

A comparison of inquiry-oriented teaching and lecture-based approach in nursing ethics education

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ABSTRACT

Background: With developing nursing ethics education, the traditional methods of teaching could not meet the learning needs of undergraduates. Improving ethical decision-making to undergraduates is necessary toward promoting nursing ethics.

Objective: The aim of study is to compare the effect of inquiry-oriented teaching and lecture-based approach on nursing ethics education for undergraduates.

Design: A quasi-experimental study was conducted for undergraduate nursing students.

Settings: Two nursing schools participated in the study in mainland China.

Participants: A total of 97 undergraduate nursing students participated in the study.

Methods: The study adopted a quasi-experimental design.

Results: The inquiry-oriented teaching group was significantly higher on average scoring than the lecture-based group after intervention in 2 aspects including: professional relationship ($P = 0.015$) and ethical decision making ($P = 0.021$). Contrarily, this study also showed that in the lecture-based group the score of foundational theories of nursing ethics was higher than Inquiry-oriented group ($P = 0.038$). A statistically significant difference was not found between the two groups in 3 scenarios: ethics related to nursing practice, ethics related to nursing research and necessity of learning nursing ethics.

Conclusion: Combination of inquiry-oriented teaching and lecture-based approach is suggested as part of design for curriculum of nursing ethics education.

1. Introduction

Advances in health science and technology have led to profound changes in nursing practice and education (Park et al., 2012). Contemporary nursing practice environments are dynamic, unpredictable and reactive (Levett-Jones et al., 2010). Nursing students encountering moral dilemmas may feel unable to solve the ethical issues in clinical environment (Ahn and Yeom, 2014). Nursing ethics education is becoming increasingly important for nursing students and registered nurses to develop the competency to make ethical decisions and to behave ethically to better protect patients' rights (Goethals et al., 2010; Lin et al., 2010). The principle of patient-centeredness is widely held as one of the cores aims of healthcare providers (Suikkala et al., 2018).

Ethical decision-making is an integral part of the nursing responsibility and is one of the major goals of nursing education (Khatiban et al., 2018). Nursing ethics education can possibly help to develop and improve the ability to identify and solve ethical problems among nursing students (Khatiban et al., 2018), and provide an opportunity to develop nursing students' critical thinking and moral reasoning skills (Callister et al., 2009).

Simultaneously, researches have highlighted the importance of appropriate teaching methods in promoting the acquisition of new knowledge (Li et al., 2008), and improving the ethical performance of nurses (Woods, 2005). As a traditional method of teaching, lecturing has been widely accepted by educators and students, especially in undergraduate nursing education (Lin et al., 2010). Evidence suggests that

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lecture-only teaching, though easy to implement (Sadeghi et al., 2014; KuMar et al., 2015), is insufficient for the acquisition of knowledge and can lead to inattention on the part of students (Zavertnik et al., 2010; Day-Black et al., 2015; Hultquist, 2016). Some studies indicate that the lecture-based teaching can lead to lower levels of student satisfaction, learning outcomes, knowledge exploration and assimilation (Sandhu et al., 2012), which often fails to cultivate students' abilities (Pale, 2013). Although the limitations of lecture-based approach are widely recognized, the unitary method of lecture teaching has been commonly employed (Sandhu et al., 2012; Pale, 2013; Sangestani and Khatiban, 2013; KuMar et al., 2015). Traditional teaching methods being too frequently used in classes is an important factor affecting the quality of university teaching (Zhou et al., 2016). Recommendations are given on replacing and amending lecture-based method with other teaching methods to reduce some of the deficiencies (Pale, 2013). A variety of teaching methods to improve nursing students' knowledge acquisition and comprehensive ability (Clarke, 2010) are needed in current nursing ethics education, which will most benefit healthcare.

Constructivism has gradually been accepted as the main philosophical stream in pedagogy. Research has identified the positive effects of constructivist teaching strategies on nursing students' understanding of bioethical issues and ethical competency (Choe et al., 2014). Some scholars believe ethical knowledge and ethics education should be based on actual situations and practical problems (Lin et al., 2010; Krautscheid and Brown, 2014). In recent decades, science education has shifted sharply from passive lecturing to more active and student-centered strategies (Pizzolato et al., 2014; Clarke, 2010). From the constructivist perspective, each student builds their own body of knowledge based on individual experiences (Choe et al., 2014). Inquiry-oriented teaching is based on the theory of constructivism (Vlassi and Karaliota, 2013), focusing on student-centered learning activities, including process of investigation, questioning, communication, reflection, and collaboration (Anderson, 2002; Chapman, 2011).

