Clinical scholarship during a longitudinal integrated clerkship community research project

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UOW MEDICAL DEGREE

• 4-year graduate-entry course
• Early and longitudinal clinical experience
• Includes a 12-month longitudinal community-based integrated clerkship in Phase 3
Scholarship is a highly regarded academic pursuit, typically relating to university-based research (viz Boyer 1990).

Clinical settings offer a different perspective on scholarship.

Recent literature (Grigsby & Thorndyke 2011) has advanced the notion of ‘clinical scholarship’.

Includes aspects such as using a scientific approach to solve clinical problems, influence beyond the clinical setting, and improving health.
systematic observation and scientifically based methods to identify, describe, and solve clinical problems
• occurs in throes of practice; potential for learning how to improve clinical practice
• not limited solely to what occurs in the traditional clinical setting of the hospital, outpatient clinic, or clinical practice
• broad scope, beyond a disease process, into lives of patients and families, community arena
• often interdisciplinary; knowledge and methods from other disciplines to enhance understanding
• knowledge and expertise generated in clinical scholarship is of value. Helps us anticipate trends, needs; track and manage processes, outcomes, impact
• solve clinical problems, enhance clinical care, and improve health of patients, families, and communities.

GRIGSBY AND THORNDYKE 2011

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PREVIOUS EVIDENCE OF SCHOLARSHIP IN THE SAME COMMUNITY LEARNING ENVIRONMENT

A. Evidence of scholarly clinical practice in the learning environment
   1. *The general practice as an environment where scholarship occurs*
   2. *Learning in partnership with students*
   3. *The responsibility and obligations associated with being a teacher*
   4. *Improved systems*
   5. *Reflective practice*

B. Improved level of care

*Weston and Hudson 2014 Aust J Rural Health*
Phase 3 research project
Research project in Phase 3

COMMUNITY-BASED
STUDENT DRIVEN
AUTHENTIC LEARNING

• Each student undertakes a community-based project
• Own choice or interest
• Experience of continuum of research from design to data collection and analysis to dissemination
• Topics are varied: include chronic disease management, cancer screening rates, community perceptions of vaccination, health literacy, child health, access to health care in rural communities

• IS CLINICAL SCHOLARSHIP APPARENT DURING THIS RESEARCH ACTIVITY?
Outcomes for students

RESEARCH CAPABILITY - BEFORE

- Defining a research question/idea
- Writing a research protocol
- Finding relevant literature
- Critically reviewing literature
- Using quantitative research methods
- Using qualitative research methods
- Analysing and interpreting results
- Writing and presenting a research report
- Publishing results
- Applying for research funding

Pre
Outcomes for students

RESEARCH CAPABILITY - AFTER

- Defining a research question/idea
- Writing a research protocol
- Finding relevant literature
- Critically reviewing literature
- Using quantitative research methods
- Using qualitative research methods
- Analysing and interpreting results
- Writing and presenting a research report
- Publishing results
- Applying for research funding

Pre vs Post
CAN THE GRIGSBY & THORNDYKE FRAMEWORK BE APPLIED TO RESEARCH PROJECT EXPERIENCE IN THE COMMUNITY?

Additional evidence of clinical scholarship during the LIC?

Abstracts of 12-month community research projects undertaken by 5 cohorts of medical students (n=328) were analysed for indicators of clinical scholarship based on a framework proposed by Grigsby and Thorndyke (2011) including:

• using scientific methods to address a clinical problem,
• potential for improved clinical practice,
• interdisciplinary practice,
• extending clinical impact beyond the practice into the lives of patients.

Project topics and collaborations as indicators of scholarship
1. SOLVING CLINICAL PROBLEMS

EXAMPLES OF STUDENT RESEARCH PROJECTS

- Recommendations for antibiotic use to reduce port-a-cath infections
- A mobile app for improving accuracy of cardiac auscultation
Auscultation Trainer: A mobile application for improving cardiac auscultation accuracy.

Brandon Barks
Graduate School of Medicine, University of Wollongong

Introduction
Murmur identification accuracy is low among both medical students and practicing physicians. Accurate diagnosis of murmurs can reduce the burden of disease & reduce costs for patients and the healthcare system. There is evidence that murmur identification is a technical skill rather than an academic one and can therefore be trained by repeatedly listening to heart sounds. Several studies have demonstrated that electronic training can help improve the diagnostic accuracy of health professionals when it comes to murmur identification.

