The Effects of a Spiritual Learning Program on Improving Spiritual Health and Clinical Practice Stress Among Nursing Students

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ABSTRACT

Background: Numerous studies have indicated an association between spirituality and health outcomes. However, little information is available about interventions that have been shown to enhance spiritual health and decrease stress.

Purpose: This study examined the effects of a spiritual learning program (SLP) on nursing student-perceived spiritual health and clinical practice stress.

Method: A convenience sample of nursing students currently enrolled at a nursing school in northern Taiwan were recruited to participate in this quasi-experimental study as participants to experimental and control groups via simple random sampling. Results from a spiritual health scale and a perceived clinical practice stress scale, together with the score for clinical nursing practice, were compared between the groups. Baseline data were collected from all participants. The experimental group participated in 8 weeks of 50-minute per week SLP, which included lectures, discussion, reflection, and spiritual practices. A second data set was collected from all participants after the intervention. A third data set was collected after all participants had performed 4 weeks of nursing clinical practice.

Results: Participants were all women. Average age was 19.4 years (SD = 1.3 years). Generalized estimating equation analysis showed SLP to have a significant short-term effect on improving the total score for spiritual health (p < .01). Significantly greater improvement in clinical practice stress scores was also seen in the experimental group as compared with the control group (all p < .05). The experimental group obtained a higher score of the final clinical practice than the control group (t = 3.771, p < .001).

Conclusion: The SLP may encourage participants to see stressors as meaningful events that are connected to individual life purposes. The program developed in this study may be used to improve spiritual health and reduce stress in nursing students’ clinical practice. This SLP may be referenced when designing similar spirituality-related courses and applied to nursing student counseling.

KEY WORDS: spiritual health, clinical practice stress, nursing student, spiritual learning program.

Introduction

Although clinical practice is a critical part of the nursing curriculum, it leads to substantial stress during the learning process. According to Deary, Watson, and Hogston (2003), after 1 year of nursing education, nursing students reported increased tendencies toward feeling worried, vulnerable, and insecure (Deary et al., 2003). They were most likely to use less functional aspects of coping such as emotional-oriented coping, avoidance coping, and distraction coping. Stressors of clinical practice among nursing students are varied. Sheu, Lin, and Hwang (2002) described categories of stressful event perception and stressors that occurred during clinical practice, including stress from taking care of patients, stress from teachers and staff, stress from assignments and workload, stress from peers and daily life, stress from lack of professional knowledge and skills, and stress from clinical environment. These stressors may cause nursing students to feel distressed, which can manifest as depression, affective disorders, social dysfunction, somatic symptoms, and sleep disturbance, during rather than outside of clinical practice (Huang, Yang, Ho, & Hwu, 2011; Tsai, Lee, Tsai, & Guo, 2010). Learning experiences and stress during clinical practice will affect a nursing student’s willingness to pursue a career in nursing as well as levels of involvement and performance during the
learning period (Lei, Chen, Lin, Liu, & Sheu, 2000; Yeh & Wang, 1994). In light of this, finding ways to effectively decrease nursing student stress levels during clinical nursing practice and improve their clinical nursing practice experience are important issues for educators.

Spirituality is an essential component of health, and many systematic reviews have provided evidence of a correlation between the two (Miller & Thoresen, 2003; Powell, Shahabi, & Thoresen, 2003; Weaver & Koenig, 2006). Spirituality and religion may influence physical and mental well-being, as mediated through an individual’s perceptions, responses, decisions, and behaviors. Some studies have supported the use of spirituality as a buffer to help an individual adjust to stressful events (Coyle, 2002; Pargament, Tarakeshwar, Ellison, & Wulff, 2001). As a consequence, numerous studies have focused on spirituality and coping with stress in cancer patients (Laubmeier, Zakowski, & Bair, 2004), trauma victims (Peres, Moreira-Almeida, Nasello, & Koenig, 2007), chronic disease patients (Rowe & Allen, 2004), and women infected with human immunodeficiency virus (Sowell et al., 2000). These studies have indicated negative correlations between perceived stress and spirituality. Most used the stress-coping theory to explain the mechanism that underlies this correlation and found that people’s beliefs about the self and the world influence the perception of stressful life events (Lazarus & Folkman, 1984).

