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Development, implementation, evaluation and validation of a haemophilia nurses' education program in South Africa

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Chapter 5

Method

This chapter presents a description of the study design, the research questions to be addressed and the method used to collect and analyse the data. Also included is a description of the sample group. Ethical factors as these relate to the study are also considered. Initially, this current research was to be a Masters thesis. Following the data collection an application was made to the University of Notre Dame Research Committee to undertake the study at a Doctoral level. The application was granted.

5.1 Aims of Study

The general aim of the present study was to conduct an evaluation of the HNEP to determine if the participants expressed an increase in knowledge, confidence and competence to care for a PWH. This present study investigated whether attendance at the HNEP better prepared RNs to care for PWH in South Africa, and determined whether the HNEP has contributed to an improvement in haemophilia care. For ease of reference, the questions being researched and identified in Chapter 1 are re-presented below.

5.2 Research Questions

1. What factors need to be considered when developing a purpose-driven haemophilia curriculum for nurses in South Africa?
2. What factors need to be considered when implementing a purpose-driven haemophilia curriculum for nurses in South Africa?
3. What transfer of knowledge, skills and perceptions is likely to occur as a result of training received via a purpose-driven haemophilia curriculum?
4. How robust is a purpose-driven haemophilia curriculum when subjected to expert evaluation?

5. On the basis of feedback received for research question 4, what are the implications for a future iteration of the HNEP?

5.3 Study Design

The study design involved a mixed method approach which was elucidated in the previous chapter and consisted of three parts.

Combining both qualitative and quantitative approaches provided a wider perspective on the research questions by yielding complementary data sets, therefore enabling data triangulation (Carr, 1994). Triangulation allows for evidence corroboration to occur thus resulting in a more robust study.

Part One of the study elicited data from three RN haemophilia coordinators who supported haemophilia interventions in SA and who were responsible for creating and delivering the HNEP. Qualitative data was sourced for this part of the study. Part Two accessed the insights of RNs who had previously attended the HNEP. This data was also sourced using qualitative methodology. To gain greater insight regarding the complexities experienced by haemophilia nurses, Part Two data was supported by three critical incidents which highlighting their experiences. Part Three of the study sought the views of expert nurse educators who evaluated the curriculum contained within the Haemophilia Resource File (HRF) supplied to the attendees of the HNEP. A quantitative survey was used to obtain data for this part of the study and was supported by written statements from the experts. Data from the three parts were then integrated in order to answer the research questions. Each of the three parts of the study is explained in detail in what follows. A diagrammatic representation of the relationship between the research questions, participants and methods used for collecting data is presented in Figure 5.1.

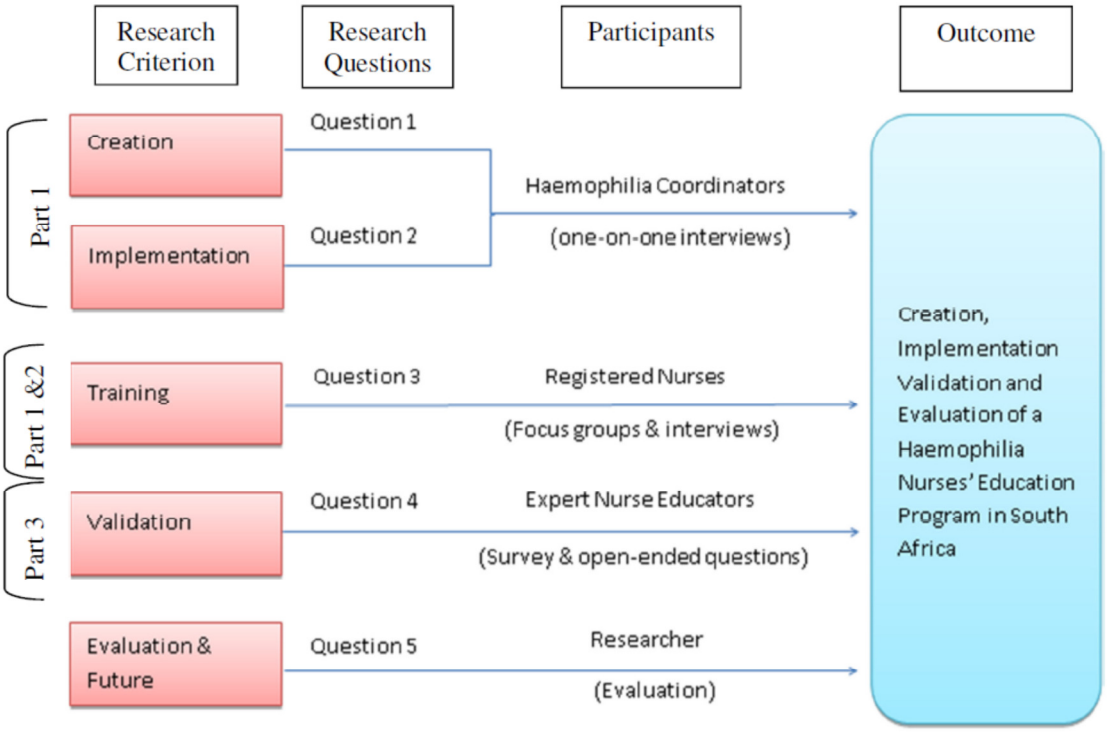

Figure 5.10 The relationship between the research questions, participants and data collection methods.