Aims
This pilot study aimed to create a mobile application and provide evidence that it could increase the auscultation accuracy of its users.

Methods
An Apple iOS application was developed and was distributed for testing to medical students and other health professionals. Users completed a pre-test (25 novel heart sounds with multiple choice answers) to assess baseline auscultation proficiency. They then use the application to listen to 500 repetition of each of five heart sounds (AS, AR, MS, MR, normal). They then completed a post-test to assess any change in their proficiency from baseline. Participants rated their confidence with their answers on both tests on a 0-10 scale.

Results
68 participants were recruited with 58 completing the pre-test. However, only 13 completed the study (n = 13). The mean age of these participants was 25.2 years (SD=5.0 years). The group was 76.9% female, all were medical students, they used iPhones, and resided in several different countries (5 AU, 1 NZ, 1 UK, & 6 US).

Analysis of the data revealed that use of the application resulted in increased performance (t(12) = 2.375, p = 0.035) & confidence (t(11) = 8.638, p < 0.001) (Figure 1 & 2). Additionally, it was discovered that variation from the study schedule (i.e. 50 repeats of each sound per day) was correlated with decreased gains in confidence but not performance (p=0.636, p=0.026).

Discussion
While performance and confidence gains were seen with the use of the application, they were not as large of gains as have been seen in other studies (46% vs. ~400%) (Barrett et al. 2004). Some reasons for this may include that this study:
1. Had a higher average performance (33% vs. 21%).
2. Had a smaller sample size and population heterogeneity.
3. Had participants listen to more sounds (500 vs. 250).
4. Used a longer test (25 vs. 10 questions).
5. Used sounds on the test that were different than the ones used for training purposes.

Limitations of this study included:
1. A small sample size.
   a. Limited to Apple devices only.
   b. Technical issues & attention.
   c. Anonymous nature of the study design.
2. Use of recorded heart sounds vs. real patients.

Conclusion
This proof-of-concept study was able to successfully demonstrate that a mobile application designed to help medical students and health professionals improve their ability to recognize heart sounds may be feasible. Additionally, since the performance gains seen were measured using novel recorded heart sounds, this lends credibility to the hypothesis that these improvements may carry over into real-world practice.

Future directions will include replicating the results in a larger study, determining the effect continuing to use the application on performance decay, and expanding the application to include Android users.

Figure 1 - Score
Figure 2 - Confidence
2. IMPROVEMENTS IN CLINICAL PRACTICE

EXAMPLES OF STUDENT RESEARCH PROJECTS

| Education session with GPs on vitamin D resulted in more screening and more people prescribed Vitamin D |
| Education on leg ulcer management |
| Increase in flu vaccination rate with intervention |
| Recommendations for ED management of STEMI, based on clinical audit |
| Determining barriers to engagement in cervical cancer screening |

STEMI: Segment Elevation Myocardial Infarction
Determining Barriers to Engagement In the National Cervical Screening Program In A Rural Area of Australia

Abigail Evans

Introduction:
Cervical cancer is one of the most common, preventable and curable cancers (Everett et al. 2011). Even though Australia has an effective readily available Cervical screening program, many women are reluctant to engage (AHVW 2011; AGDHA 2012). Screening examines women for cancerous and precancerous changes largely due to Human Papilloma Virus, by cytological sampling of the cervical squamous columnar junction cells by a “Papanicolaou smear” (AHVW 2011, AGDHA 2012, AGDHA 2013; NHMRC 2005; Papanicolaou & Traut 1941; Scarinci et al. 2010). According to literature geographically isolated women are failing to engage in regular Pap smears (AHVW 2011; Dietsch et al. 2003; Scarinci et al. 2010). However, we do not fully understand why they are resistant to screening.

Aims:
The current study aimed to identify, from a female perspective, barriers to attending the National Screening Program in a rural setting. Thus contributing to existing evidence, allowing appropriate measures to be implemented, targeting education, improving screening engagement and cervical cancer prevention.

Methods:
Following human ethics approval from the University of Wollongong, posters advocating medical student initiated research and survey were put up in the waiting room at a rural Medical Practice in NSW. The poster invited women, 18 years and over, attending the practice to complete an anonymous 14 question survey, containing quantitative and qualitative questions. Data collected from surveys was analysed using descriptive statistical analysis.