Investigations of experimental spiritual intervention have been rare compared with investigations of the correlation between spirituality and health-related outcomes. However, some research has indicated that spiritual intervention can improve health-related outcomes, including reductions in stress (Bormann et al., 2006; Tuck, Alleyne, & Thinganjana, 2006), anxiety (Rajagopal, Mackenzie, Baley, & Lavizzo-Mourey, 2002), and depressive symptoms (Rajagopal et al., 2002), as well as improvements in quality of life (Bormann et al., 2006), perceived health status (Moritz et al., 2006), and spiritual health (Tuck et al., 2006). In general, interventions have included a course introducing the broader concepts of spirituality and religion. Tuck et al. (2006) showed that, after receiving a 6-week spiritual intervention, healthy adults reported reduced perceived stress levels and an increase in spiritual perspective. The SPIRIT-6 intervention included topics such as the meaning and importance of spirituality and religion, the expression of spirituality to others, creative expression of spirituality, forgiveness, and spiritual awareness (Tuck et al., 2006). In contrast, some intervention programs focus on one or more spiritual techniques such as meditation (Elias, Giglio, & Pimenta, 2008), repetitive mantras (Bormann et al., 2006), and prayer (Rajagopal et al., 2002). In a study by Bormann et al. (2006), frequent repetition of a mantra (words with spiritual significance) greatly improved stress, trait anxiety, trait anger, quality of life, and spiritual well-being in healthcare workers (Bormann et al., 2006).

Spiritual health is a dynamic process, and spiritual coping strategies can help people find meaning and purpose in stressful events (Baldacchino & Draper, 2001). Previous studies have indicated that terminal and oncology patients have elevated spiritual needs (Borneman, Ferrell, & Puchalski, 2010; Edwards, Pang, Shiu, & Chan, 2010), but spirituality is a component of holistic health, and it affects and is affected by physical, mental, emotional, and social well-being (Ellison, 1983; Seaward, 2001). Therefore, both religious and spiritual-based practices have the potential to assist people through the meaning, making process necessary to alter the effects of stress (Gall, Charboneau, Clarke, Joseph, & Shouldice, 2005).

Few studies have used a spiritual intervention to try to enhance spiritual health and decrease stress among nursing students starting their clinical nursing practice. One study has even associated clinical practice stress (CPS) with spiritual health in nursing students (Hsiao, Chien, Wu, Chiang, & Huang, 2010). The primary purpose of this study is thus to examine the effects of a spiritual learning program (SLP) administered to nursing students. Study aims were to (1) examine the effects of the SLP intervention on spiritual health and (2) examine the effects of the SLP on clinical practice-related stress.

**Methods**

**Design**

A quasiexperimental design used two groups (an experimental group, EG, and control group, CG) and a series of three measurements. Baseline data (T1) were collected from the two groups 1 week before the intervention (Study Week 1). Baseline data included demographic information, responses to spiritual health scale (SHS) and CPS, recorded using a self-administered questionnaire, and course performance (current academic performance and clinical practice performance provided by the Office of Academic Affairs). The EG participated in the intervention program for 8 weeks at 50 minutes per week. The program was administered during Study Weeks 2–9. A second set of data (T2) were then collected from the two groups at Study Week 10. These data included SHS and CPS results; EG participants also completed an additional program evaluation form. All participants then performed 4 weeks of clinical nursing practice in the hospital (Study Weeks 11–14). A third set of data (T3) were collected after completion of clinical nursing practice (Study Week 15). All participants completed the SHS, and final clinical practice grades were obtained from the Office of Academic Affairs (Figure 1). Data from EG and CG participants were collected separately using self-administered questionnaires. The study was conducted between October 2007 and January 2008. Three of the experimental participants each missed one SLP session due to illness or family issues.

**Participants**

Convenience sampling was used to select participants from a private institute of technology in northern Taiwan. The nursing department included approximately 5,000 nursing students, and the target study population consisted of students in their
fifth year of the associate degree program. Individual classes were used as sampling units in order to avoid intervention contamination. Simple random sampling was then applied to assign participants from 22 classes (around 1,100 nursing students) into either the EG or CG. Our random sampling approach first assigned unique coded numbers to each of the 22 classes (1-22), then randomly drew lots to assign each class to either the EG or CG. The purpose of the research and the intervention program was explained to participants, who were then invited to enroll. Eighty-five participants completed the three rounds of data collection (EG: 39; CG: 46). Data from six participants were not included in data analysis because they had returned incomplete questionnaires. The response rate for this study was 93.4%.

