

## Abstract #92214

### Sigma Theta Tau International's 29th International Nursing Research Congress

#### First-Year Undergraduate Nursing Students' Self-Efficacy in Numeracy

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**Purpose:** This study reviewed the open-ended responses from a survey which examined students' self-efficacy in numeracy in a first year undergraduate nursing course. Students provided valuable insights on teaching and learning of the numeracy components used to strengthen students' self-efficacy in medication calculation.

**Methods:** A survey was completed by 525 undergraduate nursing students, midway during Semester 2 in the first year of their undergraduate course. Open-ended comments were obtained on the students' perceptions of numeracy components they found easy; aspects they found difficult and; further comments about numeracy content covered in the unit. Content analysis was used to analyse the surveys open-ended comments. The data was systematically coded and categorised to identify patterns and trends that are presented as the themes below (Browne, 2004; Grbich, 2007).

**Results:** Four main themes emerged from the data. These themes were: 1) Self-realisation;

2) Practice, practice, practice; 3) Boosting confidence; 4) Wanting More.

1. *Self-realisation:* Students reflected and identified that numeracy competence was highly relevant to nursing practice. Many of the students realized that they needed to invest in improving their abilities and appreciated the teaching and learning resources in place to develop self-efficacy in numeracy.
2. ***Practice, practice, practice: In order to develop self-efficacy in numeracy, students identified that they needed to refresh their numeracy skills through practice which then prepared them for medication administration in practice settings.***
3. *Boosting confidence:* The teaching and learning strategies within the unit assisted students in developing confidence and competence in medication calculation; and reduced anxiety around numeracy.
4. *Wanting More:* Students reported wanting not only more time for processing and practicing on-line teaching and learning content but strongly acknowledged the need for more face-to-face teaching on numeracy.

**Conclusion:** In conclusion, students were satisfied with the numeracy resources and teaching and learning content being provided in the unit. Overwhelmingly, they wanted more practice each week in a

classroom environment with the tutor to increase confidence and competence, and reduce numeracy anxiety. The study findings have the potential to provide valuable insights into best practice for tertiary level nursing education in numeracy and medication calculation and administration. However, further refinement of both online and face-to-face numeracy instructions need to be explored to ensure students are able to optimize their learning opportunities in this unit.

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**Title:**

First-Year Undergraduate Nursing Students' Self-Efficacy in Numeracy

**Keywords:**

Numeracy, Self-Efficacy and Students

**References:**

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**Abstract Summary:**

This presentation will showcase survey results of 525 Undergraduate Student Nurses perceptions of teaching and learning strategies for nursing numeracy implemented to strengthen students' self-efficacy in medication calculation. It will also provide valuable insights into best practice for tertiary level nursing education in numeracy and medication calculation and administration.

**Content Outline:**

**Introduction:** In the provision of healthcare, medication administration is one of the most complex tasks that nurses perform. There is a duty of care to patients that they receive the right medication at the right time, be given the right dose and the medication is administered by the right route (McMullan, Jones, & Lea, 2012). All Registered Nurses (RNs) have ethical and legal obligations to competently calculate and administer the prescribed medications. To ensure new graduate nurses meet such competency, undergraduate nursing curricula are required to include sufficient teaching and learning content that promotes medication administration safety and competence (Australian Nursing and Midwifery Council, 2016). Yet, too often, many nursing students within tertiary institutions continue to struggle to become competent with medication calculation (Ramjan et al., 2014; Wright, 2005), and experience heightened stress and anxiety levels when faced with medication calculation competency testing (Andrew et al., 2009).

It is crucial that nursing education institutions address the challenges that undergraduate nursing students face in relation to numeracy calculations, to reduce the risk of medication errors, and potential harm to patients. These challenges can be examined through the theoretical lens of self-efficacy, defined as an individual's level of confidence in their ability to accomplish tasks (Roh & Issenberg, 2014). Self-efficacy has gained widespread attention in research since its conception by Albert Bandura in 1977. Bandura postulated that if a person has a strong belief in their ability to accomplish a specific task, this mindset can shape and influence the likelihood of success (Zhang et al., 2015). Thus, self-efficacy correlates with successful performance and therefore serves as an effective determinant of student learning and motivation (Karabacak, Serbest, Kan Öntürk, Eti Aslan, & Olgun, 2013).