5.3.1 Part One: The haemophilia coordinators.

5.3.1.1 The sample group.

Part One involved one-on-one interviews with the three South African haemophilia coordinators who provided the background to the context of the development of the HNEP. The researcher was involved in the initial development of the curriculum and teaching in the HNEP and had knowledge of how decisions were made; however, she was more interested in the context of the how the HNEP should be conceived and delivered SA. Accordingly, the questions to the haemophilia coordinators were designed to elicit information about the history and context of haemophilia in SA (Appendix D).

The three nurses involved in the care of PWH differed in relation to their education and abilities. At the time of writing, there are only three haemophilia nurse coordinators to provide care for an estimated population of 5000 PWH. Prior to 2001, Coordinator A was

assisted by Coordinator M who joined the service in 1998. Coordinator L was employed in 2001 to provide a service to Cape Town and surrounding areas.

Two of the haemophilia coordinators are white South Africans (WSA) and the third is a Black South African (BSA). All three are female practitioners with an age range of 33 to 53 years. Of the three nurses, two work full-time and the third works 30 hours per week. One full-time coordinator is hospital-based and has the responsibility for the Eastern Cape, Western Cape and Northern Cape provinces. The other two coordinators are employed in the community specifically to care for PWH. One coordinator, who is full-time, provides outreach services, including to regional areas, providing support and expertise to hospitals which have recently established haemophilia clinics. The most senior coordinator, who works 30 hours per week, practices mostly in a teaching role educating health professionals, community groups and PWH and their families which also includes writing pamphlets and updating manuals in relation to haemophilia management.

In relation to nurse qualifications, all the coordinators are Registered Nurses (RNs). The two WSA nurses hold hospital-based diplomas while the BSA nurse holds a university-based tertiary nursing diploma. The level of education reflects the era of nursing in which the nurses trained. The two WSA coordinators are hospital-based trained which was the only system available at the time. The BSA coordinator is the youngest of the three, and is tertiary educated indicating that nursing education in SA had progressed to a higher level of education in recent years. Given that SA has diverse cultures with eleven official languages, two of these nurses speak various languages, with the BSA nurse speaking seven languages. The demographic data for the three haemophilia coordinators is presented in Table 5.1.

Table5.1 Demographic Data of the Three Haemophilia Nurse Coordinators

Haemophilia Coordinators	*BSA*	*WSA*	*WSA*
Qualifications	*Tertiary Nursing Diploma* *Registered Nurse*	*Hospital Diploma* *Registered Nurse*	*Hospital Diploma* *Registered Nurse*
Place of work	*Haemophilia Foundation Head Office, Johannesburg*	*National Bioproducts Institute, Johannesburg*	*Groote Schuur Hospital, University of Cape Town*
Languages spoken	*English, SePedi, SeSotho, Setswana, Africaans, Zulu, Tsonga*	*English*	*English,* *Africaans*
Experience specific to haemophilia	*5 years*	*28 years*	*23 years*
Area where experience gained	*Haemophilia Foundation, of South Africa, Oxford Haemophilia Centre UK., Outreach visits to Regional hospitals in South Africa*	*Haemophilia Centre Mt Sinai Hospital, New York, USA and Haemophilia Centre at Johannesburg General Hospital.*	*Haemophilia Centre at Johannesburg General Hospital, Red Cross Children's Hospital and Groote Schuur Hospital, Cape Town.*

5.3.1.2 Data collection procedure.

Data were collected by engaging in one-on-one interviews with each of the three haemophilia coordinators. Such a technique provides the opportunity to probe particular responses, and is a means of eliciting a person's complex feelings or perceptions about an event (Polit, Beck & Hungler, 2001). In-depth interviews also provide an opportunity to

explore and observe phenomena in an individual context (Jackson & Borbasi, 2008; Whitehead & Annells, 2007). This approach allows the researcher to engage with the world of the participant, or an event, in detail. Such interviews generate rich, comprehensive and pertinent information (Whitehead & Annells, 2007). The researcher was an experienced interviewer, thus allowing for data of high quality to be collected (Jackson & Borbasi, 2008).

