

## Genetics Teaching in Advanced Midwifery Education Programmes: Nurse Educators' Perspectives

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**Abstract:** Genetics competencies in nursing education programmes are only found in Italy, United Kingdom and United States of America. Genetics should form an integral component of the nursing education programmes in South Africa. Omission to include genetics in nursing education programmes lead to the production of nursing workforce with restricted genetics competence. Such ill-prepared nurses are expected to comprehensively address the healthcare needs including genetics related health needs in practice. The genetics policy guideline in South Africa recommends that "recognition and management for common genetics disorders and birth defects, should be included in the training of post-basic clinical nurse practitioners" in the country. However, it remains uncertain if the advanced midwifery as post-basic nursing programme responds to the stated policy guideline recommendation. Qualitative design was used, 19 nurse educators in the advanced midwifery programmes were purposively selected and participated voluntarily. Three focus group discussions, four individuals face-to-face and four one-on-one telephone interviews were conducted to data saturation point. Data were analysed using thematic analysis. The need for learning outcomes, teaching content, teaching hours, learner evaluation, nurse educator training and programme revision to adequately accommodate and offer satisfactory genetics teaching emanated from data analysis.

**Keywords:** Advanced Midwifery, Genetics, Nursing education, nursing programme

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Date of Submission: 18-08-2017

Date of acceptance: 08-09-2017

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### I. Introduction

The teaching of genetics in most nursing programmes remains deficient across nursing systems although the field is considered an essential component for nursing education [1, 2, 3]. Further, genetics content has however less extended to learners in nursing education programmes [4]. On the other hand, evidence confirming if knowledge in genetics has stretched to learners in nursing programmes particularly those in advanced midwifery programmes is lacking. Thus, genetics teaching and learning remains inaccessible. Consequently, nursing education programmes produce poorly prepared nurses who lack the ability to provide genetics services [5]. Healthcare consumers who might benefit from genetics health services provisions remain unrecognised as they daily interact with healthcare services. The quality of life is disadvantaged as genetics services are compromised in clinical and in primary health care (PHC) settings. Provision of satisfactory genetics services to healthcare consumers influences the quality of life positively [6].

Nursing education institutions (NEIs) designs programmes based on national curricula (macro-curricula) in South Africa. The meso-curricula (NEI based) inform the development of micro-curricula (educator based). For the NEI to implement any nursing programme, related specific programme elements such as learning outcomes, teaching content, teaching hours, learner evaluation, quality control etc. should be prearranged [7, 8]. Such elements are used to guide the micro-curricula plan so that an educational programme is well focussed to address teaching and learning needs. An educational programme that is short of curricula elements for any field such as genetics is flawed. Although genetics prevail throughout human lifetime [9] curricula elements for that field could not be identified in a nursing programme called advanced midwifery. Midwifery as a specialised field "focus on expanded roles and competencies to improve: Maternal health, Reproductive health (including genetic counselling) and Neonatal/Child Health" [10]. However, the accredited literature to suggest that nursing programmes such as advanced midwifery offers satisfactory genetics or addressing genetics counselling is deficient in South Africa.

Some hereditary-related genetics conditions are experienced throughout life therefore healthcare facilities must be ready to address genetics related conditions. Advanced midwives as specialists' post-basic professional nurses' offering holistic care in the absence of medical doctors in most South African PHC settings requires satisfactory genetics knowledge, skills and competence to address all conditions. Holistic care that include genetics services could result if advanced midwives are able to assess and timeously offer appropriate healthcare to consumers who might experience genetics-related challenges [11]. Therefore, preventable genetics

related conditions could be averted while the quality of life is enhanced. The purpose of this study was to assess the teaching of genetics in the advanced midwifery as a nursing programme in South Africa. Genetics teaching is an important aspect in nursing education. The importance of accommodating and satisfactory teaching genetics could empower nurse educators so that they are able to transfer knowledge to their learners to be ready for genetics services provision in clinical and in PHC settings.

## **II. Methods**

### **2.1 Design and data collection**

A qualitative exploratory research design was employed. Purposive sampling was used and 19 female nurse educators took part in the study. All participants obtained the post-basic qualification in advanced midwifery and diploma in nursing education. Participants were teaching advanced midwifery programmes in identified nursing colleges and universities in South Africa.

Data were collected at NEIs between July and December 2013 and English language used. A voice tape recorder was used to capture focus group discussions that lasted 45 minutes and face-to-face interviews that lasted between 20 and 30 minutes. Telephone interviews also lasted 30 minutes and were captured in the note book.

