INNOVATION IN LEARNING – AN INTERPROFESSIONAL APPROACH TO IMPROVING COMMUNICATION.

Abstract

Inter-professional education (IPE) is recognised as a major way of introducing students in the health professions to the importance of teamwork and communication in the delivery of excellent health care. This pilot project evaluated mixed versus single discipline group tutorials of nursing and medical students as a way to promote IPE and understanding of communication. Four tutorial sessions were video-recorded and analysed using a video analysis coding grid. Additional data were drawn from student evaluations and assessment of group participation and were subjected to quantitative and qualitative analysis. The case study as portrayed in the DVD was thought to provide an effective learning tool by both sets of students. Medical students rated the need for mixed group tutorials significantly lower than the nursing students who thought the tutorial activity helped with an appreciation of the importance of communication to effective teamwork. However, medical students in the single discipline group did not understand the nursing role. The resources fostered reflection on student's own professional role as well as others; however, the importance of communication within the nursing role needs to be recognised by nursing students and curriculum designers.

Introduction

Health professionals are expected to work as a cohesive team but there is a tendency by faculty to abrogate the responsibility for teaching inter-professional communication skills to those in the clinical arena who may have other priorities. The importance within a clinical environment of well functioning teams has been clearly highlighted in health enquires where patient outcomes were compromised (Foster, 2005; Wakefield, 2007). This paper presents the results of a pilot project with an on-campus tutorial using an inter-professional education (IPE) strategy to emphasise the importance of communication skills with students of nursing and medicine. Professional communication skills provided the educational focus and a patient with Diabetes Type II, provided the contextual learning.

Both nationally and internationally, concern for improved communication amongst health professionals has been demonstrated in resolutions and plans in response to conservative figures from the United Kingdom, United States of America and Australia that suggest that 3.2 -16.6 percent of patients are harmed as a result of human error whilst in hospital (World Health Organisation, 2001). The clinical importance of effective communication and teamwork to patient outcomes is well recognised (Minogue, 2008). Consequently, methods to improve communication are a goal for all areas of health care worldwide (Ktug, 2008; Velji et al., 2008; Al-Benna et al., 2009; Manser, 2009; Reader et al., 2009) and it is important that strategies are put in place during health professionals' baccalaureate programmes of study (Hind et al., 2003).

In Australia, the multidisciplinary clinical team is a cornerstone of the new models of healthcare being developed to meet the challenges presented by an ageing population,

a growing incidence of chronic disease and the need to shift the focus of healthcare away from treatment of existing disease and more towards disease prevention and health promotion. Consequently, skills in interprofessional practice is seen as fundamental to these models and IPE is increasingly being adopted by universities as the best way of preparing health sciences students for the type of clinical practice they will encounter on graduation. IPE has been defined as occurring whenever "two or more professions learn with, from and about each other to improve collaboration and the quality of care" (CAIPE, 2002). A recent review of IPE and its effects on clinical practice suggests that IPE positively affects patient satisfaction, clinical team behaviour and patient safety through reduced error rates (Reeves et al., 2008)

Learning and teaching inter-professional communication and teamwork through IPE is believed to be beneficial to students particularly if introduced early and continued throughout their undergraduate programme (Hind et al., 2003). Although clinical health schools frequently share teaching resources through combining classes this has generally been for economy of scale and fiscal management rather than to develop skills in interprofessional collaboration and teamwork. Unfortunately, this has often resulted in large group lectures rather than interactive shared learning through small group engagement (Horsburgh et al., 2001).

