



# Effect of DNP & MSN Evidence-Based Practice (EBP) Courses on Nursing Students' Use of EBP

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# Disclosures

## Conflict of interest statement:

Richard Watters, PhD, RN; Elizabeth R. Moore, PhD, RN; and Kenneth A. Wallston, PhD attest there is no relevant financial relationship between them and any commercial supporting entity which would present a conflict of interest or commercialize the presentation content.





# Learning Objectives

Upon completion of this presentation, the learner will be able to:

1. Describe the significance of evaluating graduate nursing students' attitudes, perceived support, self-efficacy, knowledge and implementation of EBP.
2. Explain the relevance of using the Theory of Planned Behavior (TPB) to develop the EBP instrument.
3. Describe the four-part, 28-item, EBP instrument based on the TPB to evaluate the effect of the EBP courses.
4. Discuss the effect of the DNP and MSN EBP courses on students' attitudes, perceived support, self-efficacy, knowledge and implementation of EBP.
5. Evaluate the implications of the study for nursing practice and research.



# Purpose

To evaluate the effect of DNP and MSN level EBP courses on nursing students' attitudes, perceived support from their professional network, self-efficacy, knowledge and implementation of EBP at an independent, private research university in the southeastern United States.



# Background

- ❖ The knowledge gap that currently exists between the research and health care community results in a delay in using research knowledge in the practice environment.
- ❖ Clinician utilization of new research driven interventions is often based on their attitudes towards the innovation, support from their professional network and self-efficacy regarding implementation.
- ❖ Clinicians also have existing beliefs and knowledge gaps related to the steps involved in utilizing the evidence based practice (EBP) process in order to locate, evaluate, synthesize and utilize the best evidence in clinical practice.





# Background (continued)

- ❖ In order to address some of these concerns, traditional nursing research courses at the MSN level have recently been restructured to incorporate more focus on evidence based practice (EBP); DNP (Doctorate of Nursing Practice) curricula also include content on EBP.
- ❖ Students' attitudes towards EBP, perceived support from their professional network, self-efficacy, level of understanding and prior utilization of EBP are rarely evaluated before these courses begin or at their conclusion.
- ❖ An assessment of these factors may help faculty design courses to better meet students' learning needs, and strengthen students' ability to translate best evidence in clinical practice.



# EBP Course Content

- ❖ EBP models and medical center initiatives
- ❖ Evaluation of non-experimental quantitative research designs
- ❖ Description and critical appraisal of RCTs using CONSORT and the Cochrane Risk of Bias tables, systematic reviews and meta-analyses using PRISMA
- ❖ Critical appraisal of qualitative research
- ❖ Continuous quality improvement
- ❖ Using AGREE II to appraise CPGs
- ❖ Oral and poster presentations
- ❖ Knowledge translation in complex health care environments
- ❖ Evidence-based global health



# Course Delivery Method

- ❖ Three hours of lecture content delivered during a week-long intensive at the beginning of the semester
- ❖ Weekly voice over PowerPoint or videotaped presentations and readings available on Blackboard
- ❖ Group discussion board forums available on Blackboard
- ❖ Synchronous small group discussions of research article critiques with faculty leaders using Scopia





# Student Assessment

## Teaching-Learning Activities:

- ❖ Critical appraisal of randomized controlled trials using the CONSORT guidelines and the Cochrane Risk of Bias tables, systematic reviews and meta-analyses using the PRISMA checklist
- ❖ Using the AGREE II instrument to appraise CPGs
- ❖ Discussion board postings on non-experimental research article checklists, meta-synthesis, patient safety, quality of care, evidence translation



# Evaluation of Approach

- ❖ Student course evaluations
- ❖ Difference between pre- and post-course assessment of
  - ❖ students' attitudes toward EBP,
  - ❖ perceived support from their professional network,
  - ❖ self-efficacy beliefs,
  - ❖ knowledge of EBP and
  - ❖ utilization of EBP



# Instruments to Evaluate Students' Acquisition of EBP

- ❖ A number of EBP research instruments evaluate nurses' beliefs, barriers and/or knowledge acquisition and implementation of EBP.
  - ❖ The majority of these instruments have no theoretical basis for the content of the included items, and those that do tend to be lengthy.
- ❖ Instruments have been developed to measure evidence acquisition and appraisal skills (Shaneyfelt et al., 2006) primarily evaluating medical students' and postgraduate trainees' EBP skills including critical appraisal.
  - ❖ These instruments primarily measured EBP knowledge acquisition by self-report rather than objective measures.
- ❖ Melnyk and Fineout-Overholt (2008) developed the EBP Beliefs and Implementation Scales and administered them to nurses to evaluate the validity and reliability of their instruments.