### **2.2 Data analysis**

All participants were female nurse educators in the advanced midwifery programmes of which 84% were teaching in nursing colleges while only 16% were teaching at universities. The ages of participants ranged between 43 and 62 years. Data were analysed using six stages of thematic analysis according to [12]. The stages included:

Familiarising yourself with data. The researcher transcribed all the tape-recorded information. This provided the researcher an opportunity to fully immerse in the data. Generation of insights into the data sets was enhanced. Further, the researcher repeatedly read the transcripts to enhance familiarisation with data.

Generating initial codes. This stage commences during the reading and rereading of data sets and the researcher understood the data better to initiate generation of codes. Remarkable materials were identified in the data sets as initial codes extracts were organized. Different highlighters were used to identify similar codes.

Searching for themes. This stage is characterised by the identification of themes from an extensive list of codes. The codes were then sorted, grouped and combined to formulate comprehensive themes. The underlying sub-themes were recognised as similar codes.

Reviewing themes. At this stage, the themes were identified but were further refined. The researcher merged some themes while other themes were separated to make different themes with strong dissimilarities but fitting well to represent data sets.

Defining and naming themes. Identified themes were further refined and defined to apprehend the meaning of each theme and related data it represents. The researcher identified the sub-themes as these were composed within themes to dictate what the theme is all about as reflected according to the title of each theme.

Producing the report. In concluding data analysis, themes and sub-themes were completed and the report was written. The researcher used quotes from the data sets to emphasise the significance of sub-themes to represent data sets. The co-coder was provided with raw data for analysis and upon completion of the process, a meeting was arranged during which differences were discussed until consensus was reached.

## **III. Ethical Considerations**

Approval (38/2013) was obtained from the university where the study was conducted. Further ethical approval was obtained from selected universities and from the relevant authorities in South African provinces on behalf of nursing colleges. Nurse educators were requested to take part and participation was voluntary. After the purpose of the study was explained, consent forms were signed and verbal permission was obtained before telephone interviews were conducted. Anonymity and confidentiality were maintained and the report contains no form of identification that could link participants to the study.

## **IV. Trustworthiness**

Measures for trustworthiness were applied and those included the following: Prolonged engagement with participants to guarantee truth value while applicability was reached through data saturation [13, 14]. Rich description of data ensured dependability, while neutrality was attained through triangulation and authenticity was accomplished using verbatim quotes in the report [13, 14].

## **V. Results**

Two themes and sub-themes generated from data sets are presented in table one (1) to represent the perspectives of nurse educators regarding genetics teaching in advanced programmes.

**Table (1): Themes and sub-themes**

<b>Themes</b>	<b>Sub-themes</b>
1. Absent genetics learning elements in the advanced midwifery programmes	1.1 Absent learning outcomes, 1.2 Lost teaching content, 1.3 Varied teaching hours and 1.4 Missing learner evaluations
2. Vague genetics competence amongst nurse educators	2.1 Lack of genetics training attendance 2.2 Need for programme revision

### **5.1 Themes and sub-themes**

Two themes under which sub-themes were identified represented the perspectives of nurse educators in advanced midwifery programmes. Perspectives are mainly represented by the sub-themes as follows:

#### **5.1.1 Theme one: Absent genetics learning elements in the advanced midwifery programmes**

Nurse educators in advanced midwifery expressed their perspectives as poor planning of learning elements to have negatively contributed to their inappropriate teaching of genetics.

##### **5.1.1.1 Sub-theme one: Absent learning outcomes**

Across all NEIs that offered the advanced midwifery programmes, findings revealed that learning outcomes pertaining to genetics were absent. It means learners in the programme exit with undefined genetics competence. To support the views, nurse educators said: *"Outcomes related to genetics are not planned. Currently there are no outcomes devoted to genetics teaching in the advanced midwifery programme. Genetics outcomes in our programme are lacking."*

##### **5.1.1.2 Sub-theme two: Lost teaching content**

Healthcare educators are expected to ensure that their learning programmes are sufficiently including relevant and appropriate teaching content including that of genetics. Satisfactory planning of genetics content and teaching it adequately could empower learners with knowledge, skills and competence. However, in this study, the teaching content related to genetics was haphazard. Nurse educators said: *"Our curriculum lack teaching content for genetics and its teaching is uncommon. A genetic nurse is invited to give a lecture of own choice regarding genetics. It is up to the genetics nurse to include the topic that she/he sees fit."*

