**Needs of early adopters in supporting a nursing curriculum innovation in a low resource setting: An exploratory case study**

**Introduction**

Globally, nursing education institutions (NEIs) are adopting curriculum innovations into their undergraduate programmes (Debout et al. 2012). New content, learning outcomes, teaching, and assessment methods are examples of curriculum innovation being incorporated into mainstream undergraduate nursing programmes (Marsh et al. 2018; Rich et al. 2019). To an extent, such innovations have encompassed transformation in the entire curriculum model, such as the drive to ‘competency-based education’ underpinning the shift from older, more-established curriculum models (Muraraneza et al. 2017).

Scientific, social, and political motives have driven justifications for adopting curriculum innovations in NEIs. Some curriculum innovations, driven by technological advancements, an improved understanding of how students learn, the evolving health needs, epidemiological transitions, and the need to provide evidence-based education (Melekis et al. 2015) are arguably easier to defend from a pedagogical viewpoint. However, these innovations are a challenge to implement and sustain in NEIs in all contexts in terms of constant need for support, renewal and reinvestment in resources. Educational trends such as problem-based learning (PBL) in the 1990s and competency-based education in early 2000 led to a widespread adoption of curriculum innovations in NEIs (Gray-Miceli et al. 2018). These adopted curriculum innovations were not always proven concepts for every context, further influencing desired educational outcomes. Additionally, legislation driven by various political agendas and ideology has also influenced several NEIs to adopt curriculum innovations (Frenk et al., 2010) regardless of contextual evidence. Despite the motives underpinning the adoption of curriculum innovation, those acting as “educators” are usually expected to implement these adopted curriculum innovations within nursing programmes.

This paper aims to take a critical look at the introduction of one such curriculum innovation, driven by a case study example of the implementation of a competency-based curricula for an undergraduate nursing programme in a low-resource context, and the subsequent impact on the educators expected to implement it.

**Context of this study**

This study was carried out in a low-income country with a heavy disease burden in Africa. The context of the work is therefore a health system which experiences high prevalence of the human immuno-deficiency virus (HIV) and tuberculosis (TB), maternal and neonatal mortality above the regional average, and increasing cases of non-communicable diseases (Health, 2016). Human resources for health are far below the World Health Organization (WHO) established ratios per population for a country in its income bracket (Unicef, 2017). Six NEIs train the majority of the health workforce which are nurses, while doctors are usually trained outside the country and supplemented by foreign nationals. The locally trained nurses are the first and only health professionals within the primary healthcare system that the community has access to, and these nurses are expected to be competent at graduation.

In 2010, NEIs in this setting were directed by the Ministry of Health to adopt competency-based education, as a curriculum model for nursing education in all undergraduate programmes (Ministry of Health, 2010), replacing the long-used content-driven model. Through the support of the Nursing Education Partnership Initiative (NEPI) grant (Middleton, 2014), some educators from the six NEIs in the country were involved in the development of the first-ever competency-based curriculum (CBC) for nursing (Botma, 2014) guided by a consultant in nursing education in Sub-Saharan Africa. The summary of the developed CBC has been reported elsewhere (Botma, 2014; Botma et al. 2015; Nyoni et al. 2018). These educators were further exposed to funded planned faculty development activities aligned with the implementation of the CBC for nursing (Botma et al. 2015).

The end of the NEPI grant in 2014 resulted in the subsequent end of the funded planned faculty development activities (ICAP, 2016). Generally, it is understood that the success or failure of a curriculum innovation partially rests on the educators engaged in its enactment (Snell, 2014). The enactment of a curriculum innovation may not always mirror the approved or described curriculum due to the sensitivity of a curriculum to context, however, van Melle et al., (2019) warn that essential elements of the described curriculum should be preserved during implementation. Failure to implement the curriculum as originally intended may hamper the expected return on investment, negatively influence students learning experiences, and may result in unintended educational outcomes (Wilson et al. 2012). Therefore, educators must be equipped in implementing the adopted curriculum innovation through tailored faculty development activities.

In our case study, the newly recruited educators, even those that had not been exposed to the funded planned faculty development activities, were expected to implement the CBC in the undergraduate nursing programmes in their respective NEIs. Opportunities for planned faculty development are scarce in this low-resource setting, but educators who had been trained in the CBC were expected to support other educators in their institutions to implement and sustain the CBC nursing programme. It was these educators or early adopters, who carried the expectation of undertaking their daily professional roles, as well as supporting colleagues in delivering CBC, with whom we wanted to engage with, to understand their needs in supporting other educators in implementing the CBC.

