THE DEVELOPMENT OF A MODEL FOR NUTRITIONAL INTERVENTION IN RURAL COMMUNITIES IN SOUTH AFRICA

by

Francisca Green (née Van Jaarsveld)

Submitted in partial fulfilment of the requirements for the degree

Doctor of Philosophy

in the Faculty of Natural & Agricultural Sciences

University of Pretoria

December 2004
ACKNOWLEDGEMENTS

My sincerest gratitude and appreciation to the following people:

- Professor Priscilla Botha, the supervisor of this study, who was a continuous source of knowledge, encouragement, inspiration and support
- Professor Hettie Schönfeldt, the co-supervisor of the study, who also organised funding
- Centre for Nutrition for financial support
- All the community members who willingly participated in the study. I treasure their friendliness and trust
- Makena and Mona Scheepers for approval to work on their farm
- My field worker, translator and friend, Hope Matla, for her enthusiasm, willingness and hard work
- All my family and friends, who supported me through understanding and encouragement throughout the study
- Dr Rozanne Kruger for her willingness to assist in whatever way
- My best friend in the world, WM, for all the love and patience I could ask for
- My other colleagues for all the informal encouragement sessions
- Kim Zimmerman (Department of Telematic Education) for the design, outlay and printing of the educational material
- Mr Henry Pinkham for language editing
- All the participating external evaluators who added a valuable component to the final constructed model

I also want to thank God, my creator, who has given me endurance, insight, creativity and the ability to finish this thesis.

“I am a slow walker, but I never walk backwards” - Abraham Lincoln, 1809-1865 (Applewood, 2003).
TABLE OF CONTENTS

ACKNOWLEDGEMENTS................................................................................................................. ii

TABLE OF CONTENTS ................................................................................................................. iii

LIST OF BOXES ....................................................................................................................... xi

LIST OF FIGURES .................................................................................................................. xii

LIST OF TABLES .................................................................................................................... xiv

LIST OF ADDENDA .................................................................................................................... xv

SUMMARY .................................................................................................................................... xvi

Chapter 1: Background and rationale

1.1 COMMITMENT ................................................................................................................... 2

1.2 RATIONALE ..................................................................................................................... 3

1.3 THE NUTRITIONAL SITUATION IN SOUTH AFRICA .................................................... 5

1.4 CHALLENGES FOR RESEARCHERS IN SOUTH AFRICA .............................................. 5

1.5 PERSONAL VIEW .......................................................................................................... 6

1.6 COURSE OF THE STUDY ............................................................................................... 7

1.7 OUTLAY OF THE THESIS ............................................................................................... 8

Chapter 2: Philosophical and theoretical drive force of the study

2.1 INTRODUCTION .............................................................................................................. 12

2.2 COMMUNITY DEVELOPMENT ...................................................................................... 13

2.2.1 Rural community development ............................................................................... 14

2.3 CRITICAL SOCIAL THEORY ......................................................................................... 15

2.4 PARTICIPATORY ACTION RESEARCH (PAR) PARADIGM ........................................... 17
2.5 DIMENSIONS OF PAR ................................................................. 20
  2.5.1 Participation ........................................................................ 20
  2.5.2 Action .............................................................................. 22
  2.5.3 Research ........................................................................... 23
  2.6 COMMUNITY-BASED PARTICIPATORY RESEARCH .............. 24
  2.7 ADULT EDUCATION .............................................................. 28
  2.8 EVALUATIVE RESEARCH .................................................... 29
    2.8.1 Various approaches .......................................................... 30
  2.9 CONCLUSION ....................................................................... 34

Chapter 3: Research design according to a four-phase framework

3.1 INTRODUCTION .................................................................. 36
3.2 RESEARCH AIM ................................................................. 37
  3.2.1 Goals and objectives ....................................................... 38
    3.2.1.1 Phase 1: Situation analysis ........................................... 38
    3.2.1.2 Phase 2: Design ........................................................ 39
    3.2.1.3 Phase 3: Implementation ........................................... 39
    3.2.1.4 Phase 4: Evaluation .................................................. 40
  3.2.2 Research outcomes .......................................................... 40
3.3 FOUR-PHASE MODEL .......................................................... 41
3.4 CONCEPTUALISATION .......................................................... 42
3.5 STUDY POPULATION AND SAMPLE .................................... 44
3.6 METHODOLOGY .................................................................. 46
  3.6.1 Phase 1: Situation analysis ............................................... 49
  3.6.2 Phase 2: Design ............................................................... 53
  3.6.3 Phase 3: Implementation ................................................ 54
Chapter 4: Maximising the quality of data and results