Whitehead and Annells (2007) and Lambert and Loiselle (2008) describe interviews as the most common method of collecting data in nursing research using oral narrative. According to Patton (1990) interviews are a means "to find out what is in and on another person's mind" (p. 278). Tellis (1997) agrees, stating that interviews can elicit details from the viewpoint of the participant thus adding to the evaluation process of the HNEP.

Interviews are a mechanism for evoking what cannot be seen, eliciting thoughts and feelings that are not observable and provoking situations or behaviours that may have occurred at some time previously (Patton, 1990). The questions asked by the researcher were open-ended to encourage the participant to fully express their "story", with the researcher assuming an active listening attitude and probing with questions to clarify a point as required.

5.3.2 Part Two: The haemophilia RN participants.

5.3.2.1 The sample group.

Part Two of the study included a purposive sample of 20 participants who had previously attended a HNEP and were caring for PWH. The sample was selected by the senior haemophilia nurse coordinators in SA. Participants came from four clinics in Nelspruit, Johannesburg, Cape Town and George. According to Schneider and Elliott (2007), the researchers' "knowledge of the population and its elements are used to handpick

cases typical of the population to be included in the sample" (p. 181). Purposive sampling is a common method used in nursing, and has several sub-categories such as snowball sampling and convenience sampling. In this instance, the participants were selected using criteria sampling where those selected were required to meet the criteria that had been established on the advice of the haemophilia coordinators (Table 5.2). Although the sample size was small (n = 20), the researcher was confident that the participants selected would be able to provide sufficient information as they were immersed in the context of the phenomenon the researcher sought to explore (Bloomberg & Volpe, 2008), and that the sample size had a great capacity to provide rich data (Polit & Beck, 2010).

Table5.2 Selection Criteria of Prospective Participants (RNs) in Study Part One.

1. completed the HNEP in the last ten years;
2. live and work in South Africa;
3. currently caring for PWH; and
4. managed a crisis situation in haemophilia.

5.3.2.2 Data collection procedure.

Focus groups were utilised in the service of collecting relevant data. Polit and Beck (2010) considered that focus groups are an efficient means of gathering opinions and experiences about a specific investigation. According to Tellis (1997), group interviews can elicit details from the viewpoint of the participant thus adding to the evaluation process. The advantage of a focus group is that it allows collection of rich data about an homogenous cohort (Curtis & Redmond, 2007; Rothwell, 2010) within the context of their work setting

(Freeman, 2006). By utilising focus group methodology, the researcher was able access information in relation to how the HNEP influenced haemophilia management in the workplaces of the former attendees.

Despite some potential shortcomings such as generating a Hawthorne Effect, focus groups are a cost-effective method of gathering data since a group of participants can produce individual ideas, which in turn stimulates further discussion (Goodwin & Happell, 2009; Happell, 2007). Also, data are collected immediately which is in contrast to a written survey where there exists risk of a low postal response rate (Punch, 2005). A postal survey was considered for this present study however, because of the unreliability of the postal service in SA it was decided not to utilise this option.

Focus group questions (Appendix E) were generated using the Kirkpatrick Four Levels of Evaluation (2006) model and the South African Standards of Care for Haemophilia. Four focus groups were conducted with two to six nurses in each group, as participant availability permitted. The focus groups were moderated by the researcher with a SA senior haemophilia nurse acting as an observer. It is common practice that these senior haemophilia nurses act as mentors and advisors for the nurses who have previously completed the HNEP. The inclusion of this senior nurse was to ensure that cultural issues not fully understood by the Australian researcher/interviewer were duly considered. The participants were comfortable with the presence of a senior haemophilia nurse observing the sessions since they viewed her as a mentor-colleague. They were accustomed to consulting her when they needed advice about haemophilia patients and reported regularly to her. The participants did not appear to be inhibited by her presence, speaking frankly about their experiences as nurses who cared for PWH. To corroborate evidence and to gain more fine-

grained exposure to major issues, four of the nurses agreed to take part in on-on-one interviews lasting about 30 minutes each.

A small meeting room was hired for focus group interviews at each of the venues where participation occurred. Comfortable chairs and refreshments were provided to help promote a relaxed setting so that the participants would feel at ease. Before commencement of the focus groups, each participant was given an outline of the study in plain English (Appendix F). Once they had acknowledged that they understood the purpose of the study, they were given a consent form (Appendix G) which was signed and collected immediately prior to participation. The participants were seated in a circle to facilitate group discussion. They were asked to introduce themselves, provide an overview of the area of health in which they worked and when they had completed the HNEP. To prevent one or two individuals from dominating the session, the researcher, at the beginning of each session, explained that all participants would be given an equal chance of responding to questions. The focus group interviews were audio-taped and transcribed verbatim.

