Symp osium 1 .1: Dec oding the DNA of he<䐠圀䬀e挀䩃b偈 !

.灅倀g䌀䔀b偈�

Analysis: We used two main sources to identify core nursing procedures: 1) current point of licensure
regulatory competence standards; 2) authoritative clinical nursing texts for common procedures. We
also drew on our substantial knowledge/experience of nursing science, mathematics and healthcare
numeracy education, and research.

Results: We identified 1] 20 core healthcare numeracy skills across 60 nursing procedures; 2] the
incidence of use of individual skills (range 17%
-100%); 3] the distribution of mathematics and healthcare
numeracy skills between drug dosage calculation and medicines management (40%), and wider nursing
practice (60%); 4] the skill combinations needed to perform common nursing procedures, e.g. 13 skills for
fluid balance management.

Discussion/Conclusion: Our findings give nurse educators/regulators evidence of the mathematics and
healthcare numeracy used in nursing practice. Having bridged the first gap in translational research,
educators/regulators can use our education model to build benchmarked education and assessment
programs/regulatory systems for delivering safe nursing care to patients.

References

1. Weeks KW, Pontin D, Coben D, Weeks A, Clochesy JM & Rowe D. (2022). Decoding the DNA of
healthcare numeracy: Establishing a mathematics and healthcare numeracy benchmark for nursing.
https://safemedicate.com/publications/ng/dna.html

2. Ozimek D, Kelch B, Zoellner J, Beaudry M & Valdes B. (2021). Math and Statistics Education for Nurses.
Austin TX: Dana Center. https://dcmathpathways.org/sites/default/files/resources/2021
-
01/math_for_nurses_convening_recommendations.pdf

3. Wendel A. (2020). An exploration of numeracy skills required for safe, quality nursing practice. UNLV
Theses, Dissertations, Professional Papers, and Capstones. 4090. http://dx.doi.org/10.34917/23469765

Lead presenter biography

Dr Keith Weeks

Keith is a UK RN with a PhD in authentic healthcare mathematics education and 40+ years of clinical,
education and transla6(co)16(it)7(h)-4( )7(W)-5(ee)3(ks)] TJ
ET
Qq
0.000008871 0 595.32 841.92 re
W* n
BT
/F2 9 Tf
1m1 72871 0 595.32 841.92 re

Keith is a
-

Paper 2: Nursing numeracy educators: Teaching and assessing numeracy and medication calculations
within Australian undergraduate nursing education: A qualitative study
Abstract ID 276
Authors
Mrs. Christine Walker (Western Sydney University), Prof. Nathan Wilson (Western Sydney University), Dr.
Leanne Rylands (Western Sydney University), Dr. Jim Pettigrew (University of New South Wales), Dr.
Leanne Hunt (Western Sydney University)
Abstract
Background: Proficiency in numeracy skills is critical for patient safety, however, the accuracy rate of
calculations by undergraduate and registered nurses is deficient worldwide (Minty-Walker et al, 2021).
This issue is alarming for the education of undergraduate nurses and the quality of nursing care.
Approaches best suited to improve the numerical calculation abilities of nurses remains unclear (Minty-Walker, in press). Furthermore, in the Australian context, there are no accreditation standards referring
to numeracy.
Aim: To explore the approaches to teaching and assessing numeracy and medication calculations from
the perspective of Australian nurse education leaders of undergraduate nursing degrees.
Methods: In this qualitative study, purposive sampling was used to recruit nurse education leaders (n =
17). Individual interview data were collected between Nov 2022 - Jan 2023, and analysed using thematic
analysis.
Results: A bespoke range of teaching approaches and assessment formats were implemented. Academics
were considered good clinicians, not maths teachers. There was an assumption that students would have
numerical proficiency upon entering university. Support was required for struggling students to pass
high stakes assessments, often under conditions incongruent to the clinical setting (Minty-Walker et al,
2023).
Discussion: Flexibility and diversity in developing and implementing numeracy education across
institutions is expected, however, nurses’ inability to pass a numeracy or medication calculation test
prompts consideration into the suggestion of adopting a clear pedagogical rationale for teaching one
approach over another, along with a standardised method of assessment.
Conclusions: To improve the quality of nursing numeracy education and ensure safer patient outcomes,
this research aims to inform the development of an evidence-based and standardised conceptual
teaching framework for tertiary education. Furthermore, to prompt consideration into the
recommendation for a national independent numeracy assessment that would ensure that candidates
have all achieved the required benchmark to practice safely.
References