4.1 INTRODUCTION ....................................................................................................... 60
4.2 OBJECTIVITY .......................................................................................................... 60
4.3 VALIDITY .................................................................................................................. 62
4.3.1 External validity .................................................................................................... 62
4.3.2 Internal validity .................................................................................................... 62
4.4 RELIABILITY AND DEPENDABILITY ........................................................................ 65
4.5 TRIANGULATION ...................................................................................................... 66
4.6 ETHICS AND POLITICS ............................................................................................. 67
4.6.1 Informed consent .................................................................................................. 68
4.6.2 Deceiving participants .......................................................................................... 68
4.6.3 Privacy ................................................................................................................... 68
4.6.4 Harm ...................................................................................................................... 68
4.6.5 Exploitation .......................................................................................................... 69
4.6.6 Political issues ....................................................................................................... 69
4.6.7 Personal commitment ........................................................................................... 69
4.6.8 Personal endowment ............................................................................................ 70
4.7 CONCLUSION ............................................................................................................ 70

Chapter 5: Situation analysis

5.1 INTRODUCTION ....................................................................................................... 72
5.2 THEORETICAL BACKGROUND ............................................................................... 73
5.3 DATA GATHERING ................................................................................................... 74
Chapter 6: Designing the intervention

6.1 INTRODUCTION ....................................................................................................... 92
6.2 GAINED DATA ON HYGIENE AND SANITATION ....................................................... 92
6.3 VERIFYING AND PRIORITISING .............................................................................. 93
6.4 ANALYSING .............................................................................................................. 95
6.5 THEORISING ............................................................................................................ 96
6.6 THE DESIGNING PROCESS..................................................................................... 100
6.6.1 Setting goals and objectives ............................................................................... 102
6.6.2 Designing a facilitation plan ............................................................................... 103
6.6.2.1 Strategies .............................................................................................................. 104
6.6.2.2 Format .................................................................................................................. 108
6.6.2.3 Resources .............................................................................................................. 109
6.6.3 Designing an evaluation plan .............................................................................. 109
6.7 SUMMARY ............................................................................................................... 111

Chapter 7: Implementation

7.1 BACKGROUND ........................................................................................................ 119
7.2 PREPARING THE TEAM, PARTICIPANTS AND THE AMBIENCE ......................... 120
7.3 CONDUCTING, CoORDINATING AND INTEGRATING ............................................. 122
7.3.1 Mobilising resources ........................................................................................... 122
7.3.2 Deploying the strategies ..................................................................................... 123
  7.3.2.1 Group information sessions ........................................................................... 123
  7.3.2.2 Individual dialogue sessions .......................................................................... 125
  7.3.2.3 Key informant trials ....................................................................................... 125
  7.3.2.4 Tuck shop ..................................................................................................... 127
  7.3.2.5 Competitions ............................................................................................... 127
  7.3.2.6 Educational support material ......................................................................... 128

7.3.3 Integrating with other services .......................................................................... 133

7.4 REVISING ............................................................................................................... 135
  7.4.1 Monitoring activities ....................................................................................... 135
  7.4.2 Discussion with and feedback to participants .................................................. 135

7.5 REPEATING AND REINFORCING ........................................................................ 137

7.6 CONCLUSION AND RECOMMENDATIONS ......................................................... 137

Chapter 8: Applied evaluative research

8.1 INTRODUCTION ..................................................................................................... 139

8.2 THEORETICAL BACKGROUND ............................................................................ 140
  8.2.1 The notion of evaluation .................................................................................. 141
  8.2.2 Evaluation models .......................................................................................... 143
  8.2.3 Evaluation criteria for nutritional interventions .............................................. 145
  8.2.4 Evaluation criteria for hygiene and sanitation interventions .......................... 146

8.3 EVALUATION APPLIED TO THIS STUDY ........................................................ 148
  8.3.1 Data gathering ................................................................................................. 149
    8.3.1.1 Observations with field notes ................................................................. 151
    8.3.1.2 Group discussions .................................................................................. 152
    8.3.1.3 Key informant feedback ......................................................................... 152
    8.3.1.4 Quantitative measurements ..................................................................... 153
Chapter 9: Critical reflection

9.1 INTRODUCTION ..................................................................................................... 167
9.2 AIM AND GOALS ..................................................................................................... 168
  9.2.1 Phase 1 .............................................................................................................. 168
  9.2.2 Phase 2 .............................................................................................................. 169
  9.2.3 Phase 3 .............................................................................................................. 170
  9.2.4 Phase 4 .............................................................................................................. 171
9.3 APPROACH USED .................................................................................................... 173
9.4 FINDINGS AND OUTCOMES ................................................................................... 175
9.5 PERSONAL FRUSTRATIONS .................................................................................... 179
9.6 DELIMITATIONS, LIMITATIONS AND GAPS .......................................................... 179
  9.6.1 Managerial aspects .......................................................................................... 180
  9.6.2 Financial aspects ............................................................................................. 180
  9.6.3 Methodology .................................................................................................... 181
  9.6.4 Enabling factors .............................................................................................. 181
9.7 CONCLUSION .......................................................................................................... 182

