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How cancer research could benefit from the Complex Intervention Framework: Students’ experiences of the European Academy of Nursing Science summer school

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The European Academy of Nursing Science (EANS) organises an annual summer school for doctoral nursing students which began in 1998. Each participant has to attend three summer schools during the course of their PhD studies. The programme provides a European perspective on nursing research and creates a multinational learning environment. It was established with the goal of improving quality of nursing practice by increasing the evidence for European nursing science and enhancing the opportunities for doctoral students to study, work and undertake nursing research in European Countries (European Academy of Nursing Science, 2010).

In 2010, the EANS summer school introduced a new curriculum based on the development of complex interventions, guided by the United Kingdom Medical Research Council’s Complex Intervention Framework (CIF) (MRC, 2008). The framework (Figure 1) describes the stages of developing, piloting, evaluating, reporting and implementing on a complex intervention and emphasises the need of adequate development, feasibility testing and pilot work in addition to a thorough consideration of the practical issues involved in implementing the outcomes from such research (MRC, 2008). In order to serve the progress in health care it is recognized that nursing research needs to put more emphasis on intervention studies instead of descriptive research (Rahm Hallberg, 2009; O’Connor, 2010). This can be achieved by testing, evaluation and subsequent refinement of nursing interventions in a systematic manner as advocated by the CIF (MRC, 2008).

Participants involved in the 2010 EANS summer school who were involved in cancer research (Table 1) were asked to summarise their experiences one month after joining the programme. Content analysis was used to summarise each student’s written report of one to two pages (Mayring, 2008). The inductive identification of
themes and subthemes identified from the reports was performed initially by the first two authors (BS and MK). In the case of contradictory results, summary passages were evaluated and discussed in order to achieve a consensus. Each of the participants then independently evaluated and reworked the final report. Three salient themes were identified. These were (1) the benefits of using the CIF for the conduct of nursing research (2) the benefits of formal learning as part of a doctoral degree programme, and (3) the benefits of international collaboration.

1. Benefits of the Complex Intervention Framework for cancer research

Use of the CIF in cancer research could reinforce the need to: (1) search for insight into how and why cancer care interventions work, and (2) identify if patients with cancer benefit from these interventions. Cancer patients are a diverse population, with different disease stages, therapies, co-morbidities and needs. Considering these different aspects in the planning stage of intervention research could result in more powerful outcomes and the preparation of future research should start with the critical development of the intervention and careful consideration of any possible confounding variables (MRC, 2008).

The CIF is an invaluable resource for research active oncology nurses since it provides necessary guidance to develop and implement a complex intervention research project. The flexibility of the framework, which is intended to be iterative rather than linear, is applicable to the diverse and often complex setting in which cancer care takes place. The EANS summer school was therefore perceived as helpful to novice researchers to develop the required research skills based on the strong theoretical and methodological underpinnings of the CIF to strengthen their intervention research. More specifically, the CIF emphasises the need to identify the
evidence base through the conduct of a systematic review or exploration of relevant theory (O’Connor, 2009), to examine the intervention to be tested in a pilot study (effectiveness and feasibility assessment), and to understand the change process.

Although often overlooked, the attendees of the EANS summer school reported that they have learned that piloting an intervention is a crucial phase in cancer research as it can provide answers to common problems which are often only identified during the development phase (such as ability to recruit an adequate sample size etc). During the pilot phase, a process evaluation should be executed to provide insight into why an intervention fails or has unexpected consequences, in addition to understanding why a successful intervention works and how its effects can be optimised. Only after completion of these steps, researchers can start to test the developed intervention on a larger scale preferably by means of a randomised controlled trial (RCT) or other study design (e.g. quasi experimental study).