5.3.2.3 The critical incidents.

Three critical incidents arising from interviews have been included to provide the reader with a greater sense of the sort of issues that haemophilia RNs face on a regular basis. A critical incident of a person or event involves the observation of a single incident that provides insights into that specific incident (Frankfort-Nachmias, & Nachmias, 1996). A further reason for their inclusion is to contribute to the evaluation process of the HNEP by adding to accumulating evidence (Yin, 2003), in this case as acquired via the RNs at one-on-one interviews.

Four RN focus group participants volunteered to describe an incident with a PWH which may have had a poor outcome if the nurse had not intervened. Questions asked were:

- Since completing the HNEP, can you recall and perhaps describe for me, a life-threatening situation where your intervention decreased the likelihood of a poor outcome for a PWH? and
- Can you describe how that intervention and subsequent outcome made you feel?

Three of the four responses proved to be so illuminating (with one person providing two responses) that they were deemed significant for the purpose of including in the present work. Paton (1990) explained that critical incidents can add rigour and in-depth information to other available data. The critical incidents provide an insight into the actions of two individual nurses to resolve high-risk situations with competence and confidence, post their HNEP training. These critical incidents are presented in Chapter 8.

5.3.3 Part Three: The expert assessors.

5.3.3.1 Rationale for the inclusion of Part Three.

Part Three of the study addresses the evaluation of the robustness of the curriculum which was undertaken by expert nurse educators. As important as it is to obtain insights from course participants, such participants have a certain level of ignorance regarding course efficacy that would not apply to expert educators. Whereas participants can evaluate the course per se, experts are in a far better position to consider the course in comparison to whatever is available in the market place. As educators, they are also better placed to comment of the adequacy of the pedagogical strategies utilised. There appears to be pragmatic disagreement among researchers regarding the precise number of experts required to obtain an accurate evaluation. Dumas, Sorce, and Virzi (1995) suggested five; Burns and Grove (2005) suggested that to reach consensus, between five and ten experts are recommended; and Podvezko (2008) recommended that the number be between six and nine. As validation of the HNEP was sought in Part Three of the study, seven experts were considered sufficient, as a larger number would be unlikely to reveal any further insights.

5.3.3.2 Defining expertise.

Seeking expert opinion has been identified as a bona fide method of determining content validity (Bruce, Langley & Tjale, 2008). According to Webster (1976), expertise is gained through "professional training and practical experience" (p. 800). In the case of expert nurse educators, such expertise has been gained through clinical proficiency and tertiary education. To fully appreciate what is meant by an expert, one needs to establish how expertise is characterised. The two most common ways to assess the nature of expertise is to firstly, compare the traits or characteristics of experts and novices (Chi 2006; Tsui 2003); and secondly, to study exceptional performers to gain an understanding of how they function in their domain (Chi, 2006). The first of these methods was chosen as it was thought that comparative identification had greater relevance for the present study.

There exists a plethora of literature describing the characteristics of experts and comparisons with the traits of novices (Benner, 1984; Chi, 2006; Dreyfus & Dreyfus, 1981; Moore, O'Neill & Barrett, 2008; Tsui, 2003). Table 5.3 presents a compilation of these traits as found in the citations above. The Table shows the traits of experts as opposed to novices, which the researcher utilised in selecting the appropriate experts for evaluating the HNEP curriculum and the HRF. The traits were determined by scrutinising the curriculum vitae of each potential expert.

Table 5.3 Comparison of Traits of Expert and Novice Practitioners.

Domain	*Expert*	*Novice*
KNOWLEDGE	*Domain-specific*	*Little situational understanding*
	Automaticity	*Adherence to rules or plan*
	Self-assured, confident in their knowledge	
	Knowledge & skills aligned to context of work	*No connection of knowledge to practice*
PERFORMANCE	*Opportunistic, makes best use of resources*	
	Analytic in novel situations or when problems	*Minimal understanding of complexity*
	Creates own interpretations	
	Can make rapid decisions	
	Displays efficiency, fluidity and effortlessness	
	Performance is superior	*Needs close supervision, instruction*
	Holistic understanding of the problem	*Inclined to see actions in isolation*
EDUCATION	*Has specific qualifications, education & training*	*Knowledge minimal, textbook knowledge*
	Self-improvement is important to individual	

On the basis of the information gleaned from Table 5.3, it became possible to establish a list of essential selection criteria, with justification, for an expert nurse educator (Table 5.4). Each participant's eligibility was then tested against these established criteria.

Table 5.4 Essential Criteria for Selection of Expert Nurse Educators.

