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# The Use of the Conceptual Framework to Develop a Training Programme for Home-Based Carers Who Care for People with Cardiovascular Diseases

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## Abstract

Cardiovascular disease (CVD) is the complex disease associated with morbidity, mortality and loss of quality of life. Furthermore, it is the most significant cause of death in the diabetic population. South Africa is faced with an increasing number of people diagnosed with diabetes mellitus which intensify the burden on the health system. Home Based Carers (HBCs), also known as Community Health Workers need to undergo training before taking – up health-related jobs at the community level. HBCs who care for patients with cardiovascular diseases at the community level need to be trained on how to care for their patients at care and management. The systematic literature review method was used to review literature related to diabetes mellitus, type 2 diabetes mellitus, Community Health Workers, CHWs diabetic knowledge and diabetes mellitus, diabetic training of CHWs. The following themes and their subthemes have emerged: (1) The use of Practice orientated theory for training development which include the agent, the recipient, the context, the dynamics, procedure and terminus; (2) The use of the ADDIE model in the development of a training programme for HBCs which include Analysis, Design, Development, Implementation and Evaluation. Two conceptual frameworks to be used to guide the development of the training programme for HBCs for people with diabetes. The ideas of Dickoff and others can be used to formulate the conceptual framework that guides the development of training for HBCs for cardiovascular patients. The six concepts of the survey list include agent, recipient, context, dynamics, procedure and terminus. Instructional design system following the ADDIE model provided practical steps for organising training development project. According to Branch, ADDIE's model describes and prescribes what needs to happen during the process.

**Keywords:** cardiovascular disease, diabetes mellitus, type 2 diabetes mellitus, home based carers, conceptual framework, training programme

## 1. Introduction

Cardiovascular disease (CVD) is the complex disease associated with morbidity, mortality and loss of quality of life [1]. Furthermore, it is the most significant cause

of death in the diabetic population. South Africa is faced with an increasing number of people diagnosed with diabetes mellitus which intensify the burden on the health system. The number of adults with diabetes in South Africa has increased to 4.5 million [2]. This caused the country to expand its healthcare focus to include Diabetes Mellitus. Home-Based Carers (HBCs), also known as Community Health Workers (CHWs) are involved in caring for diabetes mellitus patients in collaboration with the Primary Health Care. The previous study done in the Southern African context revealed that patients lack respect to HBCs and the HBCs lack training on chronic conditions including diabetes mellitus [3]. HBCs need to undergo training before taking – up health-related jobs at the community level. HBCs who care for patients with cardiovascular diseases including diabetes mellitus at the community level need to be trained on how to care for their patients.

In this chapter, we present conceptual frameworks that can be followed to develop training programmes for HBCs systemically. A conceptual framework is a network of interlinked concepts that can provide a comprehensive understanding of a phenomenon [4]. Furthermore, it provides an interpretative approach to reality, to express and explain ideas and also to make inferences or draw conclusions [4, 5]. A framework is a layered structure indicating the kind of programs which should be built and how they would interrelate. The conceptual framework aims to guide the development of the training programme for HBCs necessary for empowering them with knowledge and skills useful during care of People with Cardiovascular diseases including Diabetes Mellitus.

## **2. Systematic literature review method**

The systematic literature review method was used to review literature related to diabetes mellitus, type 2 diabetes mellitus, Community Health Workers, CHWs diabetic knowledge and diabetes mellitus, diabetic training of CHWs. The theories where two themes with their subthemes that has emerged. Other related sources were used to support the themes that has emerged from the theories. The following themes and their subthemes have emerged: (1) The use of Practice orientated theory for training development which include the agent, the recipient, the context, the dynamics, procedure and terminus; (2) The use of the ADDIE model in the development of a training programme for HBCs which include Analysis, Design, Development, Implementation and Evaluation.

## **3. The use of practice orientated theory for training development**

The issues that need to be addressed in the development of the conceptual framework are goal content, the prescriptions of the activity to attain the desired outcome, and the survey list to identify the gap between the intended activity and the prescriptions of the activity [5]. The main aim of the framework is to identify concepts that could be reflected in the training program. The concepts identified are utilised to describe the conceptual framework that guided the development of the training program for HBCs.