Research with newly qualified healthcare professionals has shown that benefits from IPE persist and result in demonstrable changes in work practice (Heard et al., 2001). As Leaviss found, IPE is helpful to future work practices, giving students greater understanding of the roles of other health professionals, in the areas of referrals, skills awareness, professional empathy, confidence, and holistic awareness (Leaviss, 2000). IPE has been found to be variously effective in both clinical skills laboratories (Kilminster et al., 2004) and in more conventional university-based tutorials (Ker et al., 2003). Kilminster and colleagues (2004) in a pilot study in the United Kingdom,

conducted tutorials with a mixed student group from nursing, medicine and pharmacy within a clinical laboratory setting. The students positively evaluated their learning in this context particularly in the areas of inter-professional communication and understanding of roles. However, no studies were found that examined the relative benefits of inter-disciplinary versus single discipline groups learning environment using IPE. The logistics and costs of an inter-disciplinary curriculum warrant closer examination of its relative benefits and this project endeavours to contribute to this discussion. This pilot project was founded on practice-based learning materials formulated specifically for undergraduate nursing and medical students in the setting of inter-professional small-group tutorial.

Aims

The aim of this pilot project was to evaluate a tutorial format to promote IPE with nursing and medical students in mixed (nursing and medical students) versus unmixed (nursing or medical students) tutorial groups. Ethical approval was received from the university human research ethics committee and student participants signed a consent form.

Methods

A mixed method approach was used in recognition that both quantitative and qualitative designs have their limitations (Polit & Beck, 2007). The underlying assumption is that a combination of the two forms of research methods provides an enhanced sense of appreciation of the issue under examination, than would be the case with qualitative or quantitative methods alone (Creswell & Plano Clark, 2007). This pilot project used a survey with some forced and open-ended questions to elicit the

students' thoughts and understanding on aspects of both the content of the tutorial and the quality of the DVD as a learning resource. In addition, each tutorial session was video recorded and team members analysed these recordings to obtain a deeper understanding of group dynamics and interactions. A video analysis coding grid was adapted from one developed by Abasi and Taylor (2007) for observation of adult literacy skills. Changes were made from their focus of evaluating literacy skills to reflect the study's focus on promoting IPE. Specifically the changes that were made included replacing the elements of *Facing* with *Body Language*, *Verbalising* with *Engagement*, and removing the element of *Manipulating materials. Body Locomotion* remained in the grid, retaining only *laughing, listening* and adding *nodding* and *choosing to write*. (see Appendix A). The coding grid provided an organised structure to the data analysis. Two team members viewed the videos together and marked their grid when a particular behaviour was seen. At times they discussed their interpretations and formed a collaborative analysis which is suggested as a way to add rigour to a study (Abasi & Taylor, 2007).

Sample

A convenience sample of 16 third year students from the Bachelor of Medicine (four year degree) and 16 Bachelor of Nursing (three year degree) programs were voluntarily recruited to trial the IPE tutorial session. The students were assigned to one of four groups of eight students. Of the four groups, two consisted of equal numbers of nursing and medicine students, one consisted only of nursing students and one contained only medical students. With regard to the place of communication skills in the curriculum, nursing students have a first year subject dedicated to understanding communication and each semester's clinical subjects includes

assessment of their communication skills in practice. In contrast, the medical program features an integrated curriculum with formal teaching and assessment of communication skills occurring throughout the first two years of the program.

Setting

The tutorials were conducted in a tutorial room on the university campus set up to facilitate interaction between group members and allow note-taking. Refreshments were provided to encourage a relaxed environment and to show appreciation for their contribution to the project. Three academics with experience in IPE from the research team acted as tutors for the sessions. The tutor sat with the students around the table.

A video camera was set up in a corner of the room and ran for the duration of the two-hour tutorial. There were no other persons in the room during the tutorials. The tutorial sessions were in addition to students' core learning and were not linked to any student assessment. At the end of each tutorial, participants were given two movie passes in appreciation of their attendance.

At the outset of the tutorial, all students were asked to list what they thought were the three primary roles of junior doctors and of nurses. They then viewed a professionally developed DVD of a patient's 5-day hospital stay that had been developed by the research team to provide high quality, structured, realistic situations designed specifically to meet the project learning objectives and to act as triggers to stimulate discussion (Gilbert et al., 2000). The DVD depicts a patient with Type II diabetes, who requires admission to the hospital for immediate treatment of a respiratory infection and stabilisation of his diabetes. The DVD followed the patient's on-going

care through to hospital discharge a week later via four scenes using professional actors and film crew. The actor's roles included the patient, a graduate first year registered nurse, an experienced nurse, a first year doctor and the patient's daughter. A senior doctor was involved via telephone communication with both the junior doctor and junior nurse. A Tutor's Guide was developed to provide structure and consistency in the delivery of each tutorial.