Two research examples originating from our author group illustrate the benefit of CIF usage in cancer care research. A first example demonstrates the potential confounding variables interfering with the intended research question in research pertaining to venous access devices. Examples include patient-related factors (disease stage, type of cancer, age, gender, behaviour); device-related factors (device type, maintenance and locking procedure); health care professional-related factors (skills needed to manage the system); and insertion-related issues (type of sedation, vein selection, catheter tip positioning control, port or exit site location etc.). In the piloting phase, these factors can be controlled for as far as possible and assessed in relation to the acceptability of the intervention, delivery issues, patient adherence; and hence recruitment and retention of subjects in the larger study.
Piloting the intervention has the capacity to avoid early study discontinuation or weaker research results.

A second example demonstrates the need for the use of CIF in family nursing within paediatric oncology (Svavarsdottir, 2006). Family nursing is undeniably a complex, with many interacting foci including the child, parents, siblings, nurses, physicians and other health personnel. The wellbeing of the family is influenced by many factors, for example, the prognosis and progress of the disease, caregiver support, social capital and the family’s own resilience. Moreover, factors not directly related to the child’s disease, such as work-related stress for the parents, school problems for siblings, and even a neighbour’s divorce can be influential on family wellbeing (Svavarsdottir, 2006), thus nursing interventions should be designed with these complexities in mind. If one does not consider possible biases or confounders, it is unlikely that one will correctly determine the real effect of the intervention. This is vital if decision makers prioritise interventions to be effective in a health care system which is expected to meet increasing demands.

2. Benefits of formal learning as part of a doctoral programme

The EANS summer school curriculum, based on the CIF framework, substantially increased students awareness of the necessity to plan and conduct a thorough pilot study prior to the conduct of intervention research. The attendees of the EANS conference realised that such research has to be carefully planned and implemented only after careful piloting. The summer school and collaboration with European colleagues contributed greatly to their motivation to develop and identify effective nursing interventions and test them on their merits. Further they reported that the CIF helped increasing their understanding of the processes involved in the development
of interventions, and provided a blueprint by which to test and evaluate the working mechanism(s) of the intervention. EANS’ expert teachers encouraged and motivated the attendees to enlarge their projects, move them closer to practice, and give greater consideration to the time investment and patients’ health states in addition to the economical aspects of conducting a study.

3. Benefits of international collaboration at the EANS summer school

Without doubt, the attendees reported that the EANS summer school provided a forum for networking and establishing international research contacts with PhD students of other European countries. As a result of this and their engagement in various learning tasks and group work, they expect to further develop their personal research and critical thinking skills and to apply this to their research projects. Reinforcement of the need to collaborate with European colleagues in joint research projects was stressed throughout the programme whilst sharing knowledge and expertise with fellow doctoral students was identified as one of the greatest benefits of joining EANS. Networking with researchers in their field will improve cancer nursing research through enhanced sharing of knowledge and improved collaboration in future research projects.

Collaborating with, and sharing difficult experiences with other novice researchers allowed EANS students to discover new fields of cancer nursing. Some of them recognized that their current observational research is only the first step towards the completion of more complex intervention studies. The summer school raised an awareness of their responsibility to proceed with and develop intervention studies, and to test and refine them if possible using an appropriate experimental design. Moreover, future multicenter studies in heterogeneous European context should take
into account nursing viewpoints form a variety of cultures. An important goal of the EANS summer school is to stimulate greater exchange in relation to research ideas, plans, and ongoing projects. The attendees reported that recognising and supporting each others’ different strengths and knowledge base has been an effective way of learning from others.

For novice cancer researchers it is important to learn how and in what circumstances other researchers work, what kind of problems they encounter, and how they solve them. Greater international collaboration and developing an international network among peers provides opportunity to ask for help, support and advice from others, whilst learning about others’ experiences reduces the danger of repeating the same errors when starting a new study. Hopefully, the insights generated at the EANS summer school will generate an increasing number of internationally oriented research projects. Admittedly, adding an international dimension to the research endeavour will introduce a greater degree of complexity given the different status of nurses, healthcare systems and research traditions within different European countries.