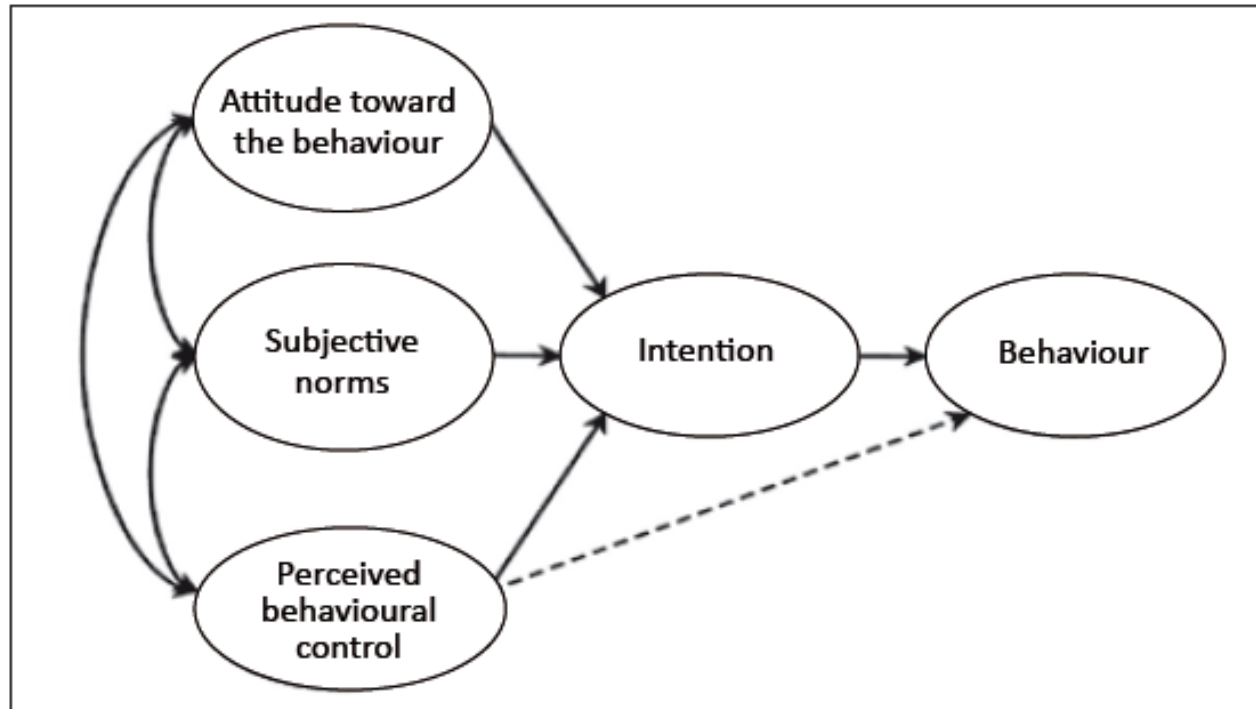




# Instrument Development

- ❖ Items for the instrument were developed after a review of literature regarding EBP research instruments and assigned to one of the four domains of the theory of planned behavior (Ajzen, 1991)
  - ❖ (See Figure 1).
- ❖ Face & content validity were assessed by a methodological expert in instrument development and three EBP content experts.
- ❖ Questions were further revised in 2012 based on the initial validation of the instruments by students (N=348) registered in the DNP, MSN and pre-specialty nursing programs at one university.
- ❖ Approaches to reliability and validity assessment included exploratory factor analysis, Cronbach's alpha and Pearson product-moment correlations.