**Instruments**

**SHS**

Definitions of spirituality are complex and varied. Spirituality is an asset that assists a person to establish the intrapersonal, interpersonal, and transpersonal connections that can add meaning to his or her life (Narayanasamy, 2004; Reed, 1992). We used the SHS developed by Hsiao and Huang (2005) to assess the state of spiritual health. The SHS uses a qualitative approach to explore the attributes of spiritual health and quantitative approach to test reliability and validity. The scale contains 47 items divided into the five subscales of “connection to others” (11 items), “to live a meaningful life” (12 items), “transcendence” (11 items), “religious attachment” (6 items), and “self-understanding” (7 items). This scale explained approximately 58.6% of total variance. Internal consistency earned a Cronbach’s alpha of .93. The correlation coefficient for 3-week test–retest reliability was .77. Each item was scored on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). For ease in comparing results and conducting analysis, the basic score was converted into a percentile. One hundred was the highest possible score, and possible scores ranged between 20 and 100. Higher scores indicated better spiritual health. Scale reliability was reassessed for the current study. The Cronbach’s alpha value for the entire SHS questionnaire was .92, with subscale values ranging from .77 to .89.

**CPS**

We measured CPS using the perceived CPS scale for nursing students (CPS), initially developed by Sheu et al. (2002) to measure the types of perceived stressful events and levels of
stress during clinical practice. Six subscales for the most common CPS types were assessed for nursing students. These included (a) patient care stress, (b) teacher and nursing staff-derived stress, (c) assignment and workload-related stress, (d) peer and daily life-related stress, (e) stress due to lack of professional knowledge and skills, and (f) environment-related stress. Subscales included a total of 29 items. A 5-point Likert-type scale (from 0 to 4) measured degree of stress. Total possible scores ranged from 0 to 116. Factor analysis identified the six subscales as explaining 50.7% of total variation. Although internal reliability for the scale had previously earned a Cronbach’s alpha value of .89, the value was .91 in the current study. As noted above, scores were converted into a percentile format to facilitate comparisons of results and further analysis. Higher scores indicated higher perceived CPS.

**Other**

Each student’s academic performance represented the average of all academic and nursing clinical practice grades earned by a participant during her first through fourth years. Final clinical nursing practice scores were collected after completion of the clinical practice period.

Each student’s clinical practice score was based on the appraisal of a clinical practice nurse who served as senior clinical mentor and was in charge of teaching the student. One clinical practice nurse could teach one to two nursing students each period. The assignment of nursing students to clinical mentors was a random process. All of the scores were obtained from the school’s Office of Academic Affairs. We also used a program evaluation form to record EG satisfaction with and response to the SLP.

**Intervention**

**Program design**

The SLP development included three approaches. First, this work was based on the stress-coping theory developed by Lazarus and Folkman (1984). Many previous studies have indicated spirituality as a significant mechanism in individual stress regulation (Baldacchino & Draper, 2001; Boscaglia, Clarke, Jobling, & Quinn, 2005; Gall et al., 2005). Second, two of the authors summarized previously published strategies of spiritual health promotion into the four categories: (a) increasing the social support resources, from building significant relationships to helping others and charity; (b) expanding the mind through participation in nonprofit organizations and augmenting life experiences; (c) increasing hope and restructuring the value of faith; and (d) practicing relaxation techniques (Hsiao, Chien, & Lee, 2009). One of this study’s authors was lecturer on SLP with 18 years of teaching experience and 10 years of involvement in spiritual research. Third, the authors used focus groups to survey the opinions of nursing students who were not the participants in this study. The purpose of these interviews was to elicit suggestions on content and approaches that could improve nursing student spiritual health. Forty-three nursing students were involved in six focus groups. Content analysis analyzed the qualitative data from focus group interviews. In this step, the designed intervention program contained two sections and eight units, with each unit containing two to five learning objectives. The total number of learning objectives was 34. Intervention strategies suggested by the participants in the focus groups included lectures, reflection, discussion, and the practicing of relaxation techniques.