The discussion centred on various aspects of the roles and communication between medical and nursing staff and patients in an acute care setting. Expert educators in nursing, medicine and education assessed the DVD content to ensure the vignette content was relevant and congruent with the learning objectives.

At the end of the tutorial, the students were asked to evaluate the DVD and tutorial format by indicating their extent of agreement (or otherwise) to 11 items using a four point Likert scale from 1 = 'Strongly disagree', 2 = 'Disagree', 3 = 'Agree', or 4 = 'Strongly agree'. The items were developed from the literature and one of the research team member's expertise in evaluation of student learning.

Data analysis

Student's responses for the open-ended question at the beginning of the tutorial were analysed using content analysis where data were grouped around central, recurrent ideas (Yin, 2003). This analysis was also iterative, with two members of the research team independently examining the data in a recursive manner, searching for similarities across the cases using constant comparison. Discussion between the two team members occurred with consensus of similar ideas organised into categories.

The student evaluations of the tutorial were analysed using Statistical Package for the Social Sciences (Version 14). Students' responses were grouped by discipline and tutorial group. Differences were compared using the t-test for parametric data and the Mann-Whitney test for non-parametric data. Multivariate analysis of variance was used to evaluate differences in responses between the independent variables 'Student type' and 'Group type'. Statistical significance was set at < 0.05.

Analysis of the video recording was conducted by two of the researchers following Abasi and Taylor's qualitative ethnological technique (2007). We were looking for evidence of communication behaviour and used the tailored analysis grid as an instrument for recording each time we saw evidence of the behaviour (Abasi and Taylor, 2007). In line with the study's research topic, we included the three elements used by Abasi and Taylor (2007) of *Body Language, Engagement* and *Body Locomotion* where appropriate. In the first element, *Body Language* we identified eye contact with the speaker and with group member/s, and whether no eye contact was made as an indication of the level of attention and support amongst group members. Through the second element, *Engagement*, we considered appropriate indicators to include body placement, engagement with the DVD, questioning, explaining, discussing, prodding of others, the need to be prodded, elaborating and providing an illustration. Utilising the last element, *Body Locomotion*, we looked for the non-verbal behaviours of laughing, listening, nodding and note taking, each important to positive group interaction (Abasi and Taylor, 2007).

Results

Twenty-nine students took part in the project, comprising 13 medical students and 16 nursing students. The other three medical students were unable to attend their session due to illness and last minute timetabling issues. Three groups had seven participants and one had eight. There were two male nursing student and three male medical students – the remainder were female. All of the nursing students knew each other as did the medical students but they did not know individuals from the other health profession.

Junior doctor's and nurse's roles

Students' understanding of the three most important roles of junior doctors and nurses showed some areas of congruence. Both nursing and medical students agreed that junior doctors should be responsible for assessing the patient and ordering medication, treatment and investigations. Medical students also listed communication as one of the primary roles for both themselves and for registered nurses (see Table 1).

(Table 1 here please)

Students' evaluation of the DVD and the tutorial is shown in Table 2 and indicates that in general, they positively evaluated all aspects of the tutorial (mean scores ranged from 3.40 to 3.77 out of a maximum of 4), with the benefit of having the DVD to provide a context, scoring highest (Item 2). No significant differences between medical and nursing students were found on any of the items.

(Table 2 here please)

With and between groups analyses revealed statistically significant differences for two items. Analysis of Item 5 "The case study was suited to inter-professional

learning" revealed a significant difference in group-type whereby participants in the unmixed groups rated the case study as being more suited to IPE than students in the mixed groups, regardless of student-type (P = 0.04, Mean = 3.58, SD = 0.58) (see Figure 1).