# Theory of Planned Behavior



Source: Ajzen, I. (1991). Theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50, 182. [http://dx.doi.org/10.1016/0749-5978\(91\)90020-T](http://dx.doi.org/10.1016/0749-5978(91)90020-T)

**FIGURE 1:** Theory of Planned Behaviour.



# Instrument to Evaluate the Effect of EBP on Nursing Students

- ❖ Instrument consists of four subscales plus two other sections:
  - ❖ Attitudes toward EBP (6 items),
  - ❖ Professional Network Support (5 items) ,
  - ❖ Self-Efficacy (9 items), and
  - ❖ Behavioral Implementation (8 items).
- ❖ First 3 subscales use a 5-point Likert response format that range from 1 (*strongly disagree*) to 5 (*strongly agree*). Items in the fourth subscale use a 5-point response format that range from 1 (*never*) to 5 (*very often*).
- ❖ The other two sections consist of:
  - ❖ A multiple-choice test (7 items) to measure Knowledge of EBP, and
  - ❖ Demographic information





# Research Hypotheses

1. DNP students will have higher baseline pre-course scores than the MSN students on all of the TPB subscales and the knowledge test because of their greater number of years of experience in nursing.
2. All students (DNP & MSN) will achieve higher scores on these variables post-course compared to baseline scores.
3. Pre- to post-course change scores will be similar in both the DNP and MSN students.
4. Implementation of EBP in the clinical setting is related to or is a function of the student's attitudes towards EBP, perceived support from their professional network, and self-efficacy.



# Methods

- ❖ The EBP instrument, based on the theory of planned behavior (TPB), was administered to 190 MSN and 37 DNP students using REDCap (Research Electronic Data Capture) both before and after the intervention (the EBP course).
- ❖ Individual student results from the pretest were linked to their posttest by using their mother's maiden name, and birthdate (month and day) for 126 students. Once the surveys were linked, the identifiers were deleted.
- ❖ Approaches to reliability and validity assessment included Cronbach's alpha and Pearson product-moment correlations.



# Results



**Table 1****Socio-Demographic Characteristics of Students  
Whose Pre-test and Post-test Data Were Linked**

	<b>MSN (n = 102)</b>	<b>DNP (n = 24)</b>
Age in years [Mean $\pm$ SD]	30.29 $\pm$ 7.23	40.04 $\pm$ 9.16
Gender – Female [n (%)]	87 (85%)	21 (88%)
Highest degree in nursing		
BSN	66 (65%)	0 (0%)
MSN	11 (11%)	23 (96%)
Number of years as an RN [Mean $\pm$ SD]	3.69 $\pm$ 4.23	15.46 $\pm$ 8.86
Current position		
Staff nurse	54 (53%)	0 (0%)
Nurse practitioner	1 (1%)	10 (42%)
Years in current position [Mean $\pm$ SD]	2.85 $\pm$ 2.82	3.84 $\pm$ 3.39
Employment status – Full time [n (%)]	30 (29%)	19 (79%)
Health care facility has Magnet status – Yes [n (%)]	39 (38%)	8 (33%)
Attended CE program on evidence based practice within last five (5) years – Yes [n (%)]	57 (56%)	10 (42%)
Attended academic course on evidence based practice within last five (5) years – Yes[n (%)]	21 (21%)	3 (13%)

**Table 2**  
**Descriptive Data on Subscales**

<b>Subscale</b>	<b># of Items</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Cronbach's Alpha</b>
<b>Attitudes</b>				
Pretest	6	26.1	2.2	0.65
Posttest	6	27.2	2.6	0.81
<b>Network Support</b>				
Pretest	5	15.4	3.4	0.70
Posttest	5	16.0	3.4	0.70
<b>Self-Efficacy</b>				
Pretest	9	30.8	5.3	0.83
Posttest	9	36.3	4.2	0.81
<b>Behavior</b>				
Pretest	8	17.0	5.3	0.86
Posttest	8	20.5	5.3	0.85

**Table 3**  
**Correlations among Subscales**

Subscale	Att - Pre	Sup - Pre	SE - Pre	Beh - Pre
Attitudes - Pre	1.00	-	-	-
Support - Pre	.18*	1.00	-	-
Self-Efficacy - Pre	.33**	.18*	1.00	-
Behavior - Pre	.23**	.38**	.45**	1.00
**. Correlation is significant at the 0.01 level (2-tailed) using Pearson's r.				
*. Correlation is significant at the 0.05 level (2-tailed) using Pearson's r.				