The ideas of Dickoff and others can be used to formulate the conceptual framework that guides the development of training for HBCs for cardiovascular patients. The six concepts of the survey list include agent, recipient, context, dynamics, procedure and terminus. The following questions are used as the basis for the formulation of the conceptual framework that informed the development training programme in this study were:

- Who is the agent? -The agent refers to the person who performs the activity which is the development of the training programme to improve knowledge, skills and attitude of the HBCs who cares for diabetes people.
- Who is the recipient? - The recipients of the activity who will benefit from the training program in this study are the HBCs who care for diabetes people.
- What is the context? - The context of the training programme is where the HBCs provide care for PWD.
- What are the dynamics? - Dynamics in this study, are the challenges and the training needs that motivated the development of the training programme.
- What is the procedure? -The procedure included the processes followed during the development of the training programme.
- What is the terminus? - Terminus refers to the end product of the activity which in this study are competent HBCs, autonomy to provide care to diabetic people and controlled blood glucose in diabetes people.

### **3.1 The agent**

The agent is the first aspect of the survey list and refers to a person who performs the activity with the aim of Dickoff and others, which is the development and implementation of the training programme for HBCs who care for diabetes mellitus people. The agent should be the researcher who conducts needs analysis and facilitate the development of the training program for empowering HBCs who care for PWD. The agent as the facilitator in this study should possess certain characteristics. The agent is expected to develop a training programme and empower HBCs with knowledge and skills necessary for the provision of care to PWD. Therefore, the agent is expected to be competent and also required to possess personal qualities and abilities necessary to perform these activities [6]. Furthermore, the agent needs to possess the following characteristics knowledge, skills and attitude to be able to capacitate HBCs with the necessary information to be able to execute their expected tasks with ease. The following characteristics of the agent are described below: knowledge, skills and attitude.

#### *3.1.1 Knowledge*

Knowledge” refers to a body of facts or ideas acquired through study, investigation, observation or experience [7]. The role of the agent as a facilitator was to develop the training programme for the HBCs who care for PWD. The agent was required to be aware of the training needs of the HBCs to develop an effective training programme, therefore training needs analysis was necessary for the development of the training programme. The agent should possess scientific knowledge and research skills that will make it possible to explore and describe the knowledge and learning needs of the HBCs for people with diabetes. The agent should detect the challenges that inhibit quality care and management of PWD. The recipients will contribute towards the development of the training programme by pointing out their challenges and learning needs during the care of diabetes mellitus people.

### **3.1.2 Skills**

The agent should be able to build good interpersonal relationships with the recipients and other stakeholders (dietician and the pharmacist) to relate and create an environment conducive for implementation of the training programme. An agent should be able to motivate and empower the participants to bring out the best in them through management skills. An agent listens actively to hear the participants' thoughts and messages and respond appropriately through listening skills. Good communication skills enable the agent to create a healthy interaction among the participants, communicate effectively so that he/she can understand problems, elaborates the points of the team and his own, and effectively conveys ideas and messages, clarity and confidence to the participants.

### **3.1.3 Attitude**

The agent treats the participants equally during training and know-how to consider the differences in each one's personalities. The agent is friendly and honest to the participants to create an admirable and pleasant environment good for interaction. People love to be with a person who has a desirable attitude and a pleasant manner of dealing with other people. The agent should be patient and persevering to be able to appreciate and understand the difficulties of the participants and determined to see objectives achieved. The agent also has a sense of empathy for the participants who need to be understood. The agent should be competent and demonstrate a professional attitude in carrying out their function. The agent should be respectable, reliable and committed to helping the participants learn for themselves and also confident to project a positive and purposeful atmosphere in the workshop.

## **3.2 Recipient**

The recipients refer to a person who receives the activity [5]. The recipients were all the HBCs who care for the diabetes mellitus people and benefited from the training programme design. The HBCs have the responsibility to provide effective and efficient quality health care to people with diabetes. The agent should be informed by the recipients' experiences in the context they are providing service that the training programme is needed to address the training needs identified during situational analysis. The recipients interact with the agent by reacting during the implementation of the training programme to achieve their desired goals.

### **3.2.1 Characteristics of recipients**

The recipients are expected to have certain characteristics that enable them to benefit from the programme and to participate fruitfully during the training. They are expected to be caring for people with diabetes to be able to participate in the training programme to achieve the desired outcomes of providing quality care. The HBCs as the recipients of the training programme in this context should be emotionally intelligent to be able to change and cope during training [8]. Attending the training programme would enhance knowledge, skills and attitudes to enable the recipients to perform their expected activities.

The HBCs as the recipients are expected to have the following characteristics of adult learners by Malcolm Knowles as outlined in Kloppe (2009): self-concept, adult learner experience, readiness to learn, orientation to learning and motivation



to learn. These characteristics offer HBCs a wide range of benefits, including improved comprehension of key concepts and a boost in knowledge retention.