Results:
Twenty one women volunteered to for the study. The total 62 barans were grouped into six themes, the two most common included; modesty/shyness/embarrassment and busy lifestyle/forgetfulness/scheduling availability. It was apparent that majority of the women preferred female doctors to perform their Pap smears.

<table>
<thead>
<tr>
<th>Theme</th>
<th>N</th>
<th>%</th>
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<tbody>
<tr>
<td>Modesty/Shyness/Embarrassment</td>
<td>18</td>
<td>29</td>
</tr>
<tr>
<td>Busy lifestyle/Forgetfulness/Doctor availability</td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>Fear/Fear of pain/Fear of an abnormal result</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Lack of understanding/Exposure to Pap smears and screening/Unaware of benefits</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Bad experience/Uncomfortable/Painful</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Cost</td>
<td>3</td>
<td>5</td>
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Majority of participants were aged 20-39 years (62%). All but three participants had completed year 12 or higher education. All participants were or had previously been sexually active and all but one was currently using or had used contraception. In addition eight participants (30%) had previously or were smoking and five of the 11 participants aged 20-39 years had been vaccinated against HPV.

Only one participant had not had a Pap smear, all other participants had had three or more. Notably, the number of Pap smears did not increase with age. The time since participant’s last Pap smear ranged from two months to ten years. Twelve (57%) participants were undergoing a two yearly period for Pap smears, five (24%) were due for a Pap smear and two (9.5%) were overdue. Nineteen of the 21 participants responded correctly with the recommendation two year period for screening and all participants were receptive to receiving reminders for when their Pap smears were due.

Discussion:
Despite cervical cancer screening being readily available and accessible in Australia, there are a multitude of reasons why rural women are not attending Pap smears or fail to continue screening (AHVW 2011; Dietsch et al. 2003; Scarinci et al. 2010; Tacken et al. 2007). Geographical isolation, indigenous identification, increasing age and low socio-economic status are known risk factors to poor screening engagement (Dietsch et al. 2003; Scarinci et al. 2010; Tacken et al. 2007). Rural communities are often composed of these sub-groups, experience transitory shortages in clinicians and may consist of less educated women. However majority of participants appeared to understand pap smear importance and correctly reported the recommended interval. Potentially participant age and education contributed to most participants (75%), not being overdue for a Pap smear.

Conclusion:
This study highlights key barriers to Pap smears, specific to women living in a rural Australian community. Failure to engage in screening due to shyness, busy lifestyles or female doctors not being available puts these women at risk of preventable cervical cancer. The onus is on practitioners to encourage Pap smear engagement, educate patients on the importance of screening and to communicate well. Practitioners must aim to decrease patient’s embarrassment and fear, making the process as acceptable and comfortable as possible. Reminders and education on screening are the most effective methods of increasing screening engagement; participants were receptive to both reminders and education (Everett et al. 2011). Further research may identify targeted community-based strategies to encourage change, educate members and improve engagement in screening and vaccination in rural communities (Kobetz et al. 2009; Scarinci et al. 2010).

References:
[References listed here]
3. INTERDISCIPLINARY PRACTICE

EXAMPLES OF STUDENT RESEARCH PROJECTS

- Study made recommendations to North Coast TB Association about TB antibiotic treatment
- Recommendations for improvement in breastfeeding services
- Early cessation of breastfeeding
Early cessation of breastfeeding: Perspectives from community nurses and lactation consultants in Illawarra, Shellharbour and Shoalhaven

Introduction
It is well recognised that exclusive breastfeeding is recommended for at least the first six months of life due to the many health benefits it confers to mother and child. However, studies in Australia show that around only 15% of babies are being exclusively breastfed at six months despite high initiation rates at birth. Much of the research addresses physical problems relating to breast feeding. Milk insufficiency is cited as the most common reason mothers give for early cessation of breast feeding.

Results
The response rate was 68% comprising 19 responses out of a total of 28 distributed surveys. The respondents felt that psychological factors had as much influence as physical factors on early cessation of breastfeeding. They felt that nipple damage was more influential than milk insufficiency as cause for stopping breast feeding and that anxiety about mothers’ ability to feed their babies adequately was the most influential psychological factor.

Discussion
There is by far more literature surrounding physical factors influencing breast feeding cessation than psychological factors. Interestingly respondents in this study thought physical and psychological factors would have an equal influence on breast feeding cessation.