In general, research shows that inquiry-oriented teaching produces positive results (Anderson, 2002; Kuster et al., 2018; Cairns and Areepattamannil, 2019), on student learning, with them engaging in the epistemic domain of inquiry (Furtak et al., 2012; Barron and Darling-Hammond, 2008). A positive trend supporting inquiry-based science instruction over traditional teaching methods was found in a research synthesis (Minner et al., 2010). However, this teaching methodology is not applied in nursing ethics education and its effects are not well-understood (Vlassi and Karaliota, 2013; Kuster et al., 2018). Therefore, this study aimed to compare the effectiveness of the inquiry-oriented teaching and the lecture-based approach in nursing ethics education.

2. Methods

2.1. Purpose

The study aimed to compare the effects of inquiry-oriented teaching and the lecture-based approach on the nursing ethics of undergraduate's students.

2.2. Research Design

In this study, a quasi-experimental research method was employed in two nursing schools. One group of students ($n = 41$) were exposed to inquiry-oriented teaching strategies and the other ($n = 59$) to traditional lecture-based approach over the courses of the fourth academic semester. Data were collected through questionnaires, following the principle of voluntary and informed consent of anonymous of participants. All the nursing students involved were assessed for their nursing ethical issues both before and after the educational intervention (Fig. 1).

2.3. Eligibility Criteria

The inclusion criteria were as follows: (1) undergraduate nursing students studying in the nursing schools; (2) the students were at grade two in the college; (3) enrollment in the nursing ethics course.

The exclusion criteria were: (1) undergraduate nursing students who missed nursing ethics course more than one study session; (2) the students did not complete the questionnaires in the investigating process.

2.4. Sample

A total of 97 nursing undergraduates from two nursing school in China were recruited. Among the 97 students, 57 were in lecture-based group and 40 were in inquiry-oriented group.

2.5. Interventions

The curriculum prior to the course of nursing ethics was the same for both nursing schools. Based on the learning objectives of this course and the content of nursing ethics, the research team developed teaching modules dependent on searching for related literature (Cameron et al., 2001; Bandman and Bandman, 2002; Jerlock et al., 2003; Benjamin and Curtis, 2010) and then held 3 rounds of discussions with 5 nursing ethics faculty members. The teaching course modules of nursing ethics included 6 parts (Table 1). We designed the curriculum for inquiry-oriented teaching and lecture-based approach on the nursing ethics. The core components of the curriculum included development of nursing ethics, theoretical foundation of nursing ethics, professional relationship, ethics related to clinical nursing practice, ethics related to nursing research, and ethical decision making (Ham, 2002). The research team conducted the group pre-lesson planning, after collective preparation of instruction, lectures provided to the same courses based on the preparation. The whole courses were supervised by the same teacher. We carried out the interventions over 8 weeks, with 16 teaching hours (45 min in one teaching hour) for each group (Table 1).

2.5.1. The Lecture-Based Group

The traditional lecture-based instructions for this study included assigned textbook readings, course objectives, students' responsibility, and the content was delivered by lecturing and Microsoft PowerPoint presentations. During the teaching process, lecturers spoke while students listened in the classroom, and students' learning was based on the memorization of teaching content instead of the application of reasoning skills (McCurry and Martins, 2010; Gonzol and Newby, 2013; Stolic, 2014).

2.5.2. The Inquiry-Oriented Group

In this study, inquiry-oriented teaching was implemented in each module following the lectures. The course was offered over 8 weeks, with 8 teaching hours of lectures and 8 h of inquiry-oriented teaching (Table 1).