##### **5.1.1.3 Varied teaching hours**

Regarding hours dedicated for genetics teaching, results revealed great variations of hours that ranged from less than one to thirty-five (-1 to 35) hours. To support the differences noted in the data sets, perspectives of nurse educators were stated as follows: *"I think in 6 hours of class only 10 minutes is allocated for genetics teaching. With us at least 53 periods are used to teach genetics because it is done over a period of five days. We use two days for genetics teaching."*

##### **5.1.1.4 Missing learner evaluation**

Regarding learner evaluation, findings revealed inconsistent formative evaluation of theory for genetics while practical evaluation was entirely absent. Summative evaluation for both theory and practical in the advanced midwifery programmes was completely absent. Nurse educators stated the lack of guidance concerning the amount of genetics content in the advanced midwifery programme as the cause of the problem. To confirm the absent learner evaluation for genetics knowledge or competence, perspectives were expressed as follows: *"During formative evaluation, sometimes a small amount of theory for about five marks is included. If there is a genetic condition in the ward, formative evaluation might be done. We do not evaluate our learners on genetics because it not taught in our programme."*

#### **5.1.2 Theme 2: Vague genetics competence amongst nurse educators**

Nurse educators further identified their own poor genetics knowledge that affected their teaching of genetics in the advanced midwifery programmes. Perspectives of nurse educators are represented in the following sub-themes:

##### **5.1.2.1 Lack of training attendance**

Results revealed that nurse educators in the advanced midwifery programmes lacked adequate training in genetics. This is despite that the aim of education is producing competent workforce after learning encounter. The following quotation support what some of the nurse educators said: *"I am shallow on genetics subjects as I attended no training in genetics. Genetics need to be prioritised because HIV brought many babies with genetic abnormalities. I think educators in the advanced midwifery programmes need in-service education in genetics. Lecturers teaching advanced midwifery should be trained in genetics because what I have realised is that lecturers do not have enough information regarding genetics."*

##### **5.1.2.2 Need for programme revision**

Regarding the programme revision, nurse educators reported a need for improvement so that genetics is adequately included in the advanced midwifery programmes. Nurse educators said: *"The programme must be revised to include adequate genetics. There is a need for a framework because genetics is not well-guided. A*

*flash out knowledge of genetics among us as educators is needed. Education is an on-going process, so we need to keep abreast with genetics knowledge. Genetics is a speciality area and we need to be better trained as educators.”*

## **VI. Discussion**

The present study revealed uncoordinated genetics teaching in advanced midwifery programmes. The basis for the omission of genetics teaching is that the required teaching and learning elements for the field are unplanned. Therefore, learners in nursing programmes exit with unknown genetics knowledge and competence despite [15] stated that the entire healthcare professionals require genetics education. Nurses like advanced midwives require satisfactory genetics knowledge and competence. Such empowerments could assist nurses in propagating for the holistic care in clinical and in PHC settings. Healthcare settings call for nurses including those practicing as advanced midwives to have appropriate genetics competence so that they daily address genetics-related challenges.

The lack of genetics learning outcomes in NEIs seems to be a systemic problem. For example, nursing programmes are periodically reviewed meaning programme implementers have opportunity to assess the presence or absence of learning outcomes in their programme. A learning outcome is a statement of competence that is witnessed as expected at the end of learning encounter in any learning programme [8]. Learning outcomes serves to guide instructions and learning [8, 16] thus assist learners to understand the expectations in learning programmes. Nurse educators in this study reported that genetics learning outcomes were absent. This finding is expected because the South African genetics policy guideline document stated that genetics education in nursing depends on availability of educators [17]. Genetics teaching that relies on availability of educators is also reported in [1]. Nurse educators in the current study could be representing those educators with limited genetics knowledge hence absent genetics learning outcomes. Inability to plan learning outcomes undermines the objectives of any learning programme, consequently educational needs are unmet.

Findings also displayed poor genetics content. Learning content “refers to the facts, concepts, theories, principles, laws, skills and attitudes one have to learn...” [7]. These authors further stated that learning content is planned based on identified learning outcomes of which in relation to genetics such are lacking as reported by the current study participants. Other studies [18, 19] confirmed the lack of inclusion of genetics in nursing programmes therefore inadequate learning content exist. Because of absent learning outcomes, the learning content if available, could be inappropriate.