EANS provides an unprecedented opportunity for novice researchers to liaise with various European research experts teaching in their summer school programme. With the solid results of a soundly conducted pilot study in hand, it is then possible to ‘go European’ in future phases of the study, and the EANS network can then be used to explore the mutual benefits of collaboration. These include opportunities to enlarge sample sizes, especially in small research populations, and increase the generalisability of intervention studies conducted in different countries.
Another example of international collaboration is the possibility to meet and discuss ideas with others involved in cancer research, such as journal editors. Some EANS students have already used the EANS contacts to explore opportunities for post-doctoral research or employment experience in other European countries. These opportunities remain after the three year summer school program by becoming an EANS Scholar or EANS Fellow.

Aspects to consider

The EANS summer school programme focusing on the CIF, provided the opportunity to learn a suitable method and approach for future cancer interventional nursing research. Although the CIF emphasises the need to examine the feasibility of any interventions developed as a result of such research, several aspects need to be considered.

The primary question when developing a research project however, is ‘how will research lead to benefits in the care of cancer patients?’. The answer to that question is far from straightforward however. Should researchers look for the largest cancer population which might profit from nursing intervention studies or concentrate on a more discrete population? It seems that there is always a dilemma in relation to general versus specific outcomes, and therefore a discussion on the subject of what population should be targeted is vitally important. It is important too to consider research priorities for some researchers; one aspiring PhD student on the EANS programme commenting that, ‘accomplishing all four phases of the CIF framework in separate research projects seems impossible within the PhD time limit from 2 to 4 years [dependent of country]. The best advice therefore is to conduct a very thorough
pilot study on testing the intervention and move from there on, instead of performing a lousy RCT'.

Conclusions

The CIF framework provides an interesting and stimulating structure for the content of summer school activities and provides students with the opportunity to study the development, piloting and evaluating of cancer nursing interventions in a meaningful way. Students are encouraged to embrace the challenge of conducting experimental research and from their collective experiences they welcome the CIF framework inclusion in the new EANS curriculum.

Acknowledgement

We should like to thank the MRC for permission to reproduce Figure 1.
References


Figure 1: Key elements of the development and evaluation process (MRC, 2008)

Feasibility/piloting
1. Testing procedures
2. Estimating recruitment/retention
3. Determining sample size

Development
1. Identifying the evidence base
2. Identifying/developing theory
3. Modeling process and outcome

Evaluation
1. Assessing effectiveness
2. Understanding change process
3. Assessing cost-effectiveness

Implementation
1. Dissemination
2. Surveillance and monitoring
3. Long term follow-up
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<tr>
<th>Author</th>
<th>Country</th>
<th>Cancer field</th>
<th>Research interest</th>
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<tr>
<td>1</td>
<td>Switzerland</td>
<td>Gynae-oncology</td>
<td>Symptom experience and symptom assessment in women with vulval neoplasia</td>
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<tr>
<td>2</td>
<td>Switzerland</td>
<td>Stem cell transplantation</td>
<td>Symptom experience and self-management of cancer survivors</td>
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<td>3</td>
<td>Spain</td>
<td>Prostate cancer</td>
<td>Nurse interventions to support decision making</td>
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<td>4</td>
<td>Greece</td>
<td>Military Oncology</td>
<td>Perceptions of caring behaviours in cancer care</td>
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<td>Finland</td>
<td>Oncology</td>
<td>Patients’ expectations concerning education during chemotherapy</td>
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<td>Netherlands</td>
<td>Head and neck oncology</td>
<td>Nurse-led follow up care: enhancement of psychosocial adjustment after cancer treatment</td>
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<td>Paediatric oncology</td>
<td>Information to parents within paediatric oncology</td>
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<tr>
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<td>Haemato-oncology</td>
<td>Venous access issues</td>
</tr>
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<td>Ireland</td>
<td>Gynae-oncology</td>
<td>Developing complex interventions pertaining to sexuality in women with gynaecologic cancers</td>
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