#### *3.2.1.1 Self-concept*

HBCs as the recipients in this study and as adult learners are entitled to make their own decisions and take control of their own lives. The HBCs as adults identify the value of attending training because they want to learn what will be useful to them. The researcher role as a facilitator during the implementation of the training programme is to guide and direct them.

#### *3.2.1.2 Adult learner experience*

HBCs gain a lot of experience when working with diabetes mellitus patients on treatment at, therefore the training programme should focus on their unique training needs. HBCs as adult learners employed their learned experiences during care of diabetic people before they participated in the study to direct their learning because and to be actively involved in their learning.

#### *3.2.1.3 Readiness to learn*

HBCs as the recipients of the training were ready to challenge themselves with new learning experiences that offer some sort of social development benefit. They are ready to challenge themselves with new learning opportunities that will help them to fine-tune skills that pertain to their working environment.

#### *3.2.1.4 Orientation to learning*

As the recipients of the training, HBCs as adult learners are expected to change their perspective from one of postponed application of knowledge to immediacy of application. Their orientation towards learning was expected to shift from one of subject-centeredness to one of problem centeredness so that they will be able to solve problems related to their work problems.

#### *3.2.1.5 Motivation to learn*

HBCs need learning activities that will demonstrate how learning is going to benefit their work area.

#### *3.2.2 Roles of the recipients in programme development*

The roles of the recipients during programme development included participation during needs analysis to assess their knowledge and point out their practices, sources of information, challenges and training needs. The HBCs knowledge gaps and learning needs lead to the plan used to develop a collective training programme including the nurse, dietician and a pharmacist.

##### *3.2.2.1 Skills of the recipients*

HBCs as recipients possess different skillsets which assist in the execution of their daily tasks and to relate well with others to achieve the desired programme development goals as planned including communication skills, interpersonal skills, listening skills and patience.

### **3.3 Context**

Context according to Dickoff and others refers to the setting in which activity took place [5]. The context is also described as an environment where data were collected about knowledge, experiences and the learning needs of HBCs who care for PWD and also where the training programme was implemented. The functions of the HBCs in this context are mandated by the Department of Health (DoH) which operates under the legal framework of the South African government. For the development of an effective training programme, the researcher needs to take into consideration the Guidelines on the Implementation of the Three Streams of Primary Healthcare Re-engineering [9], in line with the Policy Framework and Strategy Ward Based Primary Healthcare Outreach Teams [9] which regulate the functioning of the HBCs in this context.

The agent and the recipient need to understand the context concerning legal and policy frameworks that govern the activities of the HBCs. It was necessary for the agent and the recipient to understand the policies that regulate the day-to-day activities of HBCs in this context. To support the HBCs to improve quality health care provision, it is important to establish the relationship between legal frameworks, health context policies/guidelines and procedures [10]. Context of the training programme provides learning opportunities for recipients who are the HBCs. The context of the training can be influenced by the internal sources of the agent that guides her activities including competence and communication competence and the external resources available for maintaining and supporting the agent's capacities and power.

### **3.4 Dynamics**

Dynamics refers to the energy source or motivation for the activity inside an individual or the internal motivating factors for success [5]. Dickoff and others further explain that dynamics explore the physical, biological, psychological and chemical power sources of recipients and agents [5]. The training programme needs the dynamics that serve as the motivating factors that can be utilised to accomplish the activities of training programme development. The training programme needs to address the motivating factors as outlined by the HBCs during needs analysis to improve their knowledge, skills and attitude:

### **3.5 Procedure**

This aspect of the survey list is the guiding procedure, technique or the protocol of the activity [5]. This refers to the general rule that guides the activity and provides steps to be followed to achieve the set goals of the programme. Dickoff and others indicate that the procedure highlights the path, steps or pattern followed when performing an activity [5]. Furthermore, Dickoff and others indicate that procedures are the guiding rules, protocols or techniques while an activity takes place and do not prescribe particular features [5]. The procedure that provided steps followed during the development of the training programme to achieve the training goals was described. The procedure that can be followed for the development of a comprehensive training programme is the ADDIE Model of instruction [11]. The procedure for the development of the training programme described steps for creation of the following: learning outcomes, subject content, assessment strategies, instructional strategies, resources and trainers. Problem-based learning encourages the recipients of the programme to solve work-related problems by completing the given activities.