Next, we applied content validity to examine SLP validity; five experts who were either scholars or clinical experts in spirituality, nursing, and education participated. Content validity indices (CVI), calculated to assess the relevance and importance of program learning objectives, indicated a CVI range given by the five experts of .77–.88 (M = .81) Program content was then modified based on the experts’ suggestions. Next, 90 nursing students were invited to evaluate each unit and program learning objectives in terms of whether the assigned objectives could improve nursing student spiritual health and were integrated, interesting, and effective. Nearly all (88%) of the 34 learning objectives were identified as appropriate.

**Program content and intervention strategies**

The first section of the SLP was an introduction that comprised two courses on personal spiritual awareness and the meaning of spirituality, respectively. The second section focused on approaches to enhance spiritual health through deriving meaning and thinking from a spiritual viewpoint through activities such as stress management, relationship building, thanking others, exploring the value of self, and having a meaningful life, faith, and health. Each activity encouraged exploration of spirituality and reflection on the relevance of spirituality to individual spiritual growth. Thus, the SLP differed from traditional education courses, as it did not focus on acquiring new external knowledge. Intervention strategies included (a) lectures to introduce knowledge related to spirituality; (b) a “learning and reflecting sheet” including questions designed to lead participants to explore their own spirituality and derive meaning from experience, such as, “What is important and meaningful in your life?” was used to prompt reflection; (c) discussion to allow participants to share and listen to other spiritual experiences and options; and (d) practice, for example, meditation.

**Ethical Considerations**

The institutional review board of the participating nursing school approved this study, and participants gave voluntary consent. The study purpose and data collection process were explained to all participants before the study started. The content of the investigation and participant rights, including voluntary participation, anonymity, and the fact that participation would not affect participants’ academic grades in any way, were stated. Experimental group participants were
informed that they had the right to drop out from or re-enter the intervention program at any time. After collecting final research data, we invited the CG to participate in a 2-hour SLP.

Data Analysis
Statistical analyses included descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (use of an independent samples t test to compare the age, academic performance, and clinical practice score between the EG and CG).

Repeated measures ANOVA with robust standard error and an autoregressive first-order (AR1) working correlation matrix of a generalized estimating equation (GEE) evaluated intervention effects (Liang & Zeger, 1986). Effects evaluated included the main effects of time and group (EG and CG) and two-way interaction effect(s) of time by group. A significant interaction effect of time by group would indicate a significant change from baseline to a specific later time point between the two groups. Significant interaction effect(s) in GEE results would thus provide evidence of intervention effect.

The SPSS software package 17.0 for Windows (SPSS, Chicago, IL, USA) was used for all analyses; \( p < .05 \) was considered statistically significant.

Results

Participant Characteristics
Participants were all women. Average age was 19.4 years (SD = 1.3 years). No significant differences in age, academic grades, or nursing clinical practice grades were found between the two groups (Table 1). Table 2 lists descriptive statistics for spiritual health and CPS for the two groups at baseline (T1), 10 weeks (T2), and 15 weeks (T3). But data on CPS were not collected at T3. Because we supported the perceived stress of clinical practice would be decreased resulting participants had finished their final clinical practice at 14 weeks.

Changes in Spiritual Health
Table 2 shows a total spiritual health score range of 74.82–82.26 (maximum possible score: 100). These scores indicated participants had moderate to good spiritual status and were similar to a previous study (Hsiao et al., 2010). The total CPS scores indicated moderate stress (range: 47.36–52.01; maximum possible score: 100) and were similar to a study by Sheu et al. (2002). The GEE analysis showed that, from baseline (T1) to 10 weeks (T2), the improvement in the total score for spiritual health, as well as in meaning derived from living and religious attachment, was greater in the EG than for the CG (\( B = 0.19, p < .01 \); \( B = 0.21, p < .05 \); \( B = 0.41, p < .001 \), respectively). Furthermore, the effect of religious attachment in the EG was maintained through 15 weeks (T3; \( B = 0.3, p < .05 \)). Results are shown in Table 3.

In addition, the SLP had a significant but short-term improvement effect on spiritual health in EG participants. Only the religious attachment subscale was still better in the EG than the CG at 4 weeks after intervention (T3).