**Methods**

**Design**

This study used an exploratory qualitative design.

**Participants**

While 96 educators had been trained in the implementation of the CBC during the planned faculty development activities supported through the NEPI grant, the researchers purposively sampled educators who were still employed within NEIs in the country, who were willing to support others, and educators who were directly involved in the implementation of the CBC in nursing at the NEI. This sampling resulted in only eight educators, distributed across all the NEIs in the country, in itself an indication of the scarce resource that trained educators or early adopters had become.

**Data collection**

Data was collected through semi-structured interviews that explored the perceived needs of the early adopters in supporting others in implementing the CBC. A data collector with experience in the context, research methods, and the curriculum model was engaged to conduct the interviews. Due to the geographic distribution and inaccessibility of some of the NEIs, data was collected through a combination of face-to-face interviews and telephone interviews. The interviews were conducted in either the local language and English based on the preference of the participants, and lasted on average 40 minutes. All interviews where audio-recorded and field notes were captured. The interview questions explored the participants experience in supporting other educators in implementing the new curriculum model including what they thought would enable their role in supporting other educators in implementing the curriculum.

**Data analysis**

The interviews were transcribed verbatim and allocated identifiers. The process of data analysis proceeded in iterative steps as described in Saldaña (2009). In the initial step, the first author identified units of analysis in the form of sentences and paragraphs within the data, applied various coding methods to generate a code list. The second author acted as a co-coder by reviewing the code list against the transcripts. Discussion and consensus influenced the final codes. In the second step, the researchers grouped the codes based on patterns and relationships among the codes through pattern coding methods. This process was engaged through iteration with the data and reflection notes to generate themes which are presented as findings of this study.

**Rigor**

The trustworthiness framework was applied in this study to enhance rigor (Lincoln & Guba, 1986). Data were collected until data saturation by an experienced qualitative researcher who was also involved as a co-coder during data analysis. An audit trail was kept to enhance the transparency of the data collection and analysis process including processes related to decision making. The results of the study are linked to and directly supported by quotes from the interviews with the participants of this study.

***Ethics clearance***

The National Institutional Research Board of the Ministry of Health in this country approved this study (Ethics number: ID 119/2019). The principles of ethical research in the Belmont report was applied throughout the study (Department of Health (South Africa), 2015). All participants gave informed consent to be part of the study secondary to an explanation of the purpose and process of the study.

**Findings**

The eight participants were distributed across five NEIs within the country. These participants had all been exposed to the new curriculum through the funded faculty development activities and also experience at their home institutions. In as much as their original training was not specifically aligned with the new curriculum model, they seem to have naturally taken up a mentorship role for the new curriculum within their institution. All of the included participants had more than two years clinical experience and more than five years as nurse educators within their respective institutions. The researchers labelled each NEI using one of the last five letters of the alphabet and each participant was labelled numerically based on the sequence of interviews at their institution. Four over-arching themes each with a number of sub-themes were identified within the responses; these are discussed in turn below.

**Theme 1: Essential resources needed for faculty development**

The participants identified essential resources needed within the NEIs to enhance faculty development for improved and sustained implementation of the competency-based nursing programme. The identified resources were clustered into three major sub-themes namely; material resources, human resources, and financial resources.

***Sub-theme 1.1: Material resources***

The participants explained that they need specific material resources to enhance their role in supporting the implementation of the CBC. In particular, participants desired for such resources to be aligned with the socio-constructivist learning philosophy that underpins the curriculum. According to the participants, the availability of such material resources would enable the faculty development activities to occur. Specifically, the participants pointed out resources such as teaching aids, connectivity, computers, and constant electricity supply. One of the participants stated:

*The electricity is unreliable and we do not have a back-up system…how then do you assist an educator to develop teaching material, let alone search for evidence? [V2]*

The participants highlighted that the resources that had already been developed (workbooks, study guides, articles and reports related to CBC in the country) needed to be stored in repositories that are accessible to both senior and newly appointed educators. Similar comments were made about updating library resources. Some of the participants saw the need for the adoption of electronic libraries in all the NEIs, as opposed to just some of them:

*A lot of material has been developed through workshops and training, but we just don’t have it… it’s in personal computers and not in one repository where we can all access. Even if I am to support new staff, it would be easy for me to work with already developed material accessed at a repository [X1]*