In recent years, poor performance in numeracy in nursing assessments has been a concern for undergraduate nursing students and academics. A first year undergraduate nursing unit, in a tertiary institution in western Sydney, provided students with the opportunity to develop competence and confidence in medication calculation. This was achieved by students completing a diagnostic numeracy assessment which determined baseline competence. Students identified as having weak foundations are supported through referral to numeracy specific workshops. All students regardless of numeracy ability were provided with blended teaching and learning of, and assessment in, medication administration principles.

**Purpose:** This study reviewed the open-ended responses from a survey which examined students' self-efficacy in numeracy in a first year undergraduate nursing course. Students provided valuable insights on teaching and learning of the numeracy components used to strengthen students' self-efficacy in medication calculation.

**Methods:** A survey was completed by 525 undergraduate nursing students, midway during Semester 2 in the first year of their undergraduate course. Open-ended comments were obtained on the students' perceptions of numeracy components they found easy; aspects they found difficult and; further comments about numeracy content covered in the unit. Content analysis was used to analyse the surveys open-ended comments. The data was systematically coded and categorised to identify patterns and trends that are presented as the themes below (Browne, 2004; Grbich, 2007).

**Results:** Four main themes emerged from the data. These themes were: 1) Self-realisation;  
2) Practice, practice, practice; 3) Boosting confidence; 4) Wanting More.

1. *Self-realisation:* Students reflected and identified that numeracy competence was highly relevant to nursing practice. Many of the students realized that they needed to invest in improving their abilities and appreciated the teaching and learning resources in place to develop self-efficacy in numeracy.
- ***Practice, practice, practice:* In order to develop self-efficacy in numeracy, students identified that they needed to refresh their numeracy skills through practice which then prepared them for medication administration in practice settings.**
  - *Boosting confidence:* The teaching and learning strategies within the unit assisted students in developing confidence and competence in medication calculation; and reduced anxiety around numeracy.
  - *Wanting More:* Students reported wanting not only more time for processing and practicing on-line teaching and learning content but strongly acknowledged the need for more face-to-face teaching on numeracy.

**Conclusion:** In conclusion, students were satisfied with the numeracy resources and teaching and learning content being provided in the unit. Overwhelmingly, they wanted more practice each week in a classroom environment with the tutor to increase confidence and competence, and reduce numeracy anxiety. The study findings have the potential to provide valuable insights into best practice for tertiary level nursing education in numeracy and medication calculation and administration. However, further refinement of both online and face-to-face numeracy instructions need to be explored to ensure students are able to optimize their learning opportunities in this unit.

First Primary Presenting Author

***Primary Presenting Author***

Rebecca O'Reilly, PhD

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**Professional Experience:** July 2016 – current Director of Academic Programs for the Bachelor of Nursing Undergraduate Course, School of Nursing & Midwifery, Western Sydney University 2015- July 2016 Academic Course Advisor Bachelor of Nursing program, Parramatta Campus. February 2012 – 2015 Academic Course Advisor Bachelor of Nursing program (L-Q) and Bachelor of Nursing (Advanced) Program 1st December 2011 – December 2017 Lecturer (Full-time tenured)WSU 14th July 2003 – 30th November 2011 Associate Lecturer (Full –time tenured)University of Western Sydney 1992-current - Registered Nurse 1998 - current - Registered Midwife

**Author Summary:** Rebecca is a Senior Lecturer and Director of Academic Programs, Undergraduate of Bachelor of Nursing (BN) courses in the School of Nursing & Midwifery at Western Sydney University.

She is also a Registered Nurse and Midwife Rebecca has been an academic for 16 years and has extensive experience in development and quality assessment of teaching and learning content and curriculum development as well as being a researcher and supervisor of higher research degree students.