Minty-Walker, C., Wilson, N.J., Rylands, L., Hunt, L., & Pettigrew, J. (in press). Numeracy teaching for
undergraduate nursing students: A scoping review. Journal of Nursing Education.
Lead presenter biography
Christine Walker
Christine is an Australian RN with over 28 years’ experience in clinical practice and education. Her
clinical area of expertise is in operating theatre nursing where she held governance positions of clinical
nurse specialist, clinical nurse educator and nurse educator. She is a lecturer and campus program
advisor at Western Sydney University teaching on the undergraduate nursing degree in theoretical and
clinical units, and also acts as subject coordinator. Christine has been developing her publications profile
since 2016 and is currently a PhD Candidate at WSU researching nursing numeracy education.
Paper 3: Nurse academics confidence and anxiety levels when teaching nursing numeracy to Australian
undergraduate nursing students: A cross-sectional study
Abstract ID 278
Authors
Mrs. Christine Walker (Western Sydney University), Prof. Nathan Wilson (Western Sydney University), Dr.
Leanne Rylands (Western Sydney University), Dr. Jim Pettigrew (University of New South Wales), Dr.
Leanne Hunt (Western Sydney University)
Abstract
Background: Nurse academics are required to teach undergraduate nursing students’ numeracy and
medication calculations ensuring a safe practitioner. The literature reveals that nurse academics do not
consider themselves maths teachers, and experts in that area are better suited to teaching this skill
(Minty-Walker et al, 2023). The literature reports widely on the anxiety felt by school teachers when
teaching maths (Ganley et al, 2019), however, there is no research on the anxiety or confidence levels of
nurse academics when teaching numeracy concepts to undergraduate nursing students.
Aims: To describe and analyse Australian nurse academics’ confidence and anxiety levels when teaching
numeracy; to describe who is best placed to teach numeracy and identify the resources to support
academics to teach this skill.
Methods: Purposive sampling was used to recruit Australian nurse academics (n = 170) who currently
teach numeracy and medication calculations to undergraduate nurses. Data were collected between Nov
2023 - Feb 2024, using an online survey platform, and analysed using R analytics.
 Results: The anxiety and confidence levels of nurse academics varied according to demographic profile;
academics would like resources and support to build their teaching capabilities, a combination of a
registered nurse and mathematics support staff were considered best placed to teach numeracy, and
academics were willing to learn and teach methods of calculation besides their preferred style.

