

MULTIDISCIPLINARY/INTERDISCIPLINARY EDUCATION

Influence of an Interprofessional HIV/AIDS Education Program on Role Perception, Attitudes and Teamwork Skills of Undergraduate Health Sciences Students

VERNON R. CURRAN¹, J. GERRY MUGFORD¹,
REBECCA M. T. LAW² & SANDRA MACDONALD³

¹Faculty of Medicine, ²School of Pharmacy, and ³School of Nursing,
Memorial University of Newfoundland, St John's, Newfoundland, Canada

ABSTRACT Purpose: *An evaluation study of an undergraduate HIV/AIDS interprofessional education program for medical, nursing and pharmacy students was undertaken to assess changes in role perception, attitudes towards collaboration, self-reported teamwork skills and satisfaction with a shared learning experience.*

Methods: *A combined one group pretest-posttest and time-series study design was used. Several survey instruments and observation checklists were completed by students and tutors before, during and after the educational program.*

Results: *Students reported greater awareness of roles and the continuous exposure to interprofessional learning led to improved attitudes towards teamwork. Standardized patients were effective in fostering an experience of realism and motivating collaboration between students.*

Conclusion: *A problem-based learning approach combined with standardized patients was effective in enhancing HIV/AIDS interprofessional role perception, enhancing attitudes towards collaboration and interprofessional approaches to HIV/AIDS care and fostering confidence in teamwork skills among pre-licensure health sciences students.*

KEYWORDS *Interprofessional education, program evaluation, HIV/AIDS, interprofessional relations, attitudes.*

Author for correspondence: Vernon R. Curran, PhD, Director of Academic Research and Development, Associate Professor (Medical Education), Centre for Collaborative Health Professional Education, Faculty of Medicine, Memorial University of Newfoundland, St. John's, Newfoundland A1B 3V6 Canada. Tel: +1 709 777 7542. Fax: +1 709 777 6576. E-mail: vcurran@mun.ca

Introduction

It has been suggested that comprehensive health care services require the broad spectrum of knowledge and expertise that no one practitioner can provide (Lowe & Herranen, 1981; Fagin, 1992). Interprofessional collaboration and education have been popularized as strategies for promoting a more inclusive, coordinated approach in both health care delivery and health professional education (Lowe & Herranen, 1981; Makaram, 1995; Liedtka & Whitten, 1998). Drinka (1996) describes an interprofessional healthcare team as a group of health professionals from different professions who engage in planned, interdependent collaboration. Interprofessional education has been defined as a process by which a group of students (or workers) from health-related occupations, with different educational backgrounds, learn together during certain periods of their education (Areskog *et al.*, 1988).

Interprofessional approaches to patient care are believed to have the potential for improving professional relationships, increasing efficiency and coordination, and ultimately enhancing patient and health outcomes (Wee *et al.*, 2001; Reeves & Freeth, 2002; Cullen *et al.*, 2003). Effective interprofessional teams have been characterized by the knowledge and understanding of other professions which team members demonstrate, as well as their ability to appreciate one another's skills and contributions in patient care (Areskog, 1988; Drinka, 1991; Drinka, 1996; Fitzpatrick, 1996; Clark, 1999). Parsell and Bligh (1999) suggest that interprofessional education enhances learners' understanding of other profession's roles, responsibilities and functions to prevent the formation of negative stereotypes (Parsell *et al.*, 1998).

Interactive approaches to learning, which build upon principles of small group collaborative learning, are believed to be ideal methods for facilitating interprofessional education and fostering the insights and skills required for interprofessional teamwork (Parsell *et al.*, 1998; Parsell & Bligh, 1999). A highly regarded method for facilitating interprofessional education has been the problem-based learning method or PBL. PBL encourages dialogue, interaction, articulation, critical thinking and learning from one another. Interprofessional PBL enables the knowledge base of various professions and disciplines to be integrated in the planning of interprofessional interventions. The PBL approach also teaches students the value and importance of listening to one another and sharing decision-making as they work to resolve health care problems.

Interprofessional approaches to providing care to Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) patients have been recommended because of the chronic nature of the disease, as well as the physical and psychosocial aspects of living with the infection (Abbaticola, 2000; Tsisis, 2001; Le *et al.*, 1998). In an effort to introduce more opportunities for learning on HIV/AIDS, our team designed an interprofessional education module for senior nursing, pharmacy and medical undergraduate students (e.g. students in the clinical-novice stage of pre-licensure health professional

education). At the time of the study, each of the student groups were enrolled in programs which were located within the same academic health sciences centre complex, and students had the opportunity to socialize with one another as a result of this proximity.

The primary aim of this interprofessional education module was to enhance students' ability and confidence in participating on an interprofessional team, while at the same time learning to develop an interprofessional care plan for simulated HIV/AIDS patients. A total of 133 health sciences students were enrolled in the module: 45 third year nursing students, 62 second year medical students, and 26 final year pharmacy students. The program was designed using a PBL format involving small groups of 8 to 10 students from each of the professions. Each interprofessional learning group was assigned a tutor and met on three occasions for approximately one hour over a three-week period. Sessions 1 and 2 were focused around a paper-based case study of an HIV/AIDS patient. Session 3 provided an opportunity for students to interact with a Standardized Patient (SP), who simulated a HIV/AIDS patient (Table 1). The students were presented with a brief history of the SP prior to meeting him or her and were expected to collaborate as an interprofessional team in interviewing the SP and preparing an interprofessional care plan.

An evaluation of the HIV/AIDS interprofessional education program was undertaken by the research team during the winter semester of 2003. The main goals of this study were to evaluate role perception change, attitudes towards interprofessional teamwork, self-reported teamwork skills and participants' satisfaction with the shared learning experience. The specific questions which guided the evaluation were:

1. How does participation in an interprofessional education program influence role perceptions of different health professions?
2. How does participation in an interprofessional education program influence attitudes towards interprofessional teamwork?
3. How do students' self-reported teamwork skills differ upon participation in an interprofessional education program?
4. How satisfied are students with participation in an interprofessional education program based on problem-based and standardized patient learning formats?

Methods

A combined one group pretest-posttest and time-series study design was used. Four different evaluation instruments were used in evaluating role perception, attitudinal, confidence and observational data (Table 2). The Role Perception Checklist, developed by Bowmer, Law, Burford, Boland, & MacDonald (1996), was administered to students at the beginning of the first interprofessional

Table 1. HIV/AIDS Scenarios for Standardized Patients

| | Susan | Steve | Roy |
|-----------------------------|--|--|---|
| Age / Gender | 25 F | 19 M | 52 M |
| Presenting complaint | HIV positive and pregnant. She wants to ensure that her baby is healthy. | HIV positive. A court order was given that he be treated by the HIV clinical team or be remanded to HM Penitentiary. | “I came today because I’m really feeling sick. I know I can’t put off the treatment any longer.” |
| Symptoms | Pregnant; otherwise fairly well. No physical side effects from meds but some depression on occasion | None | Anxiety, restlessness, confusion, depression |
| CD4 Count | Fluctuating | Above 500 | Below 50 |
| Viral Load | Were undetectable, but now increasing | log 3.4, 5000 copies | > log. 5.8, > 750,000 copies |
| Medications | Treatment for HIV – AZT, 3TC, and Kaletra | Uses illegal drugs, no prescription drugs, no over the counter drugs | 6 aspirins/day for headaches. Drugs from doctor for migraines. Treatment for depression. Today will agree to HAART (highly active antiretroviral therapy) |
| Occupation/Financial status | Works for temporary agency at present. Left her job in a day care center when her illness was diagnosed. No financial security | Has worked the sex trade in Vancouver and St. John’s; has occasionally worked as a waiter in bars and clubs. No money. | Heavy equipment operator. Secure; has always worked, owns his home and has insurance which will cover drug costs. |
| Affect | Excited that she is pregnant yet anxious at the same time. | Appears very intelligent and confident. Trying to put on a good front but scared to death. Not trusting of those in authority. | Sick and upset. He has decided to accept therapy. He wants very much to keep his marriage together and to make sure that his family is taken care of. |

Table 2. Summary of Evaluation Instruments

| Evaluation Instrument | Content | Scale Type | Scale completed by |
|--|--|---|---------------------------|
| Role Perception Checklist (Bowmer et al., 1996) | Respondent selects from a checklist of 14 roles those which represent other profession's role: <ul style="list-style-type: none"> ● care giver ● educator ● counsellor ● coordinator ● manager ● advocate ● researcher ● helper ● diagnostician ● coach ● prescribe medications/treatments ● prepare and administer medications ● dispense medications ● assess psychosocial | Nominal scale: 1 if selected; 0 if not. | Students |
| Weekly Team Inventory (Clark, 1994) | 17 items, examples include: <i>This week as a professional, "I am confident in my role" vs. "I am confused about my role"</i> | Items rated using a 5-point semantic-differential scale. Total score 17 to 85. Higher score indicates more positive attitudes towards teams and teamwork. | Students |

(continued overleaf)

Table 2. (continued)

| Evaluation Instrument | Content | Scale Type | Scale completed by |
|-------------------------------|--|--|---|
| Participant Evaluation Survey | <p><i>This week, I feel, “Comfortable with the other team members” vs. “Uncomfortable with the other team members”</i></p> | | |
| | <p><i>This week, I believe that teams, “Are ineffective in developing solutions to problems” vs. “Are effective in developing solutions to problems”</i></p> | | |
| | <p>Survey included the following scales and question types:</p> | <p>Bowmer <i>et al.</i> (1996) Role Perception Checklist. Hepburn, Tsukuda & Fraser (1996) Team Skills Scale. Two open-ended questions for students to comment on perceived likes or dislikes related to participation in the program.</p> | <p>15-item Team Skills Scale measures self-reported teamwork skills using a Likert scale ranging from 1 = Poor to 5 = Excellent. Total score 15 to 75. Higher score indicates more positive self-assessment of team skills.</p> |

(continued overleaf)

Table 2. (continued)

| Evaluation Instrument | Content | Scale Type | Scale completed by |
|-------------------------------------|---|---|---------------------------|
| Team Dynamics Observation Checklist | Collected observations about students' participation in the interprofessional team process, emerging leaders in the group, communication and conflict among team members, meeting skills, and outcomes. | Information summarized and analyzed using the constant comparison method. | Tutors |

education session and again at the end of the last session. This checklist required students to select from a pre-determined list the roles they perceived as representative of the other professions.

An Interdisciplinary Weekly Team Inventory, developed by researchers at the University of Rhode Island (Clark, 1994), was used to evaluate the formation of teamwork attitudes and values. The inventory included 17 items which were rated using a 5-point semantic-differential scale. Students completed this instrument after each of the three sessions.

A Participant Evaluation Survey was completed by students at the end of the last session and encompassed several scales, including the Role Perception Checklist administered at the beginning of the program. A 15-item Team Skills Scale, adapted and modified from Hepburn, Tsukuda & Fraser (1996), was also included. This scale measures self-reported teamwork skills using a Likert scale ranging from 1 = Poor to 5 = Excellent. Two open-ended questions also asked students to comment on their perceived likes or dislikes related to their participation in the program. These responses were analyzed using Glaser and Strauss's (1967) constant comparison method.

A Team Dynamics Observation Checklist was constructed for the tutors to use in making observations of the interaction and dynamics between students during the final interprofessional education session. This form collected observations about students' participation in the interprofessional team process, emerging leaders in the group, communication and conflict among team members, meeting skills and outcomes. This information was summarized and analyzed using the constant comparison method.

Results

A t-test analysis of the Role Perception Checklist responses was conducted for each role and across each of the professions. The greatest role perception changes of the nursing profession occurred in the areas of researcher (.22 mean change), coach (.15 mean change), diagnostician (.13 mean change) and assess psychosocial (.12 mean change). These were areas in which a significant change in mean score for each role was observed from pre to post-intervention. The greatest role perception changes for the profession of pharmacy were in the areas of assess psychosocial (.39 mean change), coach (.29 mean change), counsellor (.23 mean change), manager (.19 mean change), care giver (.17 mean change) and helper (.16 mean change). For medicine, the greatest role perception changes occurred in the areas of coach (.26 mean change), helper (.23 mean change), manager (.21 mean change) and advocate (.17 mean change).

Table 3 presents the overall mean scores for the Weekly Team Inventory and the mean scores for each of the professions over the three sessions. The overall mean scores for each week were 70.83 (week 1), 74.88 (week 2) and 77.24 (week

Table 3. Summary of Interprofessional Weekly Team Inventory Scores by Profession

| | Profession | N | Mean | Std. Deviation | ANOVA Sig. |
|--------|-------------------|----------|-------------|-----------------------|-------------------|
| Week 1 | Nursing | 40 | 71.43 | 1.08 | .260 |
| | Medicine | 61 | 71.41 | 1.16 | |
| | Pharmacy | 25 | 68.48 | 1.29 | |
| | Total | 126 | 70.83 | .71 | |
| Week 2 | Nursing | 45 | 77.07 | .86 | .039 |
| | Medicine | 59 | 73.29 | 1.15 | |
| | Pharmacy | 26 | 74.69 | 1.20 | |
| | Total | 130 | 74.88 | .66 | |
| Week 3 | Nursing | 44 | 79.70 | .65 | .034 |
| | Medicine | 60 | 75.57 | 1.28 | |
| | Pharmacy | 26 | 76.92 | 1.45 | |
| | Total | 130 | 77.24 | .71 | |

3). A t-test analysis of the mean differences between these scores indicated a significant increase in the weekly inventory scores over the three sessions ($p = .000$). The weekly mean scores for each profession also indicated an increase over the three sessions. An Analysis of Variance (ANOVA) between the weekly mean scores of each profession and a Scheffé post hoc analysis indicated a significant difference between the mean scores of nursing and medicine students for both weeks 2 and 3. An Analysis of Variance (ANOVA) comparing the mean scores between professions on the Team Skills Scale indicated no significant difference ($p = .268$). Nursing students (61.30) did score highest on the scale, followed by medicine (59.32) and pharmacy (57.96) respectively.

A main theme which emerged from students' comments on the Participant Evaluation Survey was related to knowledge; knowledge of the roles of other health professions and how to collaborate with these professions in the delivery of care to HIV/AIDS patients and their families. Another theme which emerged was related to knowledge of HIV/AIDS. Students reported greater knowledge of the clinical treatment and management of HIV/AIDS. The students appreciated the opportunity to interact with a simulated patient as part of the learning process and felt this teaching method was useful in fostering teamwork skill development. The main disadvantages reported by students were related to group dynamics. Some students were dissatisfied with the processes undertaken by their interprofessional group and felt that their group was not effective in engaging in a truly interprofessional collaborative process.

The Team Dynamics Observation Checklist was used by the tutors during the third session to record observations related to team dynamics. The third session involved group interaction with a standardized patient in the planning

of an interprofessional HIV/AIDS care plan. The main activities of the groups observed by the tutors were related to goal identification for the HIV/AIDS standardized patient and the development of an interprofessional care plan. Tutors reported a great deal of variation between the groups in terms of team meeting skills. Some tutors observed a high level of disorganization among the groups and a lack of awareness of principles of effective meetings. Other groups followed a specific agenda and had designated team members to perform certain roles, such as recorder or chair. The most important outcomes of the final session were reported to be information sharing, approaches to interviewing the patient, design of an interprofessional care plan, respect for other team members and clarification of roles in patient care.

Discussion

There is evidence to suggest that interprofessional education is effective in addressing stereotypical views and increasing learners' understanding of the roles, responsibilities, strengths and limitations of other professions (Clark, 1991; Parsell *et al.*, 1998; Parsell & Bligh, 1999). The results from the Role Perception Checklist in this study suggest that students reported a greater awareness of the roles of the other professions over the course of their participation in this interprofessional education program. Across each of the professions, several common role perception changes emerged. The role of 'coach' was perceived at a higher level across each of the professions and the role of 'assess psychosocial' was perceived at a higher level for nursing and pharmacy. The roles of 'helper' and 'advocate' were perceived at a higher level for medicine, and the role of 'diagnostician' was also perceived at a higher level for nursing. With the exception of the role 'diagnostician', which was scored the lowest for both the nursing and pharmacy profession, the results suggest that the interprofessional educational experience was effective in increasing awareness of the roles of other professions in interprofessional HIV/AIDS care.

The scores of the Weekly Team Inventory suggest that exposure to an interprofessional education experience resulted in a significant improvement in attitudes towards interprofessional teamwork across the professions. The increase in scores over each week also suggests that continuous exposure to interprofessional education promotes positive attitudes towards teamwork. There was no significant difference between the scores on the Team Skills Scale, and this result suggests that students' confidence in teamwork ability did not differ between the professions. Students from each profession felt equally confident in their ability to participate as effective interprofessional team members.

Interprofessional education is a dynamic process during which students often move from a unidisciplinary understanding of patient care and functioning to an interprofessional mode. Students tend to progress through several stages on

their way to forming a true understanding of interprofessional collaboration. The rate and extent to which this progression occurs is influenced by individual student reactions and interactions, group processes and conflicts, and professional values and norms. The observations of the tutors in this study confirm that team process was an important determinant of effective and productive small group functioning. Some groups were observed to have demonstrated effective team dynamics and process, whereas others did not function at an effective level. These observations suggest that “team development” is an important factor that must be considered in facilitating interprofessional education based on small group learning strategies. The role of the tutor is critical in intervening at times when group process is not working well, providing students with feedback on their group process and modeling how the group may move forward in a more effective manner with interprofessional care planning.

This was the first time that standardized patients had been used as part of interprofessional education programming at our institution. The comments and feedback from the students suggests a high level of satisfaction with the use of SPs as a methodology for facilitating shared learning. The SPs brought a higher level of realism to the interprofessional education experience and served as a catalyst during the final learning session in fostering collaboration between the students. The knowledge which the students gained while working through a paper-based case study during sessions one and two was helpful in preparing the students for their interaction with the SP. These problem-based learning sessions enabled the students to gain background knowledge and understanding of HIV/AIDS disease management. These sessions also allowed the students to learn more about the roles of each of the respective professions in HIV/AIDS care. These core competencies were necessary for the interaction with the SP and subsequent collaboration in preparing an interprofessional care plan.

The main limitations of this study were related to variability among the interprofessional learning groups. This variability resulted from differences in group dynamics, group characteristics and the facilitation approaches of the tutors assigned to each group. The characteristics of the tutor may have influenced both the learning process and the dynamics of the group. These factors may have influenced attitudes towards interprofessional teamwork, role perceptions and self-reported confidence beliefs.

Conclusions

Overall, this study demonstrates that an interprofessional education module based on principles of small group, problem-based learning and the integration of standardized patients is effective in enhancing greater awareness of roles and fostering confidence in teamwork skills among pre-licensure health sciences students in nursing, medicine and pharmacy. The program was also helpful in

enhancing students' ability to collaborate as team members in planning interprofessional care plans for HIV/AIDS patients. An educational strategy based on repeated and continuous exposure to interprofessional education would appear to have the greatest impact on attitudinal change. While we are unable to report on the impact of this educational program on the actual practice behaviors of these students, the results do suggest that interprofessional education is effective in preparing students to practice in interprofessional practice settings.

Acknowledgements

We would like to acknowledge the members of the HIV/AIDS interprofessional education program planning committee for their assistance with the development of this program. These individuals included Drs. Ian Bowmer and Gale Burford and Ms. Marilyn Babineau.

References

- ABBATICOLA, M.M. (2000). A team approach to the treatment of AIDS wasting. *Journal of the Association of Nurses in AIDS Care*, 1(1), 45–56.
- ARESKOG, N., BHATTACHARYA, A., EZZAT, E., LIM, A., MCINERNEY, K., RUBENSON, B. *et al.* (1988). *Learning together to work together for health*. Geneva: World Health Organization. Report of a WHO study group on multiprofessional education of health personnel: The team approach (Technical Report No. 769).
- BOWMER, M.I., LAW, R.M., BURFORD, G., BOLAND, B. & MACDONALD, S.A. (1996). *Role Perception Checklist*. St. John's, NL: Memorial University of Newfoundland.
- CLARK, P.G. (1991). Toward a conceptual framework for developing interdisciplinary teams in gerontology: Cognitive and ethical dimensions. *Gerontology & Geriatrics Education*, 12(1), 79–96.
- CLARK, P.G. (1994). Learning on interdisciplinary gerontological teams: Instructional concepts and methods. *Educational Gerontology*, 20, 349–364.
- CLARK, P.G. (1999). Service-learning education in community-academic partnerships: Implications for interdisciplinary geriatric training in the health professions. *Educational Gerontology*, 25, 641–660.
- CULLEN, L., FRASER, D. & SYMONDS, I. (2003). Strategies for interprofessional education: the Interprofessional Team Objective Structured Clinical Examination for midwifery and medical students. *Nurse Education Today*, 23(6), 427–3.
- DRINKA, T.J.K. (1991). Development and maintenance of an interdisciplinary health care team: a case study. *Gerontology & Geriatrics Education*, 12(1), 111–125.
- DRINKA, T.J.K. (1996). Applying learning from self-directed work teams in business to curriculum development for interdisciplinary geriatric teams. *Educational Gerontology*, 22, 433–450.
- FAGIN, C. (1992). Collaboration between nurses and physicians: No longer a choice. *Academic Medicine*, 67(5), 295–303.

- FITZPATRICK, M. (1996). Interdepartmental collaboration: Focus on outcomes. *Seminars in Perioperative Nursing*, 5(1), 47–50.
- GLASER, B.G. & STRAUSS, A.L. (1967). *The discovery of grounded theory; Strategies for qualitative research*. Chicago: Aldine Publishing Company.
- HEPBURN, TSUKADA & FRASER (1996). In E.L. Siegler, K. Hyer, T. Fulmer, M. Mezey, M. (1998). *Geriatric Interdisciplinary Team Training*. New York: Springer Publishing Company.
- LE, C.T., WINTER, T.D., BOYD, K.J., ACKERMAN, L. & HURLEY, L.B. (1998). Experience with a managed care approach to HIV infection: Effectiveness of an interdisciplinary team. *The American Journal of Managed Care*, 4(5), 647–57.
- LIEDTKA, J.M. & WHITTEN, E. (1998). Enhancing care delivery through cross-disciplinary collaboration: A case study. *Journal of Healthcare Management*, 43(2), 185–205.
- LOWE, J. & HERRANEN, M. (1981). Understanding teamwork: Another look at the concepts. *Social Work in Health Care*, 7(2), 1–11.
- MAKARAM, S. (1995). Interprofessional cooperation. *Medical Education*, 29 (Supplement 1), 65–69.
- PARSELL, G. & BLIGH, J. (1999). Interprofessional learning. *Postgraduate Medical Journal*, 74, 89–95.
- PARSELL, G., SPALDING, R. & BLIGH, J. (1998). Shared goals, shared learning: Evaluation of a multiprofessional course for undergraduate students. *Medical Education*, 32, 304–311.
- REEVES, S. & FREETH, D. (2002). The London training ward: An innovative interprofessional learning initiative. *Journal of Interprofessional Care*, 16(1), 45–52.
- TSASIS, P. (2001). HIV/AIDS challenges the normative model of healthcare delivery in Canada. *Health Services Management Research*, 14(1), 55–61.
- WEE, B., HILLIER, R., COLES, C., MOUNTFORD, B., SHELDON, F. & TURNER, P. (2001). Palliative care: a suitable setting for undergraduate interprofessional education. *Palliative Medicine*, 15(6), 487–492.