Changes in CPS and Clinical Practice Score
Table 4 shows the EG experienced a significantly greater reduction in CPS in terms of both total score and the six subscale scores compared with the CG (all \( p < .05 \)).

Mean final clinical practice score was 86.44 (SD = 4.23) for the EG and 82.76 (SD = 4.68) for the CG, demonstrating a significantly higher score for the EG (t = 3.771, \( p < .001 \); data not shown).

Discussion
As far as we know, this was the first study to demonstrate the effects of an SLP on improving spiritual health and reducing CPS in nursing students. The EG also earned significantly higher postintervention clinical nursing practice scores than their CG counterparts.

Post-SLP, we used GEE analysis to separately analyze spiritual health and perceived CPS. Analysis of group and time variables indicated intervention effects were affected by time. These results were consistent with those of previous studies (Bormann et al., 2006; Tuck et al., 2006). In examining the differential effect of SLP on spiritual health between the two groups, several explanations can be offered. First, the SLP was developed to be interesting and attractive based on a review of the literature, focus groups, and expert and nursing student opinions. Second, numerous authors have pointed

| TABLE 1. Sociodemographic Characteristics of Participants and Comparisons Between the Two Groups |
|----------------------------------|---------------|---------------|---------------|
| **Characteristic**              | **Experimental** | **Control**    |
|                                 | (n = 39)       | (n = 46)       |
| Age (years)                     | M = 19.50, SD = 1.80 | M = 19.30, SD = 0.50 | t = 0.785 |
| Academic grade\(^a\)            | M = 75.39, SD = 7.42 | M = 75.71, SD = 6.88 | t = -0.840 |
| Clinic practice grade\(^a\)     | M = 80.11, SD = 3.11 | M = 80.13, SD = 3.46 | t = -0.978 |

\(^a\) Average of all academic and clinic practice scores (first year to fourth year), and the total score is 100.
TABLE 2.
Descriptive Statistics of Spiritual Health and Clinical Practice Stress

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control (n = 46)</th>
<th>Experimental (n = 39)</th>
<th>Time</th>
<th>Control (n = 45)</th>
<th>Experimental (n = 39)</th>
<th>Control (n = 46)</th>
<th>Experimental (n = 39)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spiritual health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection to others</td>
<td>90.08 ± 6.94</td>
<td>82.98 ± 8.85</td>
<td></td>
<td>91.27 ± 7.13</td>
<td>85.97 ± 8.70</td>
<td>90.99 ± 9.44</td>
<td>83.17 ± 11.98</td>
</tr>
<tr>
<td>Meaning derived from living</td>
<td>87.21 ± 8.99</td>
<td>80.47 ± 10.48</td>
<td></td>
<td>87.07 ± 9.88</td>
<td>84.62 ± 9.47</td>
<td>86.20 ± 11.89</td>
<td>82.18 ± 13.02</td>
</tr>
<tr>
<td>Transcendence</td>
<td>74.66 ± 13.33</td>
<td>69.46 ± 10.06</td>
<td></td>
<td>77.54 ± 13.62</td>
<td>76.04 ± 9.18</td>
<td>78.77 ± 13.24</td>
<td>76.69 ± 9.59</td>
</tr>
<tr>
<td>Religious attachment</td>
<td>82.17 ± 12.36</td>
<td>68.29 ± 14.65</td>
<td></td>
<td>81.19 ± 14.58</td>
<td>75.90 ± 14.92</td>
<td>77.10 ± 16.89</td>
<td>69.23 ± 14.82</td>
</tr>
<tr>
<td>Self-understanding</td>
<td>73.48 ± 12.44</td>
<td>66.30 ± 12.21</td>
<td></td>
<td>76.51 ± 12.38</td>
<td>72.01 ± 10.63</td>
<td>75.96 ± 12.10</td>
<td>70.70 ± 11.00</td>
</tr>
<tr>
<td>Total</td>
<td>82.26 ± 6.84</td>
<td>74.82 ± 7.01</td>
<td></td>
<td>83.50 ± 8.50</td>
<td>79.93 ± 6.21</td>
<td>82.90 ± 9.64</td>
<td>77.76 ± 8.80</td>
</tr>
<tr>
<td><strong>Clinical practice stress</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress from teachers and nursing staff</td>
<td>47.19 ± 16.39</td>
<td>46.69 ± 15.03</td>
<td></td>
<td>48.61 ± 16.14</td>
<td>41.77 ± 12.59</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Stress from taking care of patients</td>
<td>47.89 ± 14.95</td>
<td>59.29 ± 16.87</td>
<td></td>
<td>50.56 ± 14.06</td>
<td>55.45 ± 15.67</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Stress from peers and daily life</td>
<td>41.44 ± 14.87</td>
<td>41.99 ± 19.34</td>
<td></td>
<td>45.28 ± 20.52</td>
<td>37.82 ± 19.29</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Stress from lack of professional knowledge and skills</td>
<td>46.56 ± 14.97</td>
<td>54.70 ± 16.09</td>
<td></td>
<td>48.70 ± 13.87</td>
<td>48.93 ± 17.75</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Stress from the environment</td>
<td>34.96 ± 17.80</td>
<td>42.95 ± 17.58</td>
<td></td>
<td>42.78 ± 18.43</td>
<td>40.60 ± 17.23</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Stress from assignments and workload</td>
<td>59.35 ± 19.54</td>
<td>58.59 ± 18.39</td>
<td></td>
<td>61.67 ± 20.48</td>
<td>52.56 ± 18.24</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Total</td>
<td>47.36 ± 12.39</td>
<td>52.01 ± 13.19</td>
<td></td>
<td>50.34 ± 12.96</td>
<td>47.48 ± 12.32</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Note. NA = not applicable.