(Figure 1 here please)

The other significant difference was seen for Item 11, "The tutorial has helped me appreciate the importance of effective inter-professional teams in the delivery of patient care". As can be seen from Figure1, medical students were more in agreement that the tutorial encouraged appreciation of effective inter-professional teams in the delivery of patient care when they were in the unmixed group compared to the mixed groups while nursing students were in agreement with this rating whether they were in mixed or unmixed groups. This interaction was statistically significant (P = 0.04, Mean = 3.56, SD = 0.57).

Video material

Analysis of the 480 minutes of video recording indicted that the tutorial was successful in that all groups engaged with the tutorial material, the DVD, and each other as evidenced by the video analysis coding grid results. IPE occurred through robust discussion in the area of dual roles within the mixed groups. In contrast, discussion of the other profession's role in the non-mixed groups was limited indicating less success in achieving this tutorial objective.

Themes were developed through content analysis (DeSantis and Ugarriza, 2000) and constant comparative technique of the ethnograms. Three themes came to light through the resulting 'ethnogram'. The first theme, *Sense of Belonging*, although evidenced in all groups, was obvious from the onset in the non-mixed group. This was observed immediately through laughing, responding to each other's comments, conversing freely, and even finishing other's sentences (in the case of the all nursing group). No significant prompting was required. Those students in mixed groups,

however, took up to half the tutorial time to 'open up', to work together in this group context, and some required significant prodding. One colourful example of this came though a medical student who had spoken only when prompted, until half way through the tutorial. During a discussion concerning patient education, he shared a story from his own experience when attending an Australian National Rural Health Conference on how important education is for understanding and engagement in one's own health. He explained that:

> *A presenter at the conference who worked in Aboriginal communities*, [which was] *obviously writhe in diabetes etcetera. His whole presentation was* [about how] *he goes to outdoor communities like in the bush.... [and] how he created this character called the 'Sugar Man'. He creates a huge man out of these big stones which represent body parts so you can walk around this big man. So his whole thing is to educate the Aboriginal people to be aware of their illness, and that education has a huge effect on compliance.....and he has all the stats to support this.*
> (Medical student 5)

From this point onwards this medical student joined in freely with the rest of the tutorial discussion and stimulated group discussion whereas prior to this he was passive.

The second theme that emerged was *Role Understanding.* It was apparent that those in the mixed groups benefited from being able to hear about both the role of the nurse and the intern as seen by the alternative profession. For example, when the scenario showed the nurse obtaining a drug order over the phone, the nursing students were asked by the medical students concerning how a nurse should take a phone call order for a drug legally. When in unmixed groups, the medical students focused on their future role with little discussion regarding the role of the nurse.

The third and final theme was *Communication Style.* These communication styles were subsequently classified as verbal or reserved (this being possibly affected by cultural background). We discovered that communication style appeared to be influenced by style of social interaction, but not gender or professional role, when in

both mixed and unmixed groups. Those who were reserved would respond when asked or prodded but they did not volunteer information or comment. There were two students who were quiet throughout, only responding when directly asked but were frequently able to give detailed comments. It was noted that Asian students tended not to elaborate, question or illustrate in response to other's comments.

Discussion

This pilot study saw the evaluation of a tutorial format designed to promote IPE in the area of communication skills with nursing and medical students in either mixed or single discipline student groupings. The students considered that the tutorial and the DVD provided a useful learning experience and reflected a realistic clinical situation which supported their learning in the area of interprofessional communication (Andersen et al, 2008). Some authors (Nestel & Tierney, 2007) suggest student role play as an additional way to model good communication.

The mixed method of data collection including video recording of all sessions proved to be invaluable for analysis. The videos allowed for the capture and analysis of audio, actions and extraneous data that inter-relate (McCormick, R., 2008). Although in some studies, the presence of the video appeared to influence the students' action (Abasi and Taylor, 2007), in this study there was no evidence to think that the students were influenced by having the video recording the session. This may be due to the fact that the video was stationary and did not need to have a technician operating it, thus making it less obvious or obtrusive.

Two of the researchers analysed the video data together thus having the ability to pause and replay the video and immediately discuss the situation. This enhanced the interpretation of the video data and 'configurational validity' was encouraged and the trustworthiness increased (Goldman–Segall, 1995).

