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Generating and Translating Evidence to Simultaneously Impact Nursing Education & Patient Care with Undergraduate Research

Amanda Dupnick, J. Luke Akers, Elisa Hillman, Andrew Bauer, Lauren Kinker (BSN Honors Students), and Dr. Amy Hagedorn Wonder

Conflicts of Interest and Disclosures

- Unfunded Study

- The presenter has no real or perceived vested interests or conflicts of interest related to this presentation.
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Objectives

- Describe how an undergraduate honors program can enable an academic and practice partnership to simultaneously:
  - Teach EBP
  - Impact care at the systems level
- Describe key facilitators to successful honors projects and experiences

Background: Undergraduate Honors Research Program

Identify candidates during junior year of the baccalaureate nursing (BSN) program, based on:

- Student performance
- Area of research interest
  - Clinical
  - Educational
- Mentor availability
  - Individual student(s)
  - Cohort

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Abstract

Baccalaureate nursing (BSN) programs often focus on using external evidence to inform decisions at the patient level. This is vitally important to achieving the evidence-based practice (EBP) goals established by the Institute of Medicine (IOM, 2001) and the associated competency expectations of the American Association of Colleges of Nursing (AACN; 2008) and the Quality and Safety Education for Nurses (QSEN; Cronenwett et al., 2007). However, to prepare BSN students for active roles in evidence-based change, it is important for programs to also mentor students in generating and translating evidence to inform care at the systems level. This presentation explains how an undergraduate honors research program can enable an academic and practice partnership, preparing students for EBP while simultaneously impacting patient care.

A group of five, junior-level, BSN students identified a clinical problem and decided to work collaboratively as a team, similar to a task force in practice, to collect and analyze data on perioperative hypothermia. The purpose of this unfunded study was to describe: a) factors associated with the occurrence of perioperative hypothermia; and b) correlations between perioperative hypothermia and post-operative complications that occurred during the inpatient stay.

Background

Perioperative hypothermia has been acknowledged as a problem in practice since the 1950's (Torossian et al., 2015). Prior studies have found correlations between inadvertent hypothermia and factors, such as:

- subject's age >60 years (Torossian, et al., 2015);
- type of surgical case (e.g., total knee replacement, total hip replacement [Frisch et al., 2017], abdominal surgery [Ying et al., 2014]).

The occurrence of perioperative hypothermia can have a significant impact on patient recovery as correlations have been found with serious complications, such as coagulation dysfunction (Ying, et al., 2014) and increased blood loss (Frisch et al., 2017).

For this study, perioperative hypothermia was defined as a documented temperature <36.0° Celsius (<96.8° Fahrenheit) (Torossian, et al., 2015; Ying, et al., 2014) during the continuum of surgical care (e.g., preoperative care, surgery, recovery).

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Methods

Design: Descriptive correlational study. Following approval from the study site and IRB for the exempt study, data were collected via retrospective chart review during summer 2017.

Sample: A total of 298 surgical cases from a 3-month period in 2017 were reviewed from a single study site in the Midwestern United States.

Inclusion criteria:

- 18 years of age and older
- Specific cases: hysterectomy, laparoscopic cholecystectomy, colectomy, hernia repair, total knee replacement, total hip replacement

Instrumentation: 20-item instrument developed from a literature review and input from the study site.

Demographic factors

- Age, gender, race, and ethnicity
- **Care related factors**
  - Type of surgery, length of time in surgery, length of time in Post Anesthesia Care Unit (PACU), and type of anesthesia
- **Complications**
  - Required blood transfusion, abnormally low hemoglobin and/or hematocrit, surgical site infection, sepsis, pneumonia, mortality

Demographics

Of the 298 cases in the total sample, subjects were:

- Primarily female (n=178, 60%)
- Caucasian (n=286, 97%)
- Mean age of 59 years (*SD*±15.7 years)

Hypothermic temperatures documented in 7 of 298 cases.