to spiritual awareness as essential to improving spiritual growth (Bruce & Cockreham, 2004; Scandurra, 1999). It was possible that the “learning and reflecting sheet” that was designed to encourage participants’ reflective thinking and discussions of their own life quests in each unit helped improve participants’ spiritual growth (Pimple, Schmidt, & Tidwell, 2003). Participants were encouraged to apply spiritual coping strategies in daily life through, for example, deriving meaning, helping others, positive thinking, and giving thanks. One participant said that “spirituality helped me to take a different, broader view on the world.” Finally, the effects of dynamic group work may have encouraged participants to influence each other. For example, an EG participant stated, “Participating in this program led our class to be more united and made us empathic and energetic.”

Researchers expected that SLP effects would be maintained through T3 for the EG, but actual effects did not last that long. Although EG spiritual health scores were slightly higher at T3 than baseline scores, differences were not significant except in the religious attachment subscale. Results indicated that the SLP intervention had short-term but not long-term effects on spiritual health. Previous studies have associated spiritual health with good health outcomes (Mueller, Plevak, & Rummans, 2001; Powell et al., 2003; Weaver & Koenig, 2006), which implies that those with good spiritual health have better health status. Therefore, further research is needed to develop better methods to achieve sustained spiritual health improvement. On the other hand, the SLP seemed to affect religious attachment for a longer period than the other subscales. We think that this difference may be related to Taiwan’s endemic religious culture. Taiwan is a multireligious society, and the education system has long maintained an unspoken taboo on discussing religion in class. This has resulted in respect for a variety of religions and generally low religious discrimination. However, instances of ersatz religious organizations collecting donations illegally have given some in the population negative feelings about religion in general. These factors contribute to Taiwanese rarely expressing their religious views in public. Recently, there has been increased recognition of the value of religion and spirituality in terminal medical care, with a concomitant increase in studies in the field of religion and holistic care. It is a possibility that our SLPs describing the relationship between religion and health helped students increase awareness of their personal religious faiths, resulting in an increased recognition of the importance of religion.
Prior awareness of different schools of religion may also have affected the EG.