Criteria	Justification
Holds a postgraduate qualification in nursing.	Exhibits evidence of higher learning.
Possesses some experience in curriculum evaluation.	Absolute necessity for the present task.
Has had some exposure to educating nurses in developing countries.	Sensitivity to challenges existing in developing countries.
Currently teaches in a tertiary institution; or has a supervisory role within the clinical setting; or has credible experience in the area of haemophilia.	Recency established. Position of leadership or responsibility indicates a higher skill level and reasoning capability.

5.3.3.3 The sample group.

Seven expert nurse educators were selected as evaluators. None had participated in the development or teaching of the HNEP. Three nurse educators were from Australia: the first was employed in the nursing school of a tertiary institution, the second in a tertiary teaching hospital in Perth, Western Australia, and the third in a private hospital outreach service to developing countries. Two experts were from universities in the UK and two from Africa who were employed at universities in SA and Malawi respectively. Each expert was assigned a code for identification purposes. The code appears under the heading "Expert" in Table 5.5.

Table 5.5 Expert Demographics.

Expert	*Country*	*Qualifications*	*Place of work*
MH	*United Kingdom*	*RN, lecturer*	*Large tertiary education facility*
MB	*United Kingdom*	*RN Senior lecturer*	*Large tertiary education facility*
LK	*Malawi*	*RN Senior lecturer*	*Large tertiary education facility*
SA	*South Africa*	*RN Senior lecturer*	*Large tertiary education facility*
JT-R	*Australia*	*RN, Lecturer*	*Private hospital outreach service*
BS	*Australia*	*RN Clinical Nurse Consultant*	*Large tertiary hospital*
AB	*Australia*	*RN, Senior lecturer*	*Large tertiary education facility*

5.3.3.4 Data collection procedure.

The expert nurse educators were contacted by email inviting them to participate in the evaluation of the HNEP and the haemophilia resource file (HRF). When an expert agreed to participate, the relevant material was delivered to them by courier. Courier expenses were paid for by the researcher. Included in the package was:

1. A covering letter informing the expert nurses about the research and explaining their participation (Appendix H);
2. Researcher contact details;
3. A consent form (Appendix I) to be signed and returned to the researcher by email;
4. An overview of the HNEP and the resource file contents (Appendix J);
5. A document containing the context of the program (Appendix K);
6. A Likert-type survey by Discenza (1993) (Appendix L); and

7. A thumb drive containing the Power Points sessions from the HNEP program (Appendix A: thumb drive). Access to the Power Point presentations allowed for a more thorough evaluation.

The expert nurse educators were each paid AU$200.00 upon receipt of the requested items. According to Fry, Ritter, Baldwin, Bowen, Gardiner, Holt, and Johnson, (2005) this type of remuneration is an acceptable practice to ensure that a busy professional will complete and return the evaluation to the researcher, as well as receive some recompense for time and effort provided.

Quantitative data were collected from a survey adapted with permission from Discenza (1993), which according to Bastable (2008), is considered "a valid instrument for selecting and evaluating instructional materials" (p. 506) developed to assist with selecting and evaluating instructional materials. The survey (Appendix L) consisted of five categories covering content, instructional design, technical production, quality of the DVD presentations; and the packaging of instructional materials of the HNEP. The experts were asked to respond to each of the category items via a Likert-type scale ranging from strongly agree, agree, disagree to strongly disagree.

Qualitative data were collected from the responses to eight open-ended questions in relation to assessment of the HRF. Questions were specifically structured to elicit information about the experts' overall impression of the HNEP, and their impressions of HRF content and associated pedagogy. Responses to the questions were analysed to identify themes and patterns occurring within the data. The findings from the survey and the open-ended questions were merged and the data results compared to help inform the research questions. The relationship between the three parts of the study and data collection is represented in Figure 5.2.