In the inquiry-oriented teaching format, the lecturers serve as coaches or facilitators who design the inquiry issues of nursing ethics and help the nursing students process information, communicate within groups and facilitate their thinking and actions. During the inquiry-oriented teaching, the students were required to consider themselves as nurses who were involved in analyzing and resolving a diversity of ethical issues. They were also required to identify nursing ethical issues by studying literature, interviewing nurses, and visiting patients in hospitals. They were encouraged to analyze the concepts in nursing ethics, to identify and address the nursing ethical dilemmas by multiple approaches and report their findings to their classmates and instructors. The research team also established an online course learning center for nursing ethics on the school websites. Course-related learning materials, including the syllabus, the teaching plans for each module,

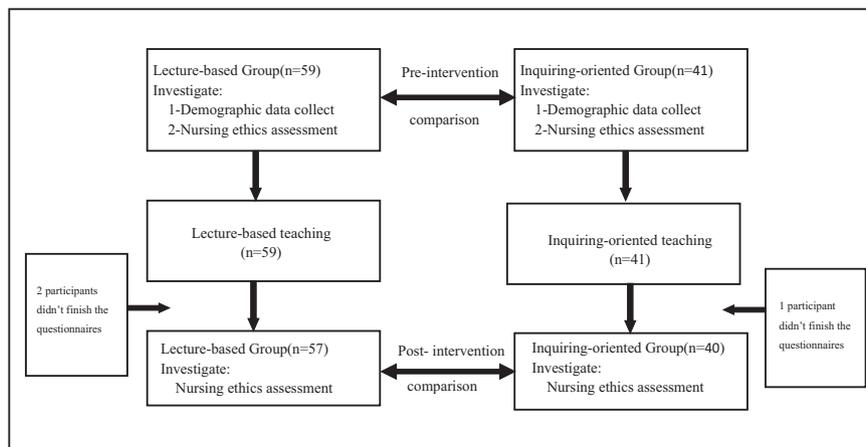


Fig. 1. Research design.

PowerPoint slides, lecture videos and frequently asked questions (FAQs), were uploaded so that the students were able to access them easily. In addition, a discussion board was created to facilitate the communication between the students and instructors outside of classes.

2.6. Outcome Measurement

This study used self-designed questionnaires for the survey, which were developed by the research team after reviewing relevant literature (Cameron et al., 2001; Park et al., 2003; Yamamoto et al., 2013), and it aimed to measure students' knowledge, attitudes, and abilities in relation to nursing ethics. The scale had 36 items under 6 dimensions: including the necessity of learning nursing ethics, theoretical foundation of nursing ethics, the professional relationship, ethics related to nursing practice, ethics related to nursing research, and ethical decision making. 5-Likert scale ranged from 1 = completely disagree to 5 = completely agree. High scores on the scale illustrated a high level of compatibility. The content validity of this scale was verified by 8 experts. The range of the content validity of the scale was I-CVI 0.81–0.93, and S-CVI 0.90. The Cronbach's alpha was 0.939 for the whole scales. Moreover, the questionnaires also included the demographic data of the participants, including gender, age, and grade point average (GPA). Data were collected from the two groups through questionnaires both before (first week of the academic semester) and after the intervention via paper in their classroom.

3. Statistical Methods

Descriptive analyses were conducted on the characteristics of the participants. *t*-Tests were performed to assess the mean differences between the two groups. For the analyses, *P* < 0.05 was considered statistically significant, with two-tailed test. The data were analyzed using the statistical software of SPSS version 22.0 (SPSS, 2014).

Table 1
The themes of the teaching modules.

No	Themes	Teaching methods		Teaching hours	
		Inquiry-oriented group	Lecture-based group	Inquiry-oriented group	Lecture-based group
1	Development of nursing ethics	Lecture + Inquiry	Lecture	1 + 1	2
2	Theoretical foundation of nursing ethics	Lecture + Inquiry	Lecture	1 + 1	2
3	Professional relationship	Lecture + Inquiry	Lecture	2 + 2	4
4	Ethics related to nursing practice	Lecture + Inquiry	Lecture	2 + 2	4
5	Ethics related to nursing research	Lecture + Inquiry	Lecture	1 + 1	2
6	Ethical decision making	Lecture + Inquiry	Lecture	1 + 1	2

4. Results

4.1. Sample Characteristics

The participants were 97 undergraduates attending at the end of study (response rate = 97%). Of the students, 57 were in the lecture-based group, with 51 females (89.5%), and the average age of them was 20.3 (SD = 0.81); 40 were in the inquiry-oriented group, with 36 females (90.0%), and the average age of them was 20.1 (SD = 1.12). The independent two-group sample *t*-test indicated no statistically significant difference in age between the two groups (*P* = 0.083), and no significant differences in GPA between the inquiry-oriented group (GPA = 2.82 ± 0.35) and the lecture-based group (GPA = 2.90 ± 0.26) (*P* = 0.236).