Level of stress in the EG was lower than the CG, indicating a positive stress reduction effect of the SLP. Several aspects of this finding are interesting and deserve additional consideration. First, spirituality may encourage the positive management of stressors. This result echoes a previous observation that highly spiritual people are more likely to work

### TABLE 3.
**Generalized Estimating Equation Analysis of Spiritual Health (AR1 Working Correlation)**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Connection to Others</th>
<th>Meaning Derived From Living</th>
<th>Transcendence</th>
<th>Religious Attachment</th>
<th>Self-Understanding</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>4.50***</td>
<td>4.36***</td>
<td>3.73***</td>
<td>4.11***</td>
<td>3.67***</td>
<td>4.11***</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.07)</td>
<td>(0.10)</td>
<td>(0.09)</td>
<td>(0.09)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Group (experimental)a</td>
<td>−0.35***</td>
<td>−0.34**</td>
<td>−0.26*</td>
<td>−0.69***</td>
<td>−0.36**</td>
<td>−0.37***</td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.11)</td>
<td>(0.13)</td>
<td>(0.15)</td>
<td>(0.13)</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Time (second)b</td>
<td>0.05</td>
<td>0.002</td>
<td>0.15*</td>
<td>−0.03</td>
<td>0.16*</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Time (third)b</td>
<td>0.05</td>
<td>−0.05</td>
<td>0.21**</td>
<td>−0.25***</td>
<td>0.12</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.08)</td>
<td>(0.07)</td>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Group (experimental) × Time (second)c</td>
<td>0.10</td>
<td>0.21*</td>
<td>0.18</td>
<td>0.41***</td>
<td>0.13</td>
<td>0.19**</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.09)</td>
<td>(0.11)</td>
<td>(0.11)</td>
<td>(0.09)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Group (experimental) × Time (third)c</td>
<td>−0.04</td>
<td>0.14</td>
<td>0.16</td>
<td>0.30*</td>
<td>0.10</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td>(0.11)</td>
<td>(0.12)</td>
<td>(0.10)</td>
<td>(0.13)</td>
<td>(0.12)</td>
<td>(0.07)</td>
</tr>
</tbody>
</table>

Note. Values are parameter estimates, and robust standard errors are in parentheses.

aReference group: control group.
bReference group: time (first).
cReference group: Group (control) × Time (first).
*p < .05. **p < .01. ***p < .001.

### TABLE 4.
**Generalized Estimating Equation Analysis of Clinical Practice Stress (AR1 Working Correlation)**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Stress From Teachers and Nursing Staff</th>
<th>Stress From Taking Care of Patients</th>
<th>Stress From Peers and Daily Life</th>
<th>Stress From Lack of Professional Knowledge and Skills</th>
<th>Stress From the Environment</th>
<th>Stress From Assignments and Workload</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>47.19***</td>
<td>47.89***</td>
<td>41.44***</td>
<td>46.56***</td>
<td>34.96***</td>
<td>59.35***</td>
<td>47.36***</td>
</tr>
<tr>
<td></td>
<td>(2.39)</td>
<td>(2.18)</td>
<td>(2.17)</td>
<td>(2.18)</td>
<td>(2.60)</td>
<td>(2.85)</td>
<td>(1.81)</td>
</tr>
<tr>
<td>Group (experimental)a</td>
<td>−0.50</td>
<td>11.40***</td>
<td>0.55</td>
<td>8.14*</td>
<td>7.98*</td>
<td>−0.76</td>
<td>4.65</td>
</tr>
<tr>
<td></td>
<td>(3.37)</td>
<td>(3.44)</td>
<td>(3.75)</td>
<td>(3.35)</td>
<td>(3.80)</td>
<td>(4.07)</td>
<td>(2.76)</td>
</tr>
<tr>
<td>Time (second)b</td>
<td>1.40</td>
<td>2.70</td>
<td>3.87</td>
<td>2.31</td>
<td>7.90**</td>
<td>2.33</td>
<td>3.04**</td>
</tr>
<tr>
<td></td>
<td>(1.69)</td>
<td>(1.51)</td>
<td>(2.07)</td>
<td>(1.95)</td>
<td>(2.72)</td>
<td>(1.92)</td>
<td>(1.11)</td>
</tr>
<tr>
<td>Group (experimental) × Time (second)c</td>
<td>−6.31*</td>
<td>−6.55**</td>
<td>−8.04*</td>
<td>−8.08**</td>
<td>−10.25**</td>
<td>−8.36**</td>
<td>−7.57**</td>
</tr>
<tr>
<td></td>
<td>(2.84)</td>
<td>(2.22)</td>
<td>(3.26)</td>
<td>(2.99)</td>
<td>(3.42)</td>
<td>(2.86)</td>
<td>(1.76)</td>
</tr>
</tbody>
</table>