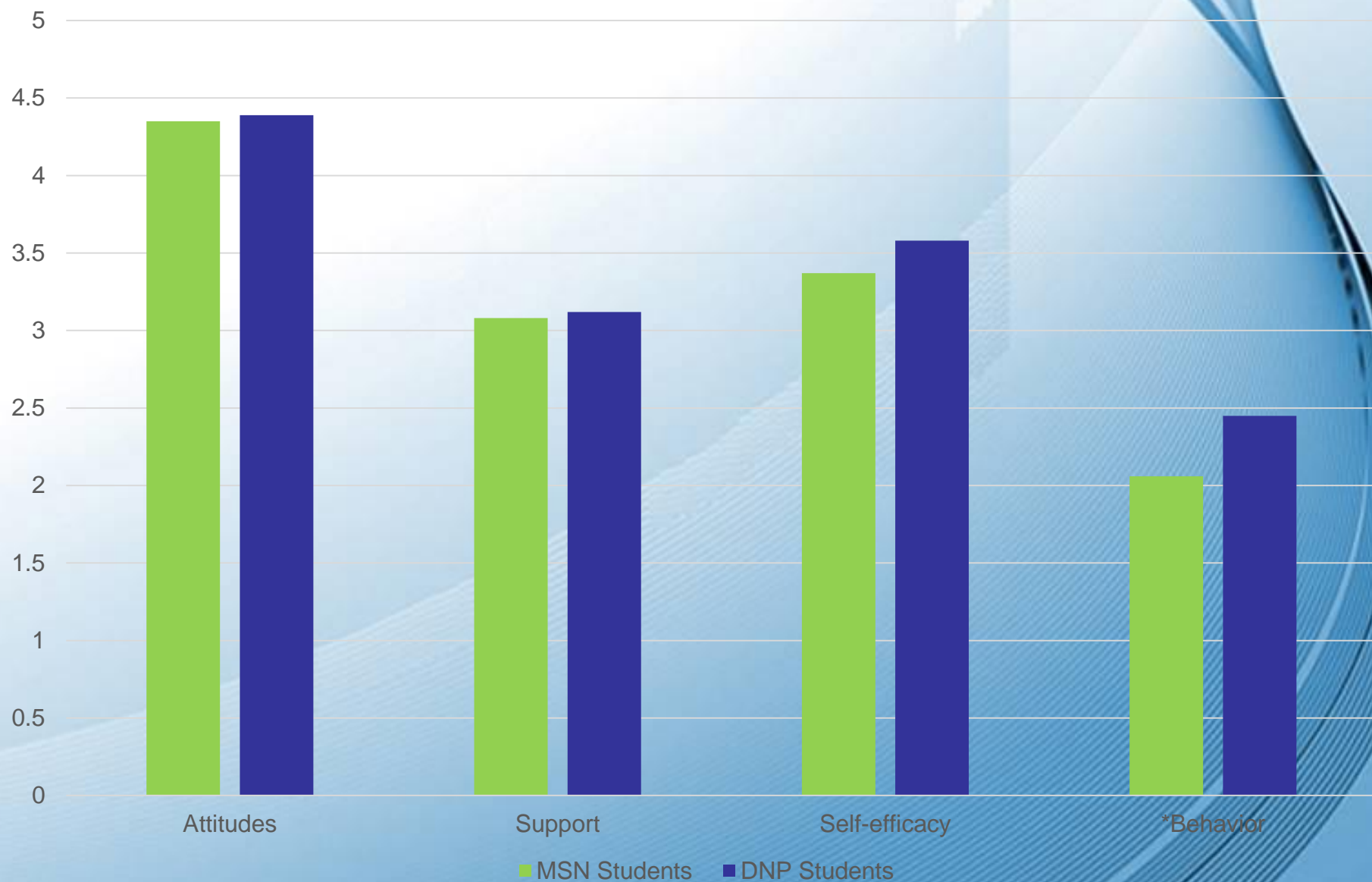
Subscale	Att - Post	Sup - Post	SE - Post	Beh - Post
Attitudes - Pre	.26**	-	-	-
Support - Pre	-	.52**	-	-
Self-Efficacy - Pre	-	-	.51**	-
Behavior - Pre	-	-	-	.48**
**. Correlation is significant at the 0.01 level (2-tailed) using Pearson's r.				
*. Correlation is significant at the 0.05 level (2-tailed) using Pearson's r.				