Characteristics of hypothermic cases:

- Mean age of 72.9 years (*SD*±15.9 years)
- Axillary temperatures ranged from 32.8°-35.8° Celsius (91.0°-96.4° Fahrenheit)
- Surgery Cases
  - Hysterectomy (1)
  - Laparoscopic cholecystectomy (1)
  - Hernia repair (1)
  - Colectomy (4)
- General anesthesia (7)
- Hypothermia initially detected/documented in PACU (7)

Results

Significant difference in mean age (p=0.0165)

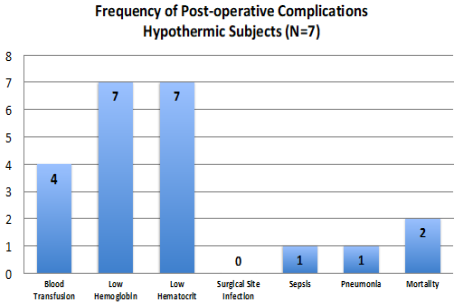
- Hypothermic subjects = 72.9 years (*SD*±15.9 years)
- Non-hypothermic subjects = 58.6 years (*SD*± 15.6 years)

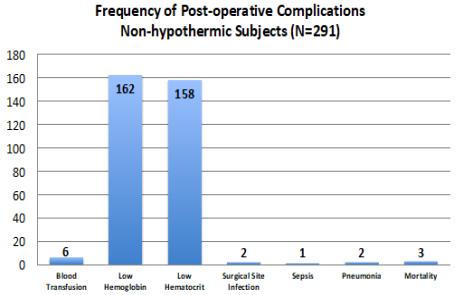
Significant difference in type of surgical case (p=0.0037)

- Hysterectomy (1)
- Laparoscopic cholecystectomy (1)
- Colectomy (4)
- Hernia repair (1)
- Total knee replacement (0)
- Total hip replacement (0)

Significant difference in postoperative complications

- Abnormally low hemoglobin (p=0.0205)
- Abnormally low hematocrit (p=0.0183)
- Blood transfusion (p<0.0001)
- Sepsis (p=0.0465)
- Mortality (p=0.0046)





Anecdotal Observations

- All hypothermic temperatures were assessed by nursing, using the axillary method
- Frequency of temperature assessment & documentation varied
- Pre-procedure laboratory tests not consistently located in chart

Outcomes

Results will be used by the study site:

- As additional evidence to support changes in practice
- To assist in developing education and policies
- As baseline measures to gauge the impact of improvements

Students applied knowledge and skills to:

- Conduct a collaborative, comprehensive, literature review
- Complete specialized training
- Collaborate with the study site on the clinical problem, instrument development, and coordination of data collection
- Develop and submit an IRB proposal
- Conduct data collection with consistency among team members
- Work collaboratively with a statistician
- Discuss results in context of existing evidence and the real world of practice

Students gained experience in dissemination of findings:

- Presented results and implications to the study site
- Abstracts selected for conference presentations
  - 1 poster presentations (Local/Regional)
  - 2 podium presentations (International)
- 2 manuscripts in progress
  - 1 manuscript on perioperative hypothermia
  - 1 manuscript on how honors research can simultaneously impact nursing education & patient care

Facilitators

- **Academic and Practice Partnership for Honors Research**
- **Communication**
  - Among team members, faculty, and the study site
- **Training Requirements for IRB**
  - Already completed during the required research course
- **Assistance with Essential Study Processes**
  - Generating the list of cases to review
  - Securing the list at the study site
  - Reserving a secure area for data collection
- **Access to Statistician**
  - Ongoing discussion during instrument development, data collection, analysis, and interpretation of results
- **Access to Secure, Online, Data Capture Software & Support**

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Facilitators to Successful Honors Projects & Experiences

- ✓Academic and Practice Partnership for Honors Research
  - Include students in meetings and discussions on quality improvement
  - Support students' research from conceptualization to dissemination
- ✓Communication
  - Among team members, faculty, and the study site
- ✓Training Requirements for IRB
  - Already completed during the research course in the BSN program

Facilitators to Successful Honors Projects & Experiences

✓Assistance with Essential Study Processes

- Generate the list of cases to review
- Secure the list at the study site
- Reserve a secure area for data collection

✓Access to Statistician

- Ongoing discussion during instrument development, data collection, analysis, and interpretation of results

✓Access to Secure, Online, Data Capture Software & Support

✓*Ongoing support from faculty and school*

Summary

The undergraduate honors research program is a win—win for academe and practice, preparing students for EBP at the systems level while simultaneously impacting patient care.

Students gain experience in:

- Generating and translating evidence
- Formulating and disseminating implications

Practice gains evidence to:

- Support and inform changes in policy and/or education
- Gauge the impact of improvements

Questions

Additional Information

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