Note. Values are parameter estimates, and robust standard errors are in parentheses.

aReference group: control group.
bReference group: time (first).
cReference group: Group (control) × Time (first).
*p < .05. **p < .01. ***p < .001.
proactively to solve problems and to seek social support in the process of doing so (Krok, 2008). Second, the SLP encouraged participants to view clinical practice stressors as a challenge, which inspired them to grow professionally. Spiritual appraisal, spiritual connection, and derivation of meaning may improve well-being and reduce stress (Baldacchino & Draper, 2001; Gall et al., 2005). One participant said, “Clinical practice is a necessary process that assists me to be a real nurse...my fear and nervousness was nonsense. I see clinical practice as a very meaningful learning process, letting me become more comfortable and with power to master clinical practice.” Therefore, the SLP taught participants to see stressors as meaningful events that are connected to individual life purpose and to value these stressors as means of improving clinical practice performance. Finally, although this study did not identify the relationship between stress level and learning efficacy, we observed that the relatively less stressed EG participants performed better in clinical nursing practice than their CG peers.

Research by Gibbons, Dempster, and Moutray (2008) indicated that, given sufficient learning opportunities to develop their skills and abilities, nurses can experience both eustress and distress simultaneously during clinical nursing practice. Furthermore, effective support networks and a positive, optimistic perspective toward meeting course expectations can facilitate the transformation of distress to eustress. Although it is possible that the SLP helped participants to achieve this transformation, the relationship between clinical performance and stress level requires further study.

There were certain limitations to this study that affect the generalizability of findings. As there have been few previous studies of the relationship between spiritual health and CPS, comparison of our results with other research is difficult. Despite our use of a simple random sampling strategy to assign EG and CG participants, the two groups were different in terms of some baseline data. Spiritual health and level of stress perception were better in the CG than EG. Thus, it is possible that a ceiling effect influenced the CG and limited the improvement potential for spiritual health scores.

On the basis of study findings, we offer the following three suggestions for future research and practical application. First, the proposed SLP may be referenced in the design of other spirituality-related courses. Second, the SLP may be applied in nursing student counseling activities, particularly as a tool to encourage reflection on and appreciation of the value of difficulty in improving professionalism and capability. Third, a spiritual health program may be developed to help prolong and deepen the effects of the SLP, which were found in this study to be largely short-lived.

Conclusion

This study showed that an SLP can improve spiritual health and alleviate stress in nursing students in the final stage of their clinical nursing practice. A question that remains to be answered is how the effect of enhanced spiritual health can be prolonged. A longitudinal study design is necessary to investigate the effect of time on changes in spiritual health.

Acknowledgment

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References


Spiritual Learning Program


靈性學習方案對提升護理學生靈性健康與實習壓力之成效

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背 景
已有許多研究發現靈性與健康結果有關，但以靈性介入探討提升靈性健康與降低壓力之研究較為罕見。

目 的
本研究旨在探討靈性學習方案對護理學生靈性健康與護理實習壓力之影響。

方 法
採類實驗設計，方便取樣選取某護理學校學生為母群體，再以簡單隨機抽樣分派實驗組（39人）與對照組（46人）。學習方案介入後，以靈性健康量表、實習壓力量表與實習成績探討兩組得分差異。前測資料（T1）收集後，實驗組參加八周、每次50分鐘的課程介入，接續收集後測（T2）資料；後測（T3）資料於兩組完成4周臨床實習後完成。

結 果
所有研究對象皆為女性，平均19.4歲（標準差1.3歲）。以一般估計模式（GEE）統計方法評估實驗介入成效，實驗組靈性健康提升、實習壓力降低，比對照組顯著（p < .01, p < .05）；同時，實習成績也高於對照組（t = 3.771, p < .001）。

結 論／實務應用
8周的靈性學習方案以講座、討論、反思與靈性活動練習，有助於研究對象將壓力事件與個人生命目的做聯結並賦予意義，進而增進護理學生靈性健康與降低實習壓力。本研究結果可以做為降低護理學生實習壓力輔導，以及規劃靈性相關課程之參考。

關鍵詞：靈性健康、實習壓力、護理學生、靈性學習方案。