### **3.6 Terminus**

Terminus refers to the last stop, end-point of the activity [5]. Terminus is the desired outcome an agent wishes to attain by implementing a particular procedure. The terminus confirms whether the desired goals have been attained or not. The participants have to express the need for diabetes mellitus training to enhance their knowledge and skills relevant to the provision of quality care to diabetes people. The training programme aims to empower HBCs with knowledge related to the management of people with diabetes mellitus. The training-related needs of the recipients should be accommodated in the training programme with the result of having competent HBCs. The HBCs are expected to be competent when providing care to diabetes people which can be achieved by attending diabetes mellitus training before commencing their duties.

Empowering HBCs may introduce the following benefits: enhancing the development of HBCs knowledge and skills, ensuring the provision of quality care to diabetes mellitus people, increase self-confidence in HBCs during provision of care, prevent diabetes mellitus complication and control of blood glucose in PWD. Training assists HBCs with relevant knowledge and proper information that will assist in coping during the provision of service to PWD and the community may develop trust in the services provided by HBCs.

## **4. The use of the ADDIE model in the development of a training programme for HBCs**

### **4.1 Definition of the ADDIE model**

ADDIE model is a systematic instructional design and abbreviation of the following logical steps: Analysis, Design, Development, Implementation and Evaluation [11]. These steps are sequential meaning the output of one step becomes the input for the next step [12]. It is also called an iterative feedback model because the results of the last stage are returned to the point of origin for feedback, to close the loop-holes and or to refine the learning product [12]. ADDIE model is pursued to ensure that correct steps are followed to develop appropriate learning material optimally, to meet the needs of the HBCs [13]. The model was helpful because it is process-based and follows a systemic problem-solving approach that provides well defined basic and easy to follow steps [14–17]. The benefit of using this model is that it permits to refer and revisit previous steps during the process.

### **4.2 ADDIE steps**

Instructional design system following the ADDIE model provided practical steps for organising training development project. According to Branch, ADDIE's model describes and prescribes what needs to happen during the process [11].

#### **4.2.1 Analysis**

The analysis is the first step of ADDIE's model which is used to identify training needs to develop the training programme for the HBCs and formed the basis of all other steps [18]. On this step, needs analysis should be conducted to identify gaps in diabetes knowledge and practices of HBCs. Major knowledge gaps and training topics suggested serve as the foundation for specifying the learning outcomes, content and activities, instructional strategies and assessment strategies. Knowledge gaps



are identified through the needs analysis to develop training [17, 19]. The analysis provides an opportunity to complete a thorough analysis of HBCs' training needs that will guide the designing and the development of the training programme.

#### *4.2.2 Design*

The design step is the blueprint of how the training programme is created [20]. The purpose of the designing step is to define the anticipated performance and suitable evaluation methods [11]. In the design step, learning outcomes are identified and formulated because the success of the training implementation depends on clearly formulated learning outcomes, to meet the needs of HBCs. There are two types of the learning outcomes namely; critical cross-field outcomes and specific learning outcomes which should be formulated. The information gathered during the analysis step (situational analysis) should be used to create a plan to bridge the learning gaps (training needs) identified and developed the specific learning outcomes. Based on the learning outcomes, the training content, teaching/learning methods, instructional strategies and assessment criteria should be designed.

The format of the design should encompass the following elements: the name of the training programme, NQF level, Credits, Purpose of the training programme, duration of the programme, learning assumed to be in place, critical cross-field outcomes, specific outcomes and assessment criteria, Unit standard and programme assessment [21]. The HBCs have a job description that describes their activities for caring for people with chronic conditions that are context-specific and is developed by NGOs managers. The designing of the training is based on SAQA because it was established to create a single, integrated, national education and training framework for the whole nation, and to improve the quality of education and training in South Africa. The adaptation of the SAQA standards format for guiding the design of the training programme should be helpful in the planning.

The clear and precise learning outcomes are formulated using Bloom's Taxonomy to classify the following levels of learning: remember, understand, apply, analyse, evaluate and create [22]. Critical cross-field outcomes to address the participants' needs and requirements and Specific Learning Outcomes for HBCs to achieve should be included.

Content is the focal point for engaging the HBCs during the process of knowledge construction. The content which is consistent with the learning outcomes should also be established and designed at this step.

#### *4.2.3 Development*

The development step is where the researcher create and assemble the content of the programme assets created in the design phase [23]. This step is aimed to create the learning content that incorporates all the learning needs of the HBCs, and also to develop learning materials with learning outcomes that are relevant, legible and reader-friendly for the level of the HBCs. The structure and content of the training programme including learning activities, instructional and assessment strategies are aligned with developed learning outcomes.