4.2. The Results of Nursing Ethics Assessment (Table 2)

There was no statistically significant difference in pre-investigation scores between two groups in 6 scenarios (*P* > 0.05). After the educational intervention, two groups were both shown significantly effective compared with pre-intervention in those 5 scenarios (*P* < 0.001) including: theoretical foundation of nursing ethics, professional relationship, ethics related to nursing practice, ethics related to nursing research, and ethical decision making.

A statistically significant difference was not found between the two groups (*P* > 0.05) after post-intervention at the end of study, including 3 scenarios: necessity of learning nursing ethics, ethics related to nursing practice, and ethics related to nursing research. Also, we found that after educational intervention, the inquiry-oriented group on average scored higher than the lecture-based group in 2 aspects: professional relationship (*P* = 0.015) and ethical decision making (*P* = 0.021). Contrarily, this study also showed that the score of theoretical foundation of nursing ethics was higher in the lecture-based group than that in the Inquiry-oriented group (*P* = 0.038).

Table 2
Comparison of pre- and post-intervention results on ethical issues.

Variable/group	Pre-intervention (Mean ± SD)	Post-intervention (Mean ± SD)	t-Value	P-value
Necessity of learning nursing ethics				
Both (n = 97)	4.23 ± 0.77	4.49 ± 0.60	−1.73	0.127
Inquiry-oriented group (n = 40)	4.27 ± 0.58	4.53 ± 0.41	−1.36	0.219
Lecture-based group (n = 57)	4.19 ± 0.90	4.45 ± 0.67	−1.75	0.143
			1.64 ^a	0.112
Theoretical foundation of nursing ethics				
Both	1.47 ± 0.53	3.58 ± 0.74	−5.80	< 0.001
Inquiry-oriented group	1.44 ± 0.46	3.40 ± 0.68	−4.21	< 0.001
Lecture-based group	1.51 ± 0.58	3.76 ± 0.79	−4.24	< 0.001
			−2.96 ^a	0.038
Ethics related to nursing practice				
Both	2.69 ± 0.71	3.40 ± 0.81	−5.38	< 0.001
Inquiry-oriented group	2.68 ± 0.75	3.43 ± 0.85	−4.76	< 0.001
Lecture-based group	2.71 ± 0.69	3.38 ± 0.75	−4.95	< 0.001
			1.88 ^a	0.128
Professional relationship				
Both	2.41 ± 0.81	3.70 ± 0.73	−5.75	< 0.001
Inquiry-oriented group	2.36 ± 0.74	3.73 ± 0.67	−4.72	< 0.001
Lecture-based group	2.45 ± 0.87	3.62 ± 0.78	−4.79	< 0.001
			3.16 ^a	0.015
Ethics related to nursing research				
Both	2.79 ± 0.69	3.59 ± 0.75	−5.36	< 0.001
Inquiry-oriented group	2.69 ± 0.67	3.62 ± 0.75	−4.20	< 0.001
Lecture-based group	2.82 ± 0.72	3.56 ± 0.75	−5.54	< 0.001
			1.24 ^a	0.237
Ethical decision making				
Both	1.27 ± 0.82	3.66 ± 0.80	−5.25	< 0.001
Inquiry-oriented group	1.62 ± 0.75	3.86 ± 0.85	−4.61	< 0.001
Lecture-based group	1.97 ± 0.75	3.45 ± 0.73	−4.64	< 0.001
			2.63 ^a	0.021

^a Comparing the Inquiry-oriented group and lecture-based group on the post-intervention.

5. Discussion

To satisfy the learning needs of the nursing students on nursing ethics, it is highly important and necessary to choose and adopt the appropriate teaching methods. Difference in effectiveness of the two teaching methods was found after teaching intervention in the study. A statistically significant improvement in ethics related to decision-making was found in the inquiry-oriented teaching group, rather than the lecture-based teaching group. To adapt to the fast-paced and complex nursing environments, nursing education should facilitate the development of students' decision-making abilities (Yuan et al., 2008). The inquiry-oriented teaching in nursing ethics improved students' involvement in resolving dilemmas and distinguishing between many ways of understanding them, developed students' moral values and facilitated their ethical decision making. The inquiry-oriented teaching method also provided the students with an opportunity to conduct research-like activities that focuses on the process of knowledge construction through discussions on expected and unexpected solutions. They work together to achieve the goals of nursing ethics education, which is to develop students' ability to engage in rational ethical decision making. Although there is often no correct answer to the ethical situations in health care (Metcalfe and Yankou, 2003), there are justifiable solutions. Nurse instructors are in position to facilitate students' learning by applying engaging teaching methods in an effort to achieve better learning outcomes (Hultquist, 2016).