Second Author  
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**Professional Experience:** Practising RN 28 years, mainly critical care- ED & ICU, CNS ED, after hours Clinical Nurse Consultant Clinical Support 14 years, A/ NUM ED, A/ AH Manager. Academia 12 years casual then fulltime, current lecturer. Deputy Director Clinical Student Experience 3 years, Deputy Director Casual Workforce & Resource Allocation/ Timetabling 1 year. Acted as DAP in both roles. Unit and campus coordination, various university committees, unit content formulation various units. Teach tutorials, labs & online.

**Author Summary:** Practising RN 28 years, mainly critical care- ED & ICU, CNS ED, after hours Clinical Nurse Consultant Clinical Support 14 years, A/ NUM ED, A/ AH Manager. Academia 12 years casual then fulltime, current lecturer. Deputy Director Clinical Student Experience 3 years, Deputy Director Casual Workforce & Resource Allocation/ Timetabling 1 year. Acted as DAP in both roles. Unit and campus coordination, various university committees, unit content formulation various units. Teach tutorials, labs & online.

Third Author  
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**Professional Experience:** Mitch's professional background includes five years of work at Australian universities in curriculum design and review, and implementing blended learning strategies. Mitch's professional role at the start of this project was as Curriculum Advisor in the Office of the Pro Vice-Chancellor (Learning Transformations), allocated to the School of Nursing and Midwifery. The Curriculum Advisor role focused on the course level, with an aim to better understand the holistic experiences of students in a degree, ranging across and interacting between a number of units at any one time.

**Author Summary:** Mitch's professional background includes five years of work at Australian universities in curriculum design and review, and implementing blended learning strategies. His role at the start of this project aimed to better understand the holistic experiences of students in nursing and midwifery degrees at Western Sydney University.

Fourth Author  
Lucie M. Ramjan, PhD  
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**Professional Experience:** Lucie is an Associate Professor with 10 year experience as an academic.

Lucie also has 11 years experience as an adolescent clinician and 17 years as a Registered Nurse.

**Author Summary:** Lucie Ramjan is an Associate Professor in the School of Nursing & Midwifery at Western Sydney University. Lucie is committed to educational research supporting academic performance and numeracy needs. She has an interest in mental health research; has collaborated on multiple educational projects related to student retention and success; co-authored over 35 publications and supervises research higher degree students. She received a national teaching award in 2012 for her contributions to student learning.

Fifth Author

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**Professional Experience:** GDipEd Armidale CAE BSc Macquarie University MA Macquarie University Phd University of Western Sydney Dr. Yenna Salamonson is an Professor and the Director of Academic Workforce at the School of Nursing & Midwifery. She has committed over 30 years of her academic career to creating a positive learning experience for students within nursing education, and at the same time, worked in the clinical setting as a Clinical Nurse Specialist, in Intensive Care, High Dependency and Coronary Care units.

**Author Summary:** Yenna is a Professor and the Director of Academic Workforce at the School of Nursing & Midwifery with over 30 years of her academic career committed to creating a positive learning experience for students within nursing education. She has authored more than 160 peer-reviewed papers and numerous conference proceedings. Yenna has supervised 21 research students to completion, and is currently supervising 10 research students. Yenna has been a recipient of a number of teaching awards.

Sixth Author

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**Professional Experience:** •MNurs-Res University of Western Sydney •MN(CL) University of Western Sydney •GCertNurs University of Technology, Sydney •BN Australian Catholic University Annette has been employed at Western Sydney University since 2004.

**Author Summary:** Annette has over 15 years experience in critical care nursing and is still clinically current. She had an active role as a clinical facilitator for WSU for a period of 4 years. Her academic achievements include foundation of learning and teaching, Graduate Certificate in critical nursing, Masters in clinical leadership in nursing and nursing research. Annette currently unit coordinates an undergraduate first year clinical unit and is a first year student experience coordinator/advisor

Seventh Author

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**Professional Experience:** • RN 1984 – 2017 current • Nurse Educator – St George Hospital 1991 -2008  
• Manager of Nurse Education – St Vincent's Hospital 2008-2013 • Lecturer – 2013 to present (2017)

**Author Summary:** Linda has worked a clinical nurse in renal dialysis and transplantation for 7 years completing a certificate in nephrology, dialysis and transplantation. Following this I moved to Nurse Education and hold over 26 years experience.