Conclusions: This research suggests a call for the formulation of an evidenced-based framework to guide
the teaching of nursing numeracy. Building the teaching capacity of nurse academics will enhance
student competence and contribute to patient safety.
References
Ganley, C.M., Schoen, R.C, LaVenia, M. and Tazaz, A.M. (2019). The construct validation of the math
anxiety scale for teachers. American Educational Research Association (AERA) Open, 5(1), pp. 1-16.
https://doi.org/10.1177/233285841983970
Minty-Walker, C., Pettigrew, J., Hunt, L., Rylands, L., & Wilson, N. J. (2023). Nurse education leaders’
perspectives on the teaching of numeracy to undergraduate nursing students: A qualitative research
study. Nurse Education in Practice, 72(103754), pp. 1-8. https://doi.org/10.1016/j.nepr.2023.103754
Lead presenter biography
Christine Walker
Christine is an Australian RN with over 28 years’ experience in clinical practice and education. Her
clinical area of expertise is in operating theatre nursing where she held governance positions of clinical
nurse specialist, clinical nurse educator and nurse educator. She is a lecturer and campus program
advisor at Western Sydney University teaching on the undergraduate nursing degree in theoretical and
clinical units, and also acts as subject coordinator. Christine has been developing her publications profile
since 2016 and is currently a PhD Candidate at WSU researching nursing numeracy education.
Paper 4: Assessing healthcare numeracy among US baccalaureate nursing students: cross-section study
Abstract ID 279
Authors
Dr. John Clochesy (Numeric Generics Ltd), Dr. Jessica Varghese (New York Institute of Technology), Dr.
Beatriz Valdes (University of Miami), Dr. Keith Weeks (Authentic World Ltd), Mr. Alex Weeks (Numeric
Generics Ltd), Dr. David Pontin (Numeric Generics Ltd)
Abstract
Background: Aspects of numeracy in healthcare have been a persistent concern and regularly appear in
the nursing literature. Contrary to popular belief, healthcare numeracy is a complex competency.
Healthcare numeracy is more than being able to manipulate numbers or being able to succeed in
academic courses in mathematics often constructed by non-nurses. Leaders of undergraduate nursing
programs often assume, albeit erroneously, that recruits entering nursing student programs have the
required proficiency in numeracy skills to succeed. Evidence suggests that this is not always the case
(Weeks et al 2022; Ozimek et al 2021; Wendel 2020).
Aim: The aim of the current study was to assess the healthcare numeracy in a cohort of US baccalaureate
nursing students and identify areas of concern.
Methods: A prospective, cross

Results: Correct student responses ranged from 11 out of 60 (18.3 %) to 58 out of 60 (96.7 %). No
participant managed to answer all of the items correctly. The most common errors presented were
related to equivalences between fractions decimals and percentages, indices and logarithms, statistics,
estimation, interpretation of tables charts and graphs, formulas and equations, percentage, and ratio.

Conclusions: Healthcare numeracy continues to be a challenge among nursing students with
implications for attrition and nursing staffing in the future.

References

1. Weeks KW, Pontin D, Coben D, Weeks A, Clochesy JM & Rowe D. (2022). Decoding the DNA of
healthcare numeracy: Establishing a mathematics and healthcare numeracy benchmark for nursing.
https://safemedicate.com/publications/ng/dna.html

2. Ozimek D, Kelch B, Zoellner J, Beaudry M & Valdes B. (2021). Math and Statistics Education for Nurses.
Austin TX: Dana Center. https://dcmathpathways.org/sites/default/files/resources/2021
-
01/math_for_nurses_convening_recommendations.pdf

3. Wendel A. (2020). An exploration of numeracy skills required for safe, quality nursing practice. UNLV
Theses, Dissertations, Professional Papers, and Capstones. 4090. http://dx.doi.org/10.34917/23469765

Lead presenter biography

John Clochesy

John, a prolific and award winning author, is a critical care nurse in the US with a PhD in nursing science
and a MA in psychology. He has 48 years of clinical, education, and research experience leading research
projects funded by the US National Institutes of Health ranging from weaning from mechanical
ventilatory support to serious games for health. He has collaborated with colleagues in the UK on
translational research related to healthcare numeracy for more than 20 years and currently serves as
Pan Ame

Methodological discussion/presentation: We focus on three concepts. First, we present a re
-
conceptualisation of the cognitive and physical modalities of a theory
-practice gap that is created by the
dominant organization mode of health professional education practice. Second, we suggest that
simulated clinical environments occupy the liminal spaces that exist between the ordered, symbolic and
abstract world of the Faculty classroom, and the situated, messy world of clinical healthcare practice.
Third, we maintain that technology
-enhanced boundary objects (TEBOs) function as simulation pedagogy
modalities. These have two functions. First, they support the transition of students across the liminal
space and boundaries between Faculty classroom and clinical practice setting. Second, they support
competence development and integration in nursing, in this case the healthcare numeracy skills needed