***Sub-theme 1.2: Human resource development***

The development of human resources was deemed essential in the support of faculty development related to CBC in this setting. The participants expressed the need to be upskilled in the processes of developing other educators and in integrating their knowledge and experiences in such a programme. The need for ‘refresher’ programmes from nursing education consultants from outside the country’s context, whom they perceived to be experts in nursing education and the CBC was also identified:

*We need training first from Prof X and Dr. X, they understand this curriculum better. Dr. X has experience with our context, and that would be useful in refreshing our knowledge and designing how best we can support the other educators in our institution. [Z1]*

Additionally, participants expressed the need to have Information Technology (IT) specialists with an orientation to the technological needs of the curriculum to be included as part of the human resource structures of the NEIs. At the time of the research, only two of the five NEIs included had full-time IT technicians whose jobs were aligned with ensuring constant internet connectivity and maintenance of the IT infrastructure within the NEIs. According to the participants, the IT technicians did not have sufficient knowledge to provide the appropriate support for the implementation of the CBC.

***Sub-theme 1.3: Financial resources***

The participants expressed the need for planned centralised faculty development activities. However, it was noted that these may be expensive when most of the NEIs do not have specific funding for planned faculty development. Participants recognised the critical shortage of educators, the terrain of the country and the distribution of NEIs in influencing the design of any specific faculty development initiatives

*It’s a struggle to get educators to be in a room and learn when they are in their institutions. They are overworked because of the staff shortage… they need to be taken to one central place far from the school if they are to concentrate and learn about this CBC. That requires money and at the moment none of the schools have a budget for it… [V2]*

*Once their physical environment is not appetising, they will not concentrate. The educators need to be fed, need workshop material and some may need to be paid to sleep in a hotel. We need money for that… [Z1]*

**Theme 2: Structured approaches to educator support**

The participants in this study expressed that educator support needs to be presented through structured approaches influenced by the needs of the educators, through specific strategies and made compulsory for all educators in the NEIs. This theme is described through two sub-themes: planning for educator support and facilitation of educator support.

***Sub-theme 2.1: Planning for educator support***

Preparing to support educators was expressed as essential in supporting the implementation of the CBC. The participants stated that the planning for educator support should be aligned with the current and continuous needs of the educators, who are at various proficiency levels related to the implementation of the CBC. The participants further explained that initiatives directed at supporting educators should be made frequent throughout a semester and such training be made compulsory to all educators at the NEIs;

*All students deserve to be trained by appropriately qualified and trained nurse educators. Therefore, all nurse educators need to be trained in implementing the CBC and such training needs to be compulsory* [X1]

***Sub-theme 2.2: Facilitation of educator support***

The participants described potential approaches for supporting educators, including the design and incorporation of distance education, where educators could be provided with CBC related materials and assessed on their understanding of the same. Such a resource would allow educators to learn about the curriculum before face to face training which is then used to support specific needs or questions.

*In addition to face to face training which is a common practice here, I recommend that we should plan for distance education, and faculty get tasks and are assessed at their institutions if they learnt and applied something there…[V3]*

The participants wanted to have benchmarking exercises at one of the local NEI that was implementing the CBC in the Midwifery programme as originally intended. In that specific institution, faculty development structures had been developed to support newly appointed educators. Other participants recognised the good practice and expressed the need to have such structures duplicated and applied across all other institutions in the country. One of the participants explained;

*XXX School of Nursing is doing well in implementing this curriculum, we can learn a lot from them. Even if it means just visiting and learning what and how they do it would be beneficial for all of us. I am aware that they even have a Faculty Development Officer, which is something very good but in our institution, we don’t have [Z1]*

**Theme 3: Challenges faced by the early adopters**

The participants in this study indicated the challenges they had faced related to the competency-based education and the CBC. These are described in two sub-themes namely; ‘trained but forgot’ and other responsibilities.

***Sub-theme 3.1: ‘Trained but forgot’***

The NEPI grant supported the training of educators in the design and implementation of the CBC. The training of educators in the CBC stopped at the subsequent end of the NEPI grant in 2014 and educators were expected to implement the CBC. However, some of the participants claim that they were not immediately involved in the implementation of the CBC, as they had to wait for approval from regulatory structures which took longer than anticipated. The fact that they were not immediately involved in the implementation of the CBC appeared to contribute to their failure to recall essential aspects of the CBC.

*I was trained but truly I have forgotten. I am as good as the newly employed educators [X1]*

In other cases, participants explained that the limitations in resources in their institutions including the lack of administrative support influenced their implementation and resulted in them forgetting how to implement the CBC as originally intended.

*I was trained and I did not implement anything since 2014. Those that implemented struggled as there is limited administrative support here… [Y2]*

***Sub-theme 3.2: Other responsibilities***

The participants stated that they have limited time to support the development of other educators and due to the general shortage of educators in the country. The educators felt that they had heavy workloads coupled with the pressure to perform since they were mostly senior and have been trained in implementing the CBC.

*I am head of the department, and facilitate several modules both in the CBC and some are not. With which time do I get to support other new educators? I want to…but I just don’t see it happening, when? [V3]*

**Theme 4: Monitoring of the programme**

In enhancing faculty development and implementation of competency-based education for nursing, the participants pointed out the need for such programmes to be monitored both internally and externally. Such monitoring may expose the gaps in implementation and be used to motivate for a planned institution and nation-wide faculty development and transformation of nursing education. This theme was described by two sub-themes namely; accountability and professional authorities’ support.

***Sub-Theme 4.1: Accountability***

The participants in this study believed that for sustained educator support and improved implementation of the CBC, NEIs need to be accountable for the programmes they deliver. They presumed that accountability would lead to specific programme improvements. The participants felt that the institutions:

…*did not care, even if the curriculum was implemented correctly, as no one was going to ask them [*W2].

Such expressions reflected limited accountability throughout the NEIs regarding the CBC. The participants further revealed that the educators in the system were not interested in being trained on the CBC, as they were aware that there are no consequences of poor curriculum enactment. This drove the participants in explaining that, the institution and the educators involved should be made to account to several authorities including the government:

*The government, which started all of this should make schools accountable. The schools can do this CBC once they know that the government is also serious [Z1]*

*The educators are clever. They want to be comfortable and if no one asks them of their practice and there is no consequence, so why bother training? [V3]*

***Sub-theme 4.2: Professional authorities’ support***

The participants in this study reflected the role of the various professional and regulatory authorities in the monitoring of the implementation of the CBC for nursing. The participants were clear that the implementation of the CBC should go beyond being focused on the NEIs but should be broad enough to engage the larger stakeholders in nursing and midwifery.

*The Nursing Council should be more serious with the process of regulating education institutions [Z1]*

*I think the Nursing Association should have a wing that focuses on the education of nurses and advocate for this CBC at such structures. I think this is when we will start to see real change [W2]*

**Discussion**

Planned faculty development activities related to curriculum innovation may not always be available in low-resource settings. Educators who are early adopters of curriculum innovations bear the potential of motivating and supporting other educators in implementing the curriculum innovation resulting in sustained curriculum change, but as we have evidenced in this one case study, this activity may not happen even when planned in the initial implementation.

Previous studies have already noted how the adoption and subsequent implementation of competency-based education models impacts on human resources within education institutions (Hawkins et al. 2015), exemplified in this study by comments on the lack of IT support. This further reinforces the need for those adopting curriculum innovations to examine their human resource and task/work distribution models for alignment with the curriculum innovation (Caverzagie et al. 2017; Nousiainen et al. 2017). Applying similar human resource strategies across different curriculum models may negatively influence the role of early adopters in supporting other educators further influencing the implementation and sustainability of the curriculum innovation.

Due to the shortage of educators in this country and a heavy workload, the participants advocated for centralised planned faculty development activities. These activities would include all educators leaving their workstations for a workshop or training related to the curriculum innovation. Such an approach would support the pooling of resources from all the institutions and distribution of the supportive role of the early adopters to all educators (Melekis et al. 2015) and is arguably a resource-efficient model for a low-resource setting. Again, the participants comments chimed with previous literature that describes the need for faculty development activities or planned educator support to be tailor-made to the needs of the setting (Downes et al. 2017). A continuing professional development (CPD) programme integrating flipped classroom principles could be developed for educators in this setting (Akçayır et al. 2018), but currently the response from participants indicated this is clearly lacking. Such opportunities may be used by early adopters to share developed educational resources and strategies with other educators, again arguably enabling more efficient use of limited resources.

Due to regulatory bureaucracy in the case study setting, the approval of the CBC for nursing took longer than expected. This time-lapse between initial training and implementation influenced the self-efficacy and ability of the early adopters to use their newly learned skills. Subsequently, the early adopters feared their competencies related to the curriculum had diminished in addition to the general advancements that had occurred in the profession, echoing earlier research that indicates time-lapse between training and eventual implementation influences skills and contributes decreased competence (Cameron, 2011). The participants here also expressed the need to be empowered concerning the CBC and in strategies of supporting other educators. Kirschner (2002) explains through experiential learning, the importance of immediate implementation of learned activities in strengthening long-term memory and future competence. It is therefore essential for the early adopters to be both engaged but also be ‘re-engaged’ in the curriculum innovation, including with planned strategies of supporting other educators and for immediate implementation.

The administrators of NEIs and other educators were perceived as reluctant to implement the curriculum innovation. This reluctance, especially from the administrators of the NEIs, negatively influenced the desire of the other educators to seek support from the early adopters. Research in a similar setting describes a culture of poor self-directness among nurse educators, who are often perceived to struggle with self-assessment and self-regulation associated with their professional expectations (Van Rensburg et al. 2015). In this study, the limited self-directedness in demoralising environments created a heavy burden on the early adopters as they had to go “above and beyond” in supporting adoption of the curriculum innovation. This may have a negative consequence on the early adopters who normally have their responsibilities within the NEI. The risk is then that early adopters may experience exhaustion and burn out, especially when the other educators are reticent and there are no consequences to non-enactment.

Advocates for the adoption of the curriculum innovation, in this case, the Government through the Ministry of Health and its funders, should engage measures to ensure follow-up, support, quality assurance and accountability of NEIs. Ultimately, any form of accountability for the success of the programme would appear to be a better model than the version which results in the spending of grants on large scale curriculum change which are then not supported, or followed up. The situation in this setting raises further questions regarding the responsibilities of funders in their expectations, and the need to closely monitor educational outcomes. It is clear in this case that more support for the local education community would have been welcomed and useful, yet as this was not part of the funding package, opportunities were lost in harnessing the enthusiasm and commitment of the early adopters. Without this support, it is likely that curriculum innovation in this low-resource setting may fail, with dangerous consequences for an over-stretched workforce ultimately impacting on the quality and safety of patient care.

Professional associations are expected to be custodians of professions, through driving and enhancing the status of their profession (Greenwood et al. 2002) and within the training and education of their members. In this setting, the participants called upon the professional associations to be engaged in supporting their role. Poor quality curriculum enactment by the educators in NEIs may influence the outcomes of such professional programmes which may have dire consequences in practice, where such graduates may struggle to meet the needs of the communities. It is clear that curriculum innovation needs to be endorsed and supported by professional associations which may improve the utility of the early adopters in supporting other educators in adopting the curriculum.

**Limitations**

The discussion and conclusions presented here are clearly based upon one context, nevertheless, it is hoped that there are useful lessons here for all those interested in curriculum development in low resource settings. The first author has played various roles in this setting related to the development and implementation of the CBC for nursing and midwifery. His involvement with the educators in the setting and his knowledge of this setting may have influenced the interpretation of the study findings. However, the second author had no previous knowledge of the project prior to this study. The conclusions drawn are therefore from a consensus view of an insider and outsider to the curriculum development, a combination we hope has offered a unique interpretation to previous evaluations of the innovation.

**Conclusion**

Educators in all settings need to be competent in a curriculum innovation during its implementation. Adopting a curriculum innovation creates the need for faculty development although such planned faculty development opportunities are limited in low-resource settings. Educators who have been trained in implementing a curriculum innovation and have adopted the curriculum innovation may be used to support other educators during implementation. However, the needs of these early adopters in supporting other educators in adopting a curriculum innovation are not always clear, especially in low-resource settings. This study explored the perceived needs of early adopters of a nation-wide curriculum innovation in a low resource setting in Africa.

The findings of the study as a whole raise questions about whether entire curricula could and should be expected to change, particularly in relation to models that are unproven in non-Western or lower resourced settings. The participants’ views presented here demonstrate that one-off investment in a low resource setting has not yet achieved long-term or sustainable curriculum change, with the education system now more fragmented by piece-meal introduction of new curricula patched over the old. Where there is clearly enthusiasm for curriculum development for local educators, harnessing their knowledge and experience of their own health and education systems to work with local professional bodies supported by external review would surely be more sustainable and effective for the healthcare outcomes of the local population.

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