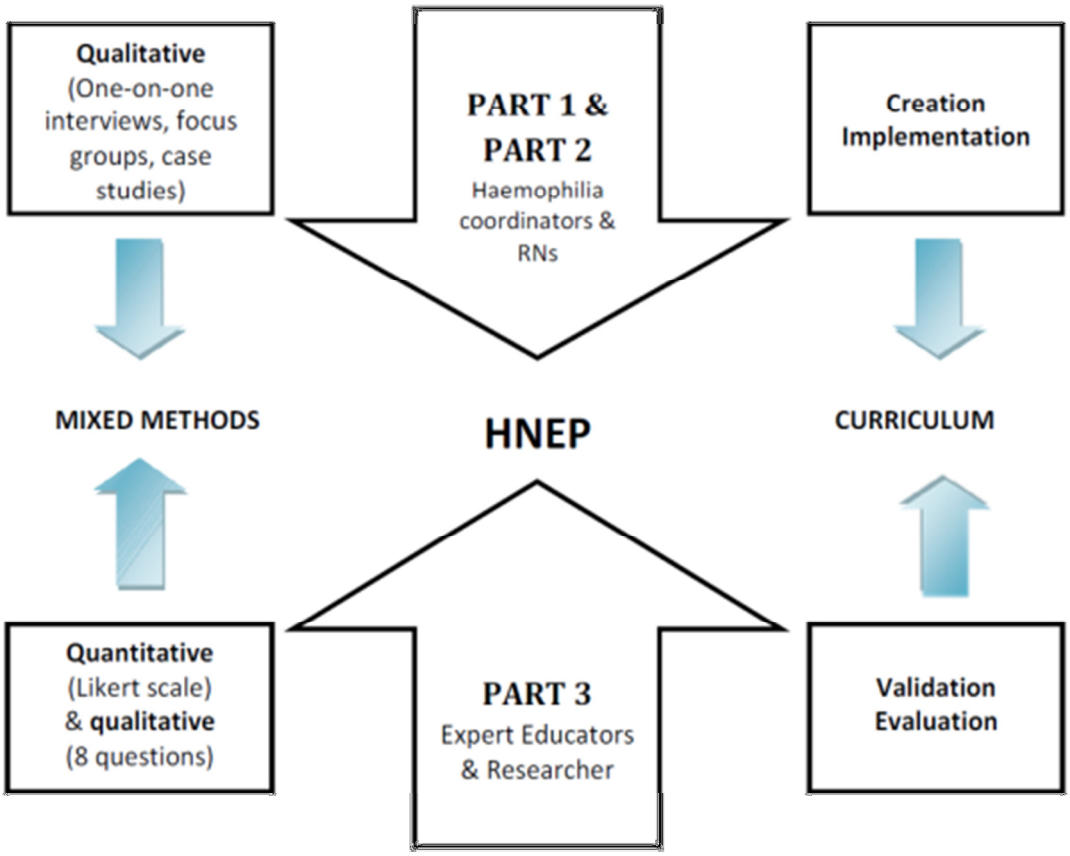

Figure 5.2 The relationship between the three parts of the study and data collection

5.4 Validation procedures: Quantitative, qualitative and mixed method research

5.4.1 Quantitative research.

Quantitative enquiry, finding its origins in positivism, advocates a methodology based in objective measurements using statistical or numerical data (Polit & Beck, 2010). Methods typically include data sourced from polls, surveys and questionnaires, which are analysed in an endeavour to discover relationships between variables (Whitehead, 2007). Cross-sectional data is used to gain information at one point in time, whereas logitudinal data may be gathered where information is being sought over time. Large sample populations are normally involved and generalisations may be made on the basis of what has been discovered from a representative sample of the population (Cresswell & Plano Clark,

2011). In the present study, as part of a broader mixed method approach, quantitiative data in the form of cross-sectional responses to questionnaires was collected and analysed.

Likert-type scales are commonly used to rate the degree to which respondents agree or disagree with a statement in a survey (Sullivan & Artino, 2013). Although there is some disagreement about whether the Likert-type scale is an ordinal scale or an interval scale, the researcher has chosen to select ordinal data for the survey used in this study. In ordinal scales the responses can be ranked but the distance between each response cannot be measured, whereas in interval scales the distance between each response can be measured and the responses can be calculated. As the survey in this study was used to determine the attitude of the expert nurses towards the content of the teaching package, by using the agree/disagree scale, there is no need to measure the distance between each response as this would not add anything useful to the data. Data from the survey was calculated in percentages and frequencies and illustrated using a diverging bar chart. Selective data from the RNs was also evaluated quantitatively as the Tables presented in Chapter 7 show.

5.4.2 Qualitative research.

Qualitative research can be described as enquiry situated in a naturalistic setting in which the researcher is exploring phenomena sympathetic to the people under investigation. This is done to ascertain the meaning they ascribe to such phenomena (Cresswell & Plano Clark, 2011). The researcher is a key instrument in the study by using observation and interviewing techniques to capture the data. Multiple methods of collecting data such as examining documents, interviews and focus groups are utilised, and researchers typically position themselves in the study as a participant-observer. Qualitative research, stemming from a constructionist orientation, investigates what individuals are encountering in their lives as a result of direct personal experience (Streubert & Rinaldi Carpenter, 2011). The

present research encompassed a qualitative aspect and was conducted in SA so is directly relevant to the needs of those nurses working with the PWH. Those involved in the research were participant observers; data was collected in a variety of ways; and participants' lived experiences were used as a starting point from which the HNEP was delivered.

