design assessments and reporting clarity before it can be understood how best to equip future nurses for this role.

Some studies found that implementing obesity as a topic into undergraduate nurse training increased student confidence and empathy towards obese patients, potentially becoming more comfortable in approaching the topic with patients in their future career. However, the literature is limited in quantity and quality and without more rigorously reported interventions and improved study designs the efficacy cannot be established.

A large literature exists of which behaviour change techniques (BCTs) are effective when used by healthcare professionals (Abraham & Michie, 2008; Michie, Hyder, et al, 2011). Frameworks that collate the most effective techniques to facilitate behaviour change that are based on theory and evidence (e.g. Michie, Ashford, et al, 2011; Dixon & Johnston, 2010) could be useful guides to designing the content of nurse training programs to train nurses to help people change unhealthy behaviours (e.g. diet, exercise). Using such guides during the reporting of interventions would allow researchers to develop and report their educational interventions consistently and precisely which enables replication, comparison and integration of findings (Michie, 2008). In doing so, the most effective techniques regarding weight management in undergraduate nursing courses can be established. As a result, student nurses will begin to develop the appropriate knowledge base and skill set to deliver these interventions in their role as a qualified nurse.

Conclusion

To conclude, studies in this area of research are not methodologically robust, nor do they report adequate details of their assessed interventions. Consequently, replication cannot be achieved. Additionally, it is impossible to construct conclusions regarding what makes up effective interventions regarding weight management in undergraduate nursing training. Therefore, it is currently unknown to what extent nursing students are being prepared to tackle obesity within patients.

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Appendix 1 Data Extraction Form

Data extraction undertaken by:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Author | Title | Study record number | Type of publication *(journal, book etc)* | Country in which study was conducted | Year of study |
|  |  |  |  |  |  |

Date of data extraction:

1. **Study aim(s)** *(state whether the aim is related explicitly or implicitly to obesity: see inclusion/exclusion criteria for specific guidance on this)*
2. **Study design** *(check appropriate)*

**2a) Design features**

Cross-sectional

Longitudinal

Included control group

Included outcome measures

Included baseline measures

Between participants

Within participants

**2b) Design labels**

* Randomised controlled trial

*Includes participant randomisation to conditions*

*Includes control and intervention group*

*Includes baseline and outcome measures*

* Non-randomised controlled trial

*No randomisation to allocate participants to conditions*

*Includes control and intervention group*

*Includes baseline and outcome measures*

* Before and after study

*Includes intervention group only*

*Includes baseline and outcome measures*

* Intervention study

*Includes outcome measures*

*No baseline measures*

***Additional comments about design features and design labels to be written here:***

1. **Participants**

**3a) Characteristics** (*state ‘unknown’ if information is missing)*

Age range:

Gender (%):

Ethnicity (%):

Total N *(if reported, state any incidence of attrition)*:

**3b) Where a control group was included, what was N? What was N for intervention group?** *(skip this section if not applicable or state ‘unknown’ if information is missing)*

Intervention: N=

Control: N =

1. **Intervention content**

**4a) Health topics stated within the description of the intervention** *(can relate implicitly or explicitly to obesity. For example, obesity on its own, obesity related conditions such as diabetes or health related behaviours such as exercise or dietary habits)*

**4b) Theoretical basis of the intervention** *(include theories that are explicitly described within the article; should be stated with reference to the intervention, can be described in the introduction, rationale etc)*

**4c) State any behaviour-change techniques within the interventions directed at altering patients’ behaviours**

**5) Intervention structure**

**5a) Methods undertaken in delivering the intervention** *(check where appropriate or state ‘unknown’ if information is missing)*

Lectures:

Seminars:

Written report:

Oral presentation:

Practical work (*e.g. workshops)*:

***If other methods were used, state them here***

**5b) What year of the undergraduate nursing degree was the intervention held?***(Be as specific as possible, e.g. Year 1, semester 2. If the information is missing state ‘unknown’)*

**5c) How long was the intervention held for?** *(state in hours, days, weeks etc or state ‘unknown’ where information is missing****)***

1. **Outcome data**

**6a) What methods were used for data collection?** (*For example, questionnaires, exams, reflective diaries etc)*

**6b) What analysis was used to determine the outcome of the data?** *(state the tools used in the assessment of the data. If the description of analysis is not specific enough then state ‘information missing’)*

6c) **If applicable, state which statistical analysis was used. Also, state what results were reported** *(for example, confidence intervals, means, p statistic etc)*

1. **Reported findings**
2. **Reported conclusions**

Appendix 2 Quality Appraisal Form

*Guidelines in completing this form are provided in a separate document. Please ensure guidelines are followed in order to gain high agreement between coders.*

Assessment completed by:

Date completed:

Article reference:

1. Is the study design appropriate for the aim of the investigation?

Yes No Unsure

Additional comments:

1. Is the content of the intervention adequately described and reported?

Yes No Unsure

Additional comments:

1. Are the methods used clearly described and reported? ( intervention implementation, data collection, analysis)

Yes No Unsure

Additional comments:

1. Is the intervention implemented in an appropriate and useful way?

Yes No Unsure

Additional comments:

1. Does the article explicitly describe a theoretical framework with reference to the intervention?

Yes No Unsure

Additional comments:

1. Has the study controlled for risk of bias? (for example, control/comparison groups, confounding variables, baseline measures, randomisation of participants etc)

Yes No Unsure

Additional comments:

1. Are the stated conclusions supported by the findings of the study?

Yes No Unsure

Additional comments:

1. Do the findings suggest that undergraduate nurses’ benefited from the intervention?

Yes No Unsure

Additional comments: