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IPS Infection Prevention Society Research Grant Final Report

Original Citation

Denton, Andrea, Garside, Joanne, Stephenson, John and Robinson, Joan (2015) IPS Infection Prevention Society Research Grant Final Report. Research Report. IPS. (Unpublished)

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Research Grant Final Report

Name: Andrea Denton

Award: Collaborative Small Projects Grant

Amount awarded: £5000

Overview of study (see original grant application):

Infection prevention and control (IPC) practice can help to reduce healthcare-associated infections (HCAIs) and assist in the fight against antimicrobial resistance (Review on Antimicrobial Resistance, 2016). It is essential, therefore, that all healthcare staff, including healthcare students, have the knowledge and understanding of IPC practices. Research indicates that more traditional IPC training approaches, such as key lectures, do not always translate into good IPC practice (Ward, 2011).

Healthcare professional students often learn clinical practice within a simulated environment, making learning more realistic through the use of scenario-based situations, role play and the use of manikins to practice care in low risk settings. In this instance, students tend to be more actively engaged in their learning. In theory, this increases the impact that learning has on clinical practice.

The specific aim of this evaluation study was to explore how simulation, as an educational approach, may assist pre-registration nursing students (adult, child, learning disability and mental health) to develop their knowledge, skills and attitudes around IPC practice. Each student took part in a simulation session where a group of students (n=25) were given scenarios and asked to assess and manage an IPC scenario linked to their clinical context. The students were directed throughout to current IPC evidence and best practice. Each simulation group was supported by an Infection Prevention and Control Practitioner (IPCP), or a senior lecturer with IPC experience. A sample of 190 healthcare nursing students completed researcher-generated questionnaires that explored the students' perceptions of the IPC educational input in theory and in practice before and after the simulation exercise. To complement this, a focus group took place after the students had spent a period in clinical practice to explore findings from the questionnaires in more detail.

The methodology used was based on Kirkpatrick's (2006) four-stage evaluation framework. The stages include: reaction to the session, learning, perceived changes in behaviour and real-world results. The model was chosen for its applicability, especially for stages 2 and 3; and its comprehensiveness, with a focus on outcomes.

Data collection and analysis

Stages 1 to 3 utilised separate questionnaires for data collection (see original grant award for examples of the questionnaires). The questionnaire data was summarised descriptively with the key outcome measure for the quantitative analysis being a measure of students' knowledge, skills and perceived behaviour change (stages 1 and 2). The qualitative elements of both questionnaires were used to generate thematic analysis providing further reflections and highlighting any expectations, concerns and /or needs following the simulation exercise (stage 3).

Stage 4 consisted of a focus group interview, exploring real-world results with the students, capturing any changes in their clinical practice and enablers and/or barriers to implementation in relation to IPC.

The taped interview consisted a series of semi-structured questions (a copy of the semi-structured questions used in the focus group was included in the original application). The focus group was facilitated by the principal investigator and a postgraduate researcher. The focus group interview was transcribed verbatim using recognised software, and maintained anonymity and confidentiality.

Initial thematic analysis of the qualitative data was undertaken using Quirkos® computer-assisted qualitative data analysis software. This package was used because of the size of the qualitative data sample and ease of use. In-depth thematic analysis will be provided for the proposed journal article.

Summary of initial findings

Data was collected from 112 respondents, representing a 59% response rate.

The aim of stage 1 (first questionnaire) was to establish the nature and value of IPC education and training the students had received throughout the 3-year course to date, both in University and practice settings. Respondents were asked whether they agreed or disagreed with specific questions/statements using a 5-point Likert scale, with options ranging from *strongly agree* to *strongly disagree*. Two examples of the statements assessed were:

“I have found previous lectures teaching infection prevention and control in university useful to me as a student”

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Overall there was a positive response to the all the questions/statements in questionnaire 1 with a composite measure being derived from the main questions. The mean score for this composite measure was 19.3 (SD 1.19), corresponding to a positive self-assessment of the students experiences of IPC. No correlation between scores and either gender or field of nursing was observed.

A two-factor analysis of variance (ANOVA) conducted on the data revealed no evidence that either gender ($p=0.542$), nursing branch ($p=0.386$) nor the interaction between them ($p=0.641$) were associated with self-assessment scores.

The aim of the second questionnaire was to explore the students' perceptions of the simulation exercise. Again, students had to use a 5-point Likert scale to express strength of agreement with specific statements or questions. One example of the statements assessed was:

“I believe that the simulation session has improved my knowledge and skills in infection prevention and control”

Generally, there was a positive response to the questions/statements with a composite measure mean score of 15.8 (SD 2.47) corresponding to a positive self-assessment of experiences. This was however slightly lower than the mean response score in the first questionnaire.

A two-factor ANOVA conducted on the data in the second questionnaire revealed evidence that nursing field was associated with self-assessment scores ($p=0.034$) for this second questionnaire, with mental health nursing students providing the most positive response

(mean 16.8; SD 1.76) and adult nursing students the least (15.15, SD 2.71). However, the differences observed between each nursing field were not judged to be substantive.

Qualitative findings from the questionnaires

50 (45%) of the first questionnaire included comments. The majority of questionnaires with comments originated from students from the adult field, reflecting the relative size of this branch compared to other branches. Overall for questionnaire 1, the first 3 questions about previous IPC education and training generated positive comments, with students expressing that sessions in university had been informative and engaging, and they had resulted in increased awareness of IPC (n=13). Previous skills/simulation-based sessions were also viewed positively (n=18), especially around hand hygiene. Whilst there was some positive feedback about IPC education in placement settings (n=17), there was also some negative feedback in relation to IPC education in placement areas (n=9). One comment from a MH participant student was that they had not received any education around IPC in placement areas.

Questionnaire 2 generated more qualitative comments, with 64 (57%) of respondents commenting on IPC after the simulation exercise. In relation to the simulation exercise, the comments indicated that participants found the exercise positive overall (n=16). Student feedback in both the first 2 questions indicated that they would have liked the session to be more 'hands on' and 'interactive' (n=8).

It is important to highlight that the questionnaires were given out at the same time after the simulation exercise (see challenges below), which may have had an impact on the responses.

Stage 3 (focus group)

The aim of the focus group was to explore the real-world results and students' perceptions of IPC behaviour in clinical practice with enablers and barriers. The number of participants (n=4; comprising 3 adult field and 1 learning disability [LD] field).

The main theme to arise from the focus group, in terms of any changes in their clinical practice and IPC following the simulation exercise, was the increase in knowledge and understanding, and a perceived increased ability to risk-assess situations. The students also felt that they were now able to answer questions from patients and members of the public on matters relating to IPC.

The main area of concern, and seen as a barrier, was the variety of practice that students observed around IPC. Students commented that some practitioners had very good practice linked to IPC, but others did not. There was also a perceived wide variation in how to undertake certain IPC-linked procedures; for example, aseptic non-touch technique (ANTT), which resulted in confusion for many. The students highlighted that the biggest influence on their IPC practice when out on placement were their mentors; they aimed to undertake any procedures or practices based on what their mentor did.

In clinical practice, IPCPs were perceived by the students to be seen by placement staff as having a 'big brother' role. The approach of the IPCP was seen to be pivotal to the reception and response of placement staff to the IPCP. The students highlighted that they had observed some positive interactions between placement staff and IPCPs, but these tended to be isolated cases. The students commented that the learning and development from the positive interactions when they as students were present was beneficial.

Plans for writing up and publications/presentations

Following initial analysis (included here in the report) the data sets will be triangulated to support cross validation of the findings from the different data sources and the data collection methods used. Discussion and recommendations will be included in the journal article and conference paper.

The plan is to simultaneously submit a research article for publication in the Journal of Infection Prevention (JIP) and a conference paper for oral presentation at the IPS conference in 2017. The research article will focus on simulation-based approaches linked to IPC, incorporating the study's aims and objectives, methodology, data collection and analysis with findings, discussion and recommendations. The conference paper will provide more of an overview of the simulation exercise, the collaborative approach used, ongoing development of the simulation-based learning approach and any potential future challenges.

The background and literature review will build upon Ward's (2011) review of the literature and combine literature linked to simulation based approaches especially in IPC and pre-registration healthcare professional education.

Challenges encountered:

The delivery of the module to specific student groups was revised with ODP pre-registration students not being involved. Delays in the approval process for the Research Grant and subsequent university ethical approval delay meant that students had already undertaken the IPC simulation session by the time the approvals had been received. This resulted in the pre-simulation exercise questionnaire being delivered at the same time as the post simulation exercise questionnaire.

The focus groups proved difficult to arrange due to third year student nurses spending most of their final year out in clinical practice. The focus group took place prior to the student's final week on placements and included 4 nurses; - 3 from Adult Field and 1 from LD Field. Whilst the reduced number of respondents resulted in limited generalisability of the findings, a positive aspect was that this reduced number facilitated all the students having an opportunity to discuss any issues in depth.

Costs to date (November 2016):

Costs to date as per grant application. Further funding will be required for writing up and dissemination via JIP and IPS conference 2017.

References

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Ward, D. (2011). The role of education in the prevention and control of infection: a review of the literature. *Nurse Education Today*, 31, pp 9-17.

Signature: 

Date: 30th November 2016