Not unexpectedly, the single discipline tutorials saw the students engage more freely from the start as they knew all members of the group and perhaps felt more relaxed in their company. It was also noted that cultural norms may have affected student's participation in this small group learning as the Asian students were quieter even in an unmixed group when they already knew all other participants. This is congruent with what is known about the reticence that is a characteristic of many Asian cultures (Jones, 1999). However, Gwee (2008) suggests that with the right learning environment the cross-cultural experience can prevail over perceived cultural barriers. A safe learning environment is crucial to effective learning particularly when communication is a focus (Moscaritolo, 2009) and further tutorial sessions may be needed to build this trust.

The nursing students evaluated highly the effectiveness of the tutorial in their appreciation of the importance of inter-professional teams in patient care. By contrast, the medical students rated the tutorial more highly when in an unmixed group. Although this is consistent with findings elsewhere that medical students may be less receptive to IPE than other health professional students (Rose et al, 2009), it also suggests that effective IPE may not necessarily be limited to interactive situations in which students are able to learn from, with and about, each other (Oandasan & Reeves, 2005). Importantly, however, the lack of detailed discussion by the students on the

other profession's role when in single group tutorials supports the notion that shared learning is critical to the effectiveness of IPE (Kilminster et al, 2004).

All students considered the case study suited IPE, however, students interacting as unmixed groups rated this item higher than when interacting as mixed groups. This unexpected result may be due to a number of factors such as the specificity of the case study, designed directly for these two cohorts, being seen to make a significant contribution to any learning situation (Andersen et al, 2008). Alternatively, it may be that this finding was simply a sample effect due to the small number of students in the trial. Further large-scale evaluations are needed to confirm this finding.

This study found that the medical students focussed almost exclusively on the communication skills of the junior doctor in the DVD and showed comparatively little concern for that of the two nurses, regardless of whether poor or good communication was being portrayed. As some of the medical students commented at the time, they were acutely aware that they would soon be in the junior doctor's position with significant responsibility for patient's overall management, so this was his/her obvious focus when viewing the DVD. This may indicate deficits in the medical students' understanding of the potential impact on patient outcomes when interprofessional communication is sub-optimal (Ktug, 2008). Conversely, the nursing students focused on both the doctors and nurses' communication and were more comprehensive in their assessment of the communication style of both professional groups. This may reflect their acknowledgement that as a registered nurse they depend on effective communicate with all health professionals (Williamson, 2003).

Disturbingly, the nursing students did not list communication – a core requirement for successful teamwork (Manser, 2009) - as one of the three most important roles for registered nurses. Nursing students may benefit from a better understanding of the relationship between good communication and their role as nurses and this may need to be curriculum driven. Medical students did recognise the importance of communication as an important skill for both professional groups but as mentioned above, they were not critical of poor communication by the nurse in the DVD. As health enquiries have noted, effective communication and collaboration across professional teams is essential for good patient outcomes (Foster, 2005) and this study's findings support the effectiveness of explicit, preferably integrated, undergraduate education to stress the importance, and assist in the development, of effective communication skills within and across professional groups.

Limitations to this project included the small sample size of 29 participants taken from the Schools of Medicine and Nursing. The students volunteered and thus may have been more enthusiastic than their peers. Bringing the medical and nursing students together was difficult logistically even with these small numbers. Formal incorporation of IPE into both nursing and medical students' curriculum will obviate the timetabling difficulties experienced; however, it remains an expensive form of learning with the small class sizes (Gilbert, 2005). This pilot only permitted one tutorial session and it might not be long enough to achieve benefits. The project was not able to measure the impact on individual's communication ability, only their perceptions.

Conclusion

This pilot project evaluated the effectiveness of a case-based interprofessional tutorial format using mixed and single discipline tutorial group sessions for undergraduate nursing and medical students to introduce the principles and skills necessary for inter-professional communication. Although some significant differences between groups were found, all students agreed that this type of interprofessional learning activity enhanced their understanding of the importance of communication in quality clinical practice.