The content knowledge by educators in a subject, results in effective teaching and learning [20]. On the other hand, the knowledge deficit among educators regarding a specific topic is an obstacle to learning. Learning content should display the elements of contemporary related science as well as proof of grounded application for a particular programme [7]. The learning content for genetics field in this study was deficient, unscientific and ungrounded to provide required knowledge and competence to learners. Therefore, genetics content is unimportant in nursing programmes particularly the advanced midwifery. Consequently, unprepared nurses who are unable to address health needs that come about genetics conditions in healthcare settings are produced.

Despite the genetics conditions prevailing across human life times and the genetics field considered an essential component in learning programmes, the current study findings showed great variations of teaching hours that ranged from less than one to thirty-five (-1 to 35). Similar variations were also reported in [18] where teaching hours dedicated for genetics ranged from two to seventy-two (2 – 72) in nursing and midwifery programmes in the United Kingdom. More than 15 years earlier teaching hours devoted for genetics teachings were reported to be only 6.5 hours [21]. While genetics teaching is accorded the low status in nursing programmes particularly in the advanced midwifery, learners continues to exit programmes with deprived genetics knowledge and competence. This deprivation poses a great challenge to healthcare consumers who remain undetected of their genetics problems.

In regard to missing learner evaluation, major barrier to evaluation is related to absent learning outcomes and lack of defined learning content as reported by current study participants. Learner evaluation is a significant aspect in education as it assists programme implementers to make judgements about “student learning and performance” [22]. Because nursing involves practice, it is important to evaluate the competence in learners to ascertain if ability to perform expected activities is present. Learner evaluation is also done to determine competence to review suitability for practice [22]. Learner evaluation assists in monitoring the value in educational programmes particularly those pertaining to healthcare education [23] such as nursing. Omission to conduct learner evaluation for genetics knowledge is expected as the field is greatly compromised as reported in the current study.

Concerning the lack of training, poor teaching of genetics was ascribed to poor training among nurse educators. Obviously, nurse educators are themselves products of nursing education system where genetics was poorly provided. This kind of practice contributed to disempowered nurse educators regarding genetics knowledge resulting in their poor teaching of genetics. The lack of training among nurse educators is also

reported in [18] where teachers were not well trained in genetics and were unable to provide satisfactory genetics teaching to their learners. In regions where there are competing health problems, genetics might be less recognised compared to other health problems [24]. In South Africa, HIV, AIDS and TB occupy the centre stage due to their enormous influence on health and the society. Subsequently, genetics is underrated in nursing programmes particularly in advanced midwifery.

Regarding a need for programme revision, nurse educators were of the view that their programmes should be revised to accommodate adequate genetics. The perspectives of participants are congruent with those in [25] where participants required training in genetics to improve their knowledge and competence. "Revision requires improving, expanding, or updating materials, resources, faculty, and the environment" [26]. If revised to appropriately include genetics and its teaching is implemented, advanced midwifery could eventually be improved. Ultimately learners might benefit so that clinical and PHC settings provide suitable genetics services.

## VII. Conclusion

Benefits that come about the satisfactory genetics teaching in nursing particularly in advanced midwifery, is that graduates might acquire adequate genetics knowledge and competencies. An inherited genetic disorder can be predicted through the proper use of family pedigree during antenatal visits if nurses are adequately empowered. Some of the genetic abnormalities may be solely preventable through pre-natal history analysis, or opting for legal choice to terminate a pregnancy with severe mental and physical malformations, the use of specific diets, early detection and treatment etc. The limited number of nurse educators for the advanced midwifery in most NEIs (colleges and universities) made it difficult to constitute more focus groups for discussions. The South African accredited literature in nursing regarding genetics is deficient and that denied the opportunity to compare the current study findings with similar findings in the country. Further, research in other nursing programmes regarding genetics teaching is required as the subject prevails from before birth throughout lifespan. Genetics competencies are essential for all healthcare educational programmes.

## Acknowledgement

Professors F.M Mulaudzi and T.M Maja are acknowledged for guidance throughout the research study. Gratitude is also extended to nurse educators as study participants for sharing their information. Acknowledgement is further extended to the University-based Nursing Education in South Africa (UNEDSA) for the financial support.

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Mauwane Rebecca Phaladi-Digamela. "Genetics Teaching in Advanced Midwifery Education Programmes: Nurse Educators' Perspectives." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)* , vol. 6, no. 5, 2017, pp. 46–51.