In terms of psychological factors respondents felt that sleep deprivation was the most common psychological factor affecting breast feeding however they felt that anxiety (about mothers’ ability to feed their babies) would have the most influence on stopping breast feeding.

This may be an area for further in-depth study to investigate if mothers feel that psychological factors have as much influence as physical factors on stopping breast feeding then a more holistic approach to supporting breast feeding women in terms of addressing anxiety as well as perceived milk insufficiency or nipple damage may help improve breast feeding duration.

It is probable that multiple factors influence breast feeding cessation including physical and psychological factors. It is possible that we currently focus mainly on the physical factors (specifically milk insufficiency) and may be missing other underpinning reasons influencing breast feeding cessation.

Conclusion
The findings suggest that we could be better supporting breast feeding women in the Wollongong, Shellharbour and Shoalhaven areas by exploring their thoughts about breast feeding a little deeper. Further in depth qualitative study regarding reasons behind stopping breastfeeding is indicated.
4. BEYOND THE DISEASE PROCESS INTO THE LIVES OF PATIENTS AND FAMILIES

EXAMPLES OF STUDENT RESEARCH PROJECTS

<table>
<thead>
<tr>
<th>Project Description</th>
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<tbody>
<tr>
<td>Technique check for use of puffer for COPD</td>
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<tr>
<td>Opportunity to provide fact sheets on vaccination for children</td>
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<tr>
<td>Development of a warfarin information sheet for patients</td>
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<td>Impact of community-based exercise on well-being</td>
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The benefits of community-based exercise on adolescent well-being

Kevin Rourke
Graduate School of Medicine, University of Wollongong

Aims
It has been established that exercise improves well-being. The Theory of Planned Behaviour purports that an activity being beneficial is not enough on its own. The individual needs to believe that the activity is beneficial in order for the activity to be pursued. The purpose of this study is to determine if adolescents believe their well-being has improved after a community-based fitness course.

Recruitment and funding
The Shoalhaven Police and Community Youth Club (PCYC) ran a 4-week fitness course. The classes involved games, sports and non-contact boxing drills. The course was promoted at 3 high school assemblies with the assistance of NSW Police. Further promotional help was received from 2ST radio, South Coast Register, UOW Media, WIN News and ABC News.

Funding was raised by Sausage sizzles at Bunnings Nswara and from a special grant from Shoalhaven City Council for $2,500.

Methods
During registration for the course, carers were informed that a survey would be handed out to adolescent participants after the last class and consent was obtained. The research was explained to both carers and adolescents and an opportunity to answer questions was given. The survey was a modified Warwick Edinburgh Mental Well-being Scale (WEMWES).

Results: 31 adolescents completed the survey. As a group, participants reported that they believed their well-being had improved throughout the duration of the activity. The mean score for each survey item showed an improvement in every area of well-being for this sample of adolescents.

74% of adolescents reported that they felt ‘more’ or ‘a lot more’ confident since starting the fitness course.

Discussion: The results of this study suggest that group exercise in a supportive, community environment may strengthen adolescents’ belief that participation in this type of activity improves their well-being. The results suggest that further research on a larger scale with a control group is warranted.
Other examples

SCHOLARSHIP IN THE COMMUNITY PLACEMENT RESEARCH

- Need for ED translation service in Emergency Department
  - Interdisciplinary
  - Into the lives of the community
  - Improved outcomes

- All projects employ systematic observation and scientifically based methods to identify, describe, and/or solve clinical problems or community issues

- Dissemination of results to practice staff, community

- 40 publications and conference presentations:
  (~10% of students)

- Increasing capacity of general practice preceptors for research
"Dr. My 5 yr old is yellow!"
An Unusual Case of Paediatric Jaundice

GBH Grand Rounds
Tues 8th November 2012
Presenter: Theresa Woodall
PhD 3 Medical Student
University of Wollongong
Conclusion

COMMUNITY-BASED RESEARCH PROJECT REPRESENTS CLINICAL SCHOLARSHIP viz. GRIGSBY AND THORNDYKE AND BOYER’S SCHOLARSHIP OF ENGAGEMENT

• Medical students undertaking community-based research during a longitudinal placement engage in clinical scholarship.
• Includes identification of ways to improve clinical practice and patient health.
• Important step in engaging medical students with their community, and development of the clinician researcher.
Questions