Learning materials that covered all the SLO should be developed at this stage. During the development of the learning materials, the researcher should consider the competency level of the HBCs. The training materials should be drafted first and then submitted for evaluation for representativeness, appropriateness, completeness and importance to the research supervisors, psychologist, dietician and pharmacist before a final version can be concluded. The professional nurse,

psychologist, dietician and Pharmacist should be included because they formed part of the implementation of this training programme.

#### *4.2.3.1 Content development*

The researcher should consider the following aspects during content development: the relevancy of the content included in the specific learning outcomes and objectives to achieve the SLO. The process of preparing the content should be based on the gaps identified during needs analysis and it matches the learning outcomes identified in the design step [24]. The content is divided in line with the SLO.

#### *4.2.3.2 Instructional strategies*

Learner-centred and problem-orientated strategies guide frameworks for accomplishing the learning outcomes. The instructional strategies should accommodate individual learner's rates of learning and learning style based on reviewed literature. The following instructional strategies lecturer method, discussion, active learning, and cooperative learning/group discussions, role-plays and case-based exercises can be used [25].

#### *4.2.3.3 Assessment criteria*

The strategies for assessment should be developed at this stage to measure success gained from the developed programme. Assessment should be undertaken regularly throughout the implementation of the training and there is an activity interlinked with all activities. The formative assessment strategies such as open-ended questions, group discussions, and peer assessment to assess the understanding and achievement of the learning outcomes during the workshop should be used. The assessment questions should be formulated at the end of every activity to assess comprehension of the content done concerning the learning outcomes of the specific unit.

#### *4.2.3.4 Training materials*

The training materials including hard copies of training manuals should be printed for all the trainees and also the PowerPoint slides which covered all the SLO should be created.

#### *4.2.4 Implementation*

A training program for HBCs who care for people with cardiovascular diseases including diabetes mellitus is delivered at this step. The subject matter included should be based on the previously developed material and the research articles. Efforts should be made to use the most recent information about DM. All the trainees should be provided with a hard copy of the training material to use before the training commences.

##### *4.2.4.1 Training delivery*

Dates for training should be identified and arrangements made with the managers of the HBC centres to release the HBCs for teaching. The training programme is at Level 4 of the National Qualification Framework (NQF) with 11/2 credits. The contact sessions for interactive facilitation with HBCs and different facilitators should be

scheduled. Training should take place at a central venue away from the HBCs workplace to avoid disturbances during training and to enhance learning.

#### *4.2.5 Evaluation*

The evaluation of the training programme was guided by Kirkpatrick four-level evaluation model [26].

##### *4.2.5.1 Reaction (level I)*

Reaction refers to the way in HBCs measure their satisfaction with the training [27]. Evaluation indicators should include training objectives, topic, content, venue, time, environment, facilitator's knowledge and preparedness, training manuals, the benefits of training on the job and what HBCs think should have been included in the training. HBCs have to be asked to rate these indicators on a 3-point Likert scale. Additionally, HBCs should also be asked to write suggestions on the training in the comment box. HBCs can be given 45 minutes to complete the evaluation tools at the end of the session.

##### *4.2.5.2 Learning (level II)*

Learning in this study refers to the extent to which the attitudes of the HBCs change, their knowledge increases and their skills broadened post-implementation of training [27, 28]. The evaluation of learning measures what the participants have learned and gained from the training programme [29]. The questionnaire can be used to evaluate learning and it can be the major focus to evaluate knowledge of HBCs post-training compared with pre-training analysis.

##### *4.2.5.3 Behaviour (level III)*

The focus of the behaviour level was on the exploration of the extent to which the knowledge and skills acquired in the training were applied back at work [29]. The trainees should report on their changes in behaviour when they returned to work after attending the training.

##### *4.2.5.4 Results (level IV)*

Results level focused on the realisation of aimed objectives and change in productivity after training [29]. HBCs should be encouraged to report on the challenges they experienced in the application of knowledge and skills learned during training.

## **5. Conclusion**

The conceptual framework has a vital purpose in creating situations to achieve the desired goals or outcomes [5]. Development of the training programme was necessary because its availability and training of HBCs will increase disease-specific knowledge. The suggested ideas of the survey list of Dickoff and others used successfully as a reasoning map to describe the conceptual framework for the development of the training programme for HBCs. The utilisation of ADDIE's model of instructional design in the development of the training programme will benefit both the quality of the training content, teaching strategies, and assessments methods. The utilisation of ADDIE's model of instructional design in the

development of the training programme can benefit both the quality of the training content, teaching strategies, and assessments methods. The six elements of the survey list of Practice orientated theory form the base of the training programme development. The training programme that would be developed based on the elements of Practice Orientated Theory to provide benefits for both the HBCs and the people with cardiovascular diseases.

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