The project also highlighted the desirability of a 'top down' approach in which the development and implementation of IPE activities are provided at the School or Faculty level rather than by individual subject champions, to facilitate the full application of IPE. This should include incorporating IPE within the faculty and school's learning and teaching philosophy and developing relevant policies and procedures that allow IPE activities to be implemented.

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Table 1: The three most important roles of junior doctors and nurses

Students	Junior doctors	Nurses
Medical students' perceptions	1. patient assessment & history 2. prescribe medications, treatment or investigations 3. communication with colleagues, patient and family	1. provide support, comfort & needs/treatment and medication 2. patient observations 3. communication with doctors, patient & family
Nursing students' perceptions	1. patient assessment 2. prescribe medications 3. order tests & interpret results	1. provide comfort, support, treatment/manage signs & symptoms 2. patient observations & documenting/recording 3. patient assessment

Table 2: Combined students' ratings of the DVD and tutorial   (N=29)

| Item	Mean [possible scores 1-4 with 4 = "strongly agree"] (SD)
1. The DVD was of high quality and is a good resource for your school.	3.42 (0.86)
2. The DVD was helpful in providing a context for the learning environment	3.77 (0.43)
3. The case study was of an appropriate complexity for my 3rd year level	3.58 (0.50)
4. The medical terminology used in the case was appropriate for my 3rd year level	3.54 (0.51)
5.The case study was suited to interprofessional learning	3.58 (0.58)
6. The tutorial format provided a supportive learning environment	3.46 (0.51)
7. The tutorial format encouraged interactive contributions from all members of the group	3.58 (0.50)
8. The tutorial format helped me to integrate and apply theoretical knowledge in the clinical context	3.56 (0.54)
9.The tutorial format encouraged active learning	3.50 (0.58)
10. The tutorial has helped me appreciate the contribution that other health professionals make to patient care	3.40 (0.62)
11. The tutorial has helped me appreciate the importance of effective interprofessional teams in the delivery of patient care	3.56 (0.58)
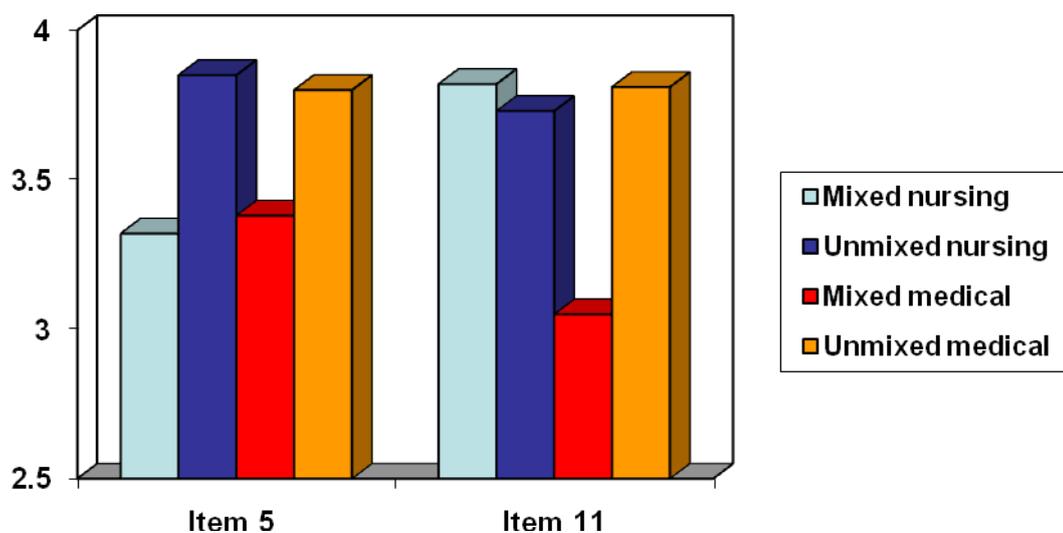
Figure 1: Student type and group type for the Item 5: *"The case study was suited to interprofessional learning"*.
Student type and group type for Item 11: *"The tutorial has helped me appreciate the importance of effective interprofessional teams in the delivery of patient care"*.