# Results for Hypothesis 1

- ❖ With the exception of behavior where the DNP students performed significantly more EBP behaviors pre-course than the MSN students, there were no other differences between the MSN and DNP students in baseline scores on any of the subscales.
  - ❖ (See Figure 1)



\*\* T-test significant at  $p < 0.01$

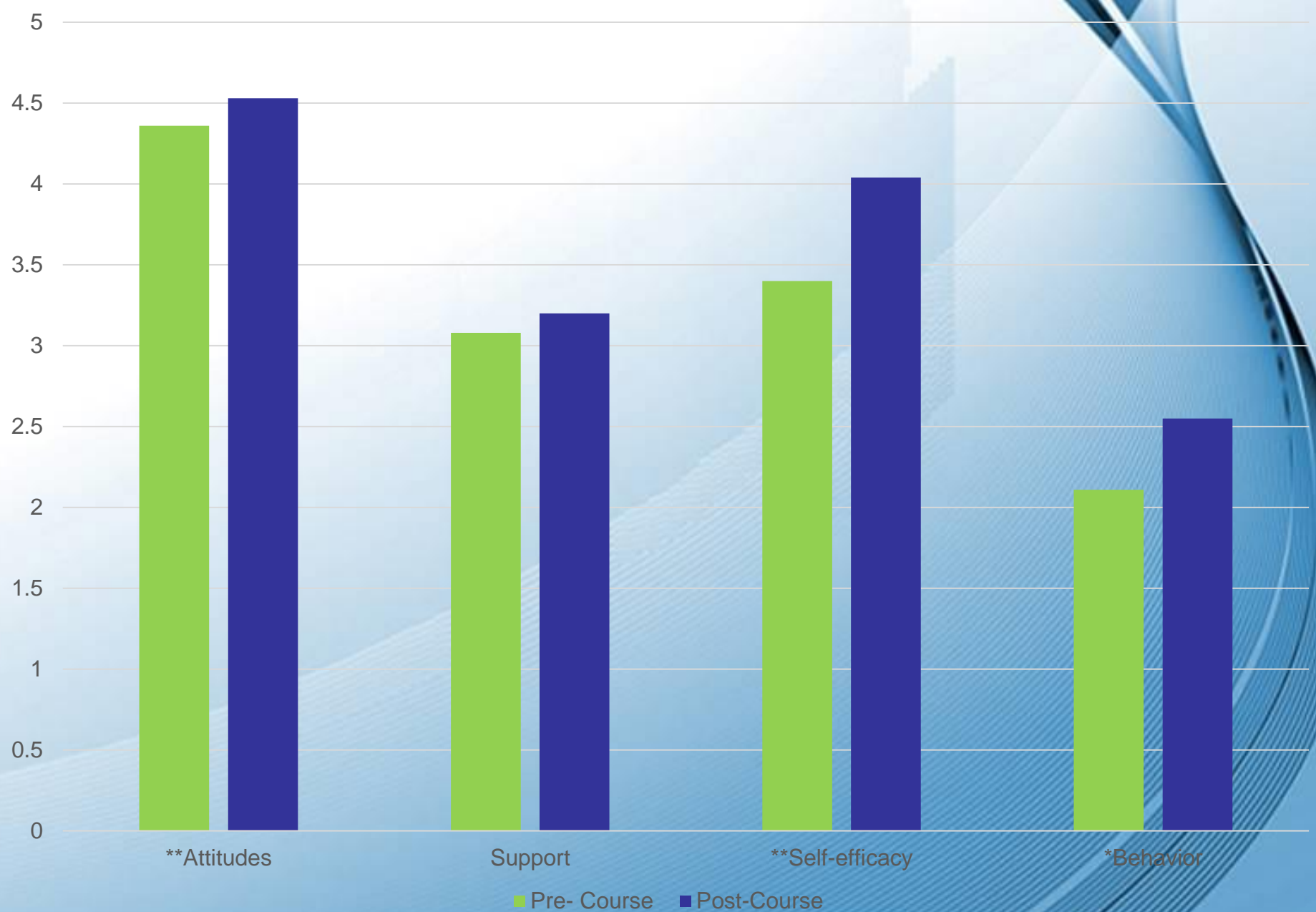
Figure 1. Baseline scores pre-EBP course.