In general, research showed that inquiry-oriented teaching produced positive results (Furtak et al., 2012; Anderson, 2002). In this study, the inquiry-oriented group on average scored higher in professional relationship than the lecture-based group after educational intervention. The inquiry-oriented teaching method showed higher student-centeredness and can be related to issues of nursing students' interest. The findings of this study are congruent with the literature which concluded that inquiry-oriented teaching is achieved via

facilitating learning process for the nursing students (McNett, 2012). In this study, inquiry-oriented teaching helped students to ask ethical questions, collect and analyze evidence, and make ethical decisions. With inquiry-oriented teaching, the education focus shifted from the instructors to the students, which gave the students more control of the learning (Chan, 2014; Stolic, 2014; Hultquist, 2016), and improved awareness of the professional relationship.

In this study, it showed that nursing ethics education with intervention can better help students' improvement in different aspects, whether they are exposed to inquiry-oriented teaching or lecture-based approach, compared with the stages without intervention. It indicated that both the two teaching methods are effective, which is consistent with the study in Taiwan and Iran (Lin et al., 2010; Khatiban et al., 2018). The lecture-based teaching method can effectively transfer of knowledge, and the score of theoretical foundation of nursing ethics was significantly higher in the lecture-based group than the inquiry-oriented group after intervention. Lecture-based teaching allows instructors to precisely establish the objectives, content, organization, and direction of their presentations. The students receive information through listening and observing the teachers in the classroom (Beery et al., 2013; Aljezawi and Albashtawy, 2015). A separate course can ensure that all the planned information is delivered in a systematic and coherent way (Lin et al., 2010).

Meanwhile, another finding of this study was that the differences between the two groups at the end of study in ethics related to nursing practice and nursing research were not statistically significant ($P > 0.05$). The lack of difference between the two groups is probably because of the short period of educational intervention (Khatiban et al., 2018), and nursing undergraduates may have a number of considerations in distinguishing dilemmas in nursing practice and nursing research. A previous research found that Malawian nursing students encountered many ethical dilemmas and conflicts in practice (Solum et al., 2012). Another study indicated that in nursing ethical practice

the critical and creative thinking should be constantly encouraged among nursing students (De Casterlé et al., 2008).

The lecture-based approach was still the dominant form of teaching, despite increased research and application of other teaching methods (Sadeghi et al., 2014; KuMar et al., 2015). An effective combination of two different teaching methods may deliver better outcomes in helping students acquire important theoretical knowledge and improve the ability of decision making in nursing ethics. When encountering nursing ethics dilemmas during the inquiry-oriented learning, the undergraduates were more inclined to engage in self-learning and critical thinking, which will enhance the students' learning outcomes.

6. Limitation

One limitation of this study is the small sample size, with most of them being female adult nursing students in two nursing schools. In addition, the participants are not randomly selected. However, the results of the study can be generalized to other nursing schools under similar contexts. When random assignment is a challenge in a real-life educational setting, it needs to be attempted before findings can be generalized. A future study may include a qualitative research on students' perspectives after exposure to different teaching methods.

7. Conclusion

The findings of this study indicate both the inquiry-oriented teaching and the lecture-based approach are effective for nursing ethics education. The inquiry-oriented teaching proves to be more effective after intervention in professional relationship and ethical decision making. These outcomes suggest that the inquiry-oriented teaching for nursing undergraduates can bring about different improvements while the lecture-based approach is more effective in knowledge acquisition. Therefore, a combination of the inquiry-oriented teaching and the lecture-based approach is suggested to become part of the curriculum design for nursing ethics education.

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Conflicts of Interest

We disclose no potential conflicts of interest, financial or otherwise.

Ethics Approval

This study was conducted based on the Declaration of Helsinki and ethical approval was obtained from the Research Ethics Committee of the West China School of Medicine, Sichuan University (2016-272). The educational program was explained to all students, and all participants reviewed and signed an informed consent form before the study. All students were informed that they had the right to decline the offer to participate in the study.

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