In qualitative inquiry, the term validity is generally replaced by trustworthiness (Onwuegbuzie & Johnson, 2006). Leung (2015), a professor of family medicine stated that the essence of qualitative research such as subjectivity and contextual implications have served to provide contentious views about quality and trustworthiness in studies in health. As a result, there are no common qualitative criteria or terminologies for qualitative research. However, Lincoln and Guba's framework (1985) is viewed by some qualitative researchers as the benchmark for frameworks for quality criteria (Polit & Beck, 2010). Lincoln and Guba (1985) discussed the parallel perspective, comparing standards of reliability and validity in quantitative research to standards of "trustworthiness" in naturalistic inquiry. Their criteria for trustworthiness in qualitative inquiry were credibility, dependability, confirmability and transferability. In later publications they added another criterion, authenticity (Guba & Lincoln, 1994). The researcher has chosen to authenticate the trustworthiness of the study by using Lincoln and Guba's framework as it has been verified by researchers over many years (Polit & Beck, 2010).

Credibility is the confidence the researcher has in the truth of the data and its interpretation. The researcher must "strive to establish confidence in the truth of the findings for the particular participants and contexts in the research" (Polit & Beck, 2010, p. 492). The present research is credible in that the purposeful sample of participants were keen to describe the truth of what they were experiencing. They realised that the research

had a practical purpose and that it was to assist them in their ongoing activity supporting PWH.

Dependability relates to the stability of the data over time and conditions. The researcher needs to ask whether the findings from the data would be similar or the same if the study were repeated using the same or similar participants in the same or similar contexts. Dependability in Part One was determined by interviewing RNs who had attended different HNEP courses over several years. Their experiences once they returned to the workplace were very similar, thus providing evidence of the stability of the data over time.

Confirmability conveys the sense of objectivity in the findings. In the present study, the data reflects the information given by the participants, which is evidenced in the extensive utilisation of participant quotations. As indicated previously and in line with Bednall (2006), the researcher was aware that she needed to suspend her own judgements in order to maintain credibility. Further, member checking was utilised to validate the researcher's interpretation of the qualitative data presented.

Transferability refers to the extent that the findings can be transferred to other groups or contexts and parallels generalisability in the quantitative paradigm. Transferability was established by the researcher providing clear descriptions about the creation and implementation of the HNEP, which was further enhanced by the positive opinions of the RNs who had completed the course and applied their learning to practice. Other developing countries are not dissimilar to SA in the broad health care challenges they encounter, and specifically with regard to haemophilia care. As such, the likelihood of transferability is high.

Authenticity represents the extent to which the researcher conveys the realities of the participants or describes the lived experience of the participants. An articulate and accurate

portrayal allows the reader to live vicariously through the participants' experience of an incident or existence. Case study investigations were utilised to ensure that the criterion of authenticity was met.

5.4.3 Mixed methods research.

Mixed methods research (MMR) is an alternative paradigm to quantitative or qualitative techniques. Teddlie and Tashakkori (2011) maintain that MMR is grounded in pragmatism, where the methodological viewpoints are congruent and can be used in combination. In MMR, data are collected from more than one source and the results compared for like findings in order to confirm accuracy. Essentially, MMR is the combination of qualitative and quantitative approaches in a single study. The approaches can be utilised at any stage of the research – philosophical position, inference techniques, methodology, data collection and interpretation of results (Creswell & Plano Clark, 2011). Both qualitative and quantitative research methods have unique strengths and weaknesses. In a mixed method approach, the limitations of one approach can be compensated for by the strength of the alternative approach, thus providing a more comprehensive appreciation of the research problem than if one approach alone was used (Punch, 2005).

Mixed methods is appropriate for researching nursing topics because nursing is a complex discipline that embraces humanistic and holistic tenets on one hand but is set in the context of biology and science on the other. Using mixed methods suggests that nursing research reflects this diversity and is suitable to research question four because it allows for analysis using descriptive statistics as well as analysis of written protocols (Whitehead & Elliott, 2007).

Validity in mixed method research takes account of the factors considered under both the quantitative and qualitative paradigms (Creswell & Plano Clark, 2011). More specifically, it remains cognisant of the need for checking the quality of the data and the results and interpretation of the results. As mixed methods research combines the two paradigms of qualitative research and quantitative research, data analysis is undertaken separately for each paradigm (Creswell & Plano Clark, 2011) and then integrated in the interest of presenting more robust findings. Such integration enriches the research task in ways that would be impossible using quantitative or qualitative methodology separately.

5.4.4 Mixed methods and action research.

A further consideration is that MMR is compatible with action research. Action research is the act of identifying a specific problem, envisaging a possible solution, implementing it, and evaluating the changes (McNiff, 2002). The aim of action research to address the needs of real life in-situ problems, with an orientation toward changing future practice. Webb, Turton and Pontin (1998) make the comment that knowledge acquired through action research is valuable in that it is based on actual practice.