## Results for Hypothesis 2

- ❖ Overall student scores on three of the four subscales of the EBP instrument (attitudes, self-efficacy and behavior) increased significantly pre-to-post EBP course ( $p < 0.01$ ).
  - ❖ (See Figure 2)
- ❖ Network support and knowledge scores increased but not significantly.





\*\* Paired T-test significant at  $p < 0.01$

Figure 2. Overall mean scores for the pre and post-EBP course instrument.



# Results for Hypothesis 3

- ❖ When the DNP and MSN students were split into separate subgroups, change scores on two subscales (attitudes, self-efficacy) remained significant in both groups.
  - ❖ (See Figure 3)
- ❖ There was a significant positive change in EBP behavior only for the MSN students. Between group differences in behavior were insignificant post-EBP course.
  - ❖ (See Figure 3)
- ❖ Knowledge scores increased significantly for the DNP students, but not for the MSN students.
  - ❖ (See Figure 4)

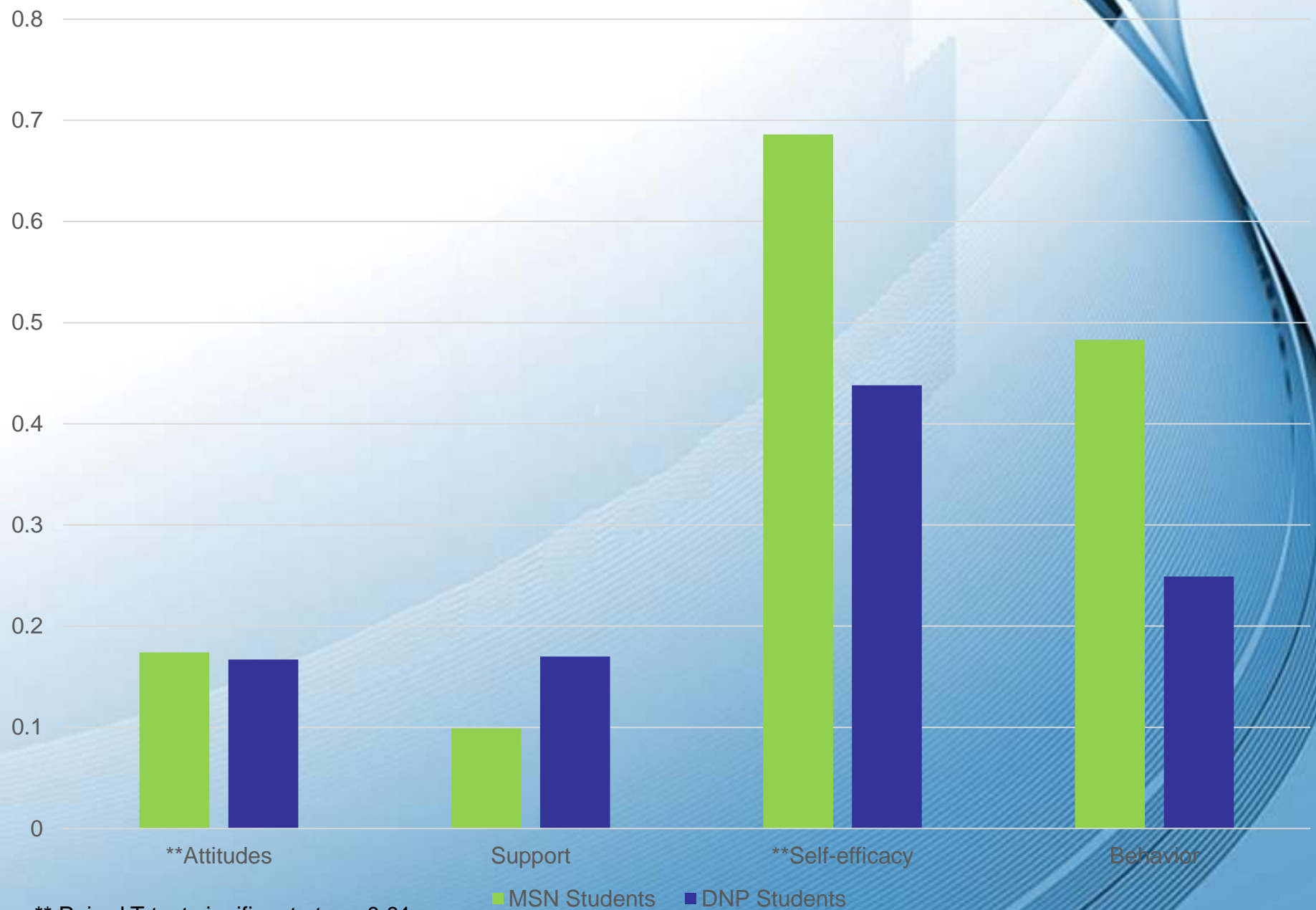
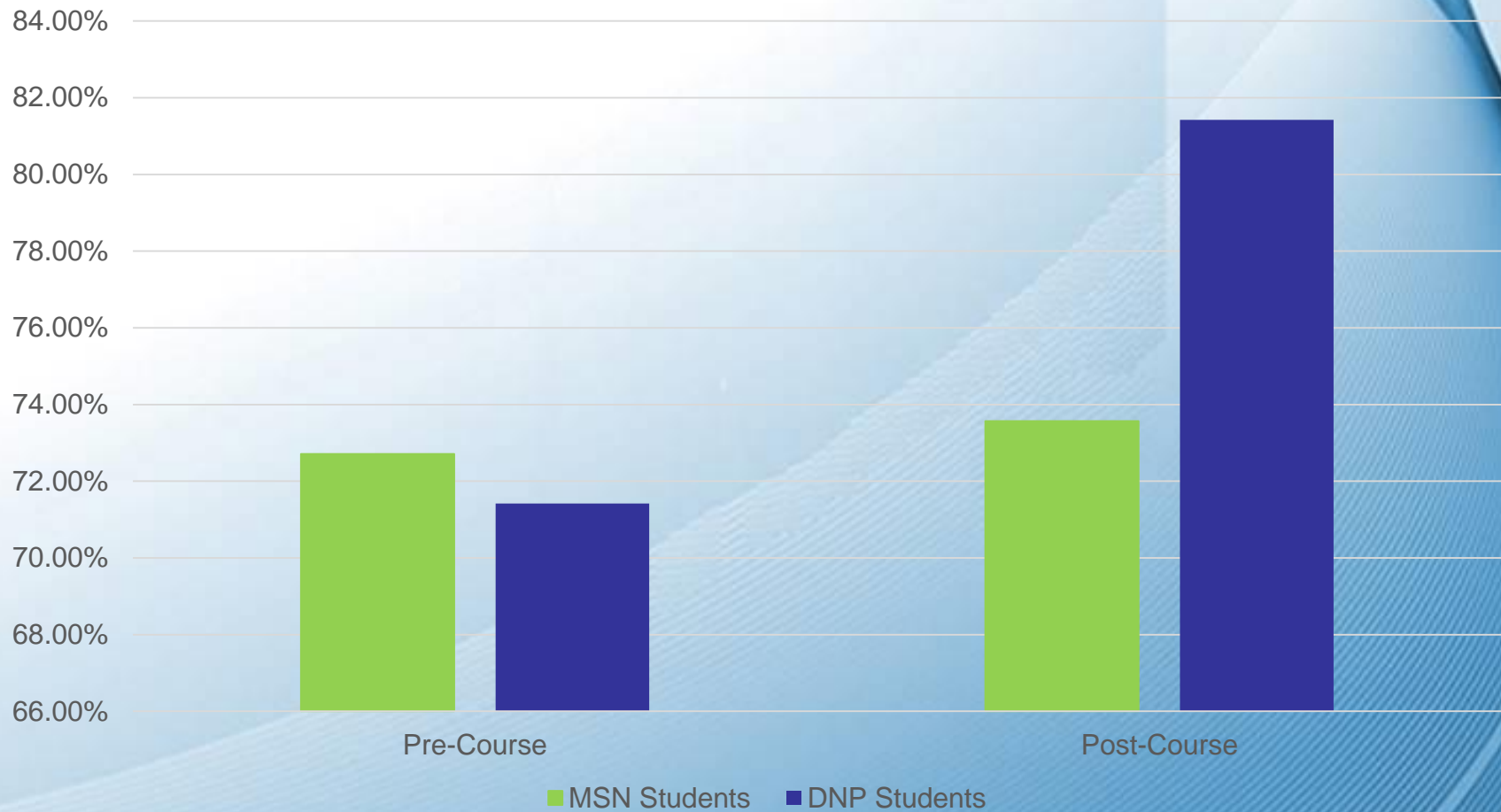


Figure 3. Pre to post-EBP course change scores MSN and DNP students.





**\*\*** Paired T-test significant at  $p < 0.01$  only for the DNP students

Figure 4. Pre and post-EBP course knowledge scores.

**Table 4.****Items on the Subscales where the Pre- to Post-EBP Course Change was Most Significant for Both MSN & DNP Students**

Attitudes	Sig. (2-tailed)
Systematic reviews/meta-analyses play a key role in guiding evidence based clinical decision making.	< 0.001
Research study design is important in selecting articles to review.	< 0.001
Support	
My nurse manager supports me in identifying a clinical/management problem and developing a researchable question using PICO (patient, intervention, comparison condition, outcomes) format to address the problem.	0.031
Financial support is provided to me by my organization to attend conferences, continuing education programs and other workshops /seminars related to evidence based practice.	0.040
Self-efficacy	
I have the skills needed to undertake a comprehensive literature review related to a clinical/management problem.	< 0.001
I can write a researchable question using PICO (patient, intervention, comparison condition, outcomes) format for a clinical/management problem.	< 0.001
I feel confident about my ability to critically appraise a research study's design.	< 0.001
Behavior	
How often have you retrieved relevant evidence once you have formulated a PICO question?	< 0.001
How often have you shared a clinical practice guideline/protocol (e.g. from the National Guidelines Clearinghouse) with a colleague?	< 0.001

# Results for Hypothesis 4

- ❖ Pre-EBP course: 30% of the variance in behavioral implementation of EBP in the clinical setting was explained by self-efficacy and perceived support from the students' professional network.
  - ❖ (See Figure 5)
- ❖ Post-EBP course: student's attitudes towards EBP, perceived support from their professional network and self-efficacy accounted for 23% of the variance in implementation of EBP in the clinical setting.
  - ❖ (See Figure 6)



## **Self-efficacy**

Accounted for 21% of variance in behavior

## **Network support**

When added to self-efficacy explained an additional 9% of variance in behavior

Figure 5. Stepwise linear regression for pre-course.



### **Self-efficacy**

Accounted for 11% of variance in behavior

### **Network support**

When added to self-efficacy explained an additional 8% of variance in behavior

### **Attitudes**

When added to self-efficacy and network support explained an additional 4% of variance in behavior

Figure 6. Stepwise linear regression for post-course.



# Discussion

- ❖ EBP courses improved EBP behaviors in the clinical setting, especially in MSN students, by increasing their positive attitudes and self-efficacy regarding behavioral performance.
- ❖ Baseline EBP knowledge scores were similar in both MSN/DNP students but increased significantly in DNP students when exposed to a rigorous academic course in EBP and critical appraisal of research evidence.
- ❖ The EBP courses seemed to have the greatest impact on both the MSN and DNP students' attitudes toward systematic reviews/meta-analyses and the importance of research study designs ( $p < 0.001$ ).
- ❖ The courses also influenced students' ability to write researchable questions, conduct comprehensive literature reviews and critically appraise research studies ( $p < 0.001$ ).
- ❖ The frequency of retrieving relevant evidence after formulating a PICO question also increased significantly after taking the EBP courses ( $p < 0.001$ ).





# Implications for Nursing Practice and Research

- ❖ A pretest and posttest course evaluation can help faculty determine the learning needs of MSN and DNP students in order to develop appropriate learning activities to support their acquisition of the essential knowledge and skills to use EBP in the clinical setting.
- ❖ Advanced practice nurses will be better prepared as nurse leaders to facilitate and promote implementation of EBP.
- ❖ Studies should continue to examine the effect of DNP and MSN EBP courses on students' attitudes, perceived support, self-efficacy, knowledge and implementation of EBP in different populations of nursing students.



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