When combined, action research and MMR can provide the opportunity to collect qualitative and quantitative data in the same study (Creswell, 2012). Mills (2011) points out that although qualitative methods appear to be more compatible with action research, the use of qualitative and quantitative methods, such as when numeric data is required to strengthen qualitative narratives, may be justified.

Common features of mixed methods and action research include conceptual features which aim at providing comprehensive information. Examples are progressing from exploratory to explanatory and to confirmatory in a dialectical manner; using reflective

practice; and implementing a collective attitude to research. Philosophical features include holding a pragmatic philosophical basis; adopting advocacy in the pursuit of social justice: and embracing outsider-insider viewpoints. Procedural features include implementing principles of systematic research inquiry and employing quantitative and qualitative methods (Ivankova, 2015).

Ivankova (2015) suggests that stakeholders are more likely to acquire a greater understanding of decisions made on the basis of data, recognise the role of evidence-based plans for improvement and encourage the process of transformation of evidence into practice after participating in action research.

The traditional approach of action research methodology noted above is most strongly seen in the initial action steps, being the creation and implementation of the HNEP prior to the decision to undertake the study. Nonetheless, action research methodology remained relevant as an approach during the action steps of evaluation, monitoring by experts, revision to cuirriculum and reflection on future possibilities (Figure 4.4). This is because it continued the aim of addressing real life problems with the object of changing future practice.

5.5 Data analysis

Data collected from the interviews with the three expert haemophilia nurses were manually analysed to identify themes and patterns in relation to the history and the development of the HNEP. Data from the interviews and focus groups involving the haemophilia coordinators and the RN participants were managed using NVivo10 (Richards, 2009) and were coded using the Kirkpatrick Four Levels of Evaluation (2006) model. Also added was the fifth level introduced by Phillips (2003) and utilised by Sandhusan, Rusynko

and Wethington (2004) to assess Return on Investment (ROI). The complete categories utilised are shown in Table 5.6. An example of coding of data from the interviews and focus groups using the Kirkpatrick Four Levels of Evaluation (Level 1) is presented in Figure 5.3.

Table 5.6 Kirkpatrick Four Levels of Evaluation + Return on Investment (ROI).

Level	Coding
1. Reaction	Satisfaction with the learning process
2. Learning	Increase in knowledge and skills
3. Behaviour	Change of performance in the workplace
4. Results	Impact on the department or organisation
5. ROI	Cost/benefit, includes intangibles

Figure 5.7 Example of coding of data from the interviews and focus groups using the Kirkpatrick Four Levels of Evaluation.

Data collected from the focus groups and interviews support the research questions and align with the Kirkpatrick Evaluation Model. As this is the first time the HNEP has been formally evaluated, there was no baseline from which to judge whether or not any aspect of the program had improved. What was sought in this analysis is the nurses' assessment of the program. Trustworthiness of the coding was achieved by the researcher reviewing and cross checking to ensure that duplication and miscoding did not occur. Further, an individual not involved with the development of the coding system was given four randomly selected interviews in order to verify the coding procedure.

Data from the seven expert reviewers and sourced via a Likert-type scale (Appendix L) were analysed using descriptive statistics (means and frequencies). Analysis was undertaken using the Windows Excel program. Free responses supplied by the experts were categorised by similarity and thus reported. Verbatim comments (quotations) were presented in support of any interpretations made.

5.6 Ethical considerations

Approval to undertake this study was granted from the University of Notre Dame Australia Ethics Committee (Appendix M) and the Ethics Committee from the University of Cape Town (Appendices N & O). Obtaining approval from Cape Town University was a lengthy process as written permission was required from the Directors of Nursing of all participants in the focus groups and interviews before they granted Ethical Approval.

All participants in the study were provided with a plain English statement information sheet explaining the study (Appendices H and J) and were requested to read and sign a consent form (Appendices G and I). The participants were informed that participation in the study was on a voluntary basis and any one could withdraw at any time without censure. The researcher affirmed that all the data gathered from this focus group and interviews would be kept confidential. Participants were informed that no one would be mentioned by name in any report related to this study. To ensure anonymity each participant was allocated a code.

All data generated from the study was stored in a locked filing cabinet drawer in the researcher's home office. Data were entered onto a password-protected computer. Only the researcher and supervisors have had access to the data and transcripts. Tapes and transcripts will be destroyed five years after the completion of the study.

5.7 Chapter summary

This chapter described the method used to collect data for Part One, Part Two and Part Three of the study. The aims of the study were reiterated and the study design and its application to the HNEP explicated. The research questions and the methods used to gather and analyse the data were considered in detail. Validity/trustworthiness was established and

ethical considerations discussed. In the next chapter, results from the interviews with the haemophilia coordinators (Part One of the study) are presented.