Chapter 10: Constructing a generic model

10.1 INTRODUCTION ................................................................................................... 184
10.2 FRAME OF REFERENCE .......................................................................................... 187
10.3 EXTERNAL EVALUATION ...................................................................................... 187
  10.3.1 Data gathering ............................................................................................... 187
Chapter 10: Added Value

10.3.2 Results ............................................................................................................... 188
10.3.3 Data analysis and interpretation ...................................................................... 189
10.4 ADDED VALUE ....................................................................................................... 190
10.5 THE PROCESS FOLLOWED .................................................................................... 193
10.5.1 Starting point .................................................................................................... 194
10.5.2 Phase 1 .............................................................................................................. 195
10.5.2.1 Preparing ................................................................................................................. 195
10.5.2.2 Contact making ...................................................................................................... 196
10.5.2.3 Data gathering ......................................................................................................... 197
10.5.2.4 Transforming the data .............................................................................................. 199
10.5.3 Phase 2 .............................................................................................................. 200
10.5.4 Phase 3 .............................................................................................................. 201
10.5.4.1 Preparing ................................................................................................................. 201
10.5.4.2 Conducting, coordinating and integrating................................................................. 201
10.5.4.3 Revising ................................................................................................................... 202
10.5.4.4 Repeating and reinforcing......................................................................................... 202
10.5.5 Phase 4.............................................................................................................. 202
10.5.6 Dissemination ................................................................................................... 204
10.5.7 Handing over ..................................................................................................... 204
10.6 DISCUSSION ........................................................................................................ 212

Chapter 11: Conclusion

11.1 INTRODUCTION ................................................................................................... 214
11.2 VALUE OF THE STUDY .......................................................................................... 215
11.2.1 Nutritional situation on Oranje farm ................................................................ 215
11.2.2 Measuring of hygiene and sanitation................................................................. 216
11.2.3 Educational material ......................................................................................... 217
LIST OF BOXES

Chapter 5

BOX 5.1: CONTEXTUAL INFORMATION ................................................................. 88
BOX 5.2: NUTRITIONAL INFORMATION ............................................................... 89

Chapter 6

BOX 6.1: UNSTRUCTURED OBSERVATIONS REGARDING HYGIENE AND SANITATION PRACTICES ................................................................. 112
BOX 6.2: SUMMARY OF HYGIENE AND SANITATION PROBLEMS IN THE COMMUNITY WITH POSSIBLE STRATEGIES ................................................................. 113
BOX 6.3: STRUCTURED OBSERVATION GUIDE ..................................................... 114
BOX 6.4: STRUCTURE TO ORGANISE THE DESIGN PROCESS .............................. 115
BOX 6.5: SUMMARY OF THE INTERVENTION DESIGN FOR HYGIENE AND SANITATION... 116
BOX 6.6: SPECIFIC HYGIENE AND SANITATION PROBLEMS IN THE COMMUNITY AS OBTAINED WITH A STRUCTURED OBSERVATION GUIDE (n=8) ........................................ 117

Chapter 8

BOX 8.1: EVALUATION PLAN .............................................................................. 148
BOX 8.2: VARIOUS INDICATORS TO MEASURE THE IMPLEMENTATION OF THE SEVEN SUMMATIVE CORE MESSAGES (Almedon et al, 1997; Van Wijk & Murre, 1992:18)........ 150
BOX 8.3: AN EXTRACT OF NOTES FROM A HEALTH WALK (UNSTRUCTURED OBSERVATION) .............................................................................................................. 161
BOX 8.4: TYPED EXAMPLE OF AN EVALUATIVE FIELD NOTE ............................. 162
BOX 8.5: STRUCTURED GUIDE FOR EVALUATIVE GROUP DISCUSSIONS (n=22) .... 163
BOX 8.6: FEEDBACK FROM KEY INFORMANT (as transcribed and translated) ........ 164
BOX 8.7: RESULTS FROM QUANTITATIVE MEASUREMENTS .............................. 165

Chapter 10

BOX 10.1: SUMMARY OF COMMENTS AND OPINIONS ON THE MODEL FROM EXTERNAL EVALUATORS (n=7) .............................................................................. 189
BOX 10.2: SELECTION OF PUBLICATIONS USED FOR VALUE ADDING .................. 191
Chapter 11

BOX 11.1: LESSONS LEARNED FROM THIS STUDY ................................................................. 223

**LIST OF FIGURES**

**Chapter 2**

FIGURE 2.1: PHILOSOPHICAL BASIS OF THIS RESEARCH STUDY ............................................. 13

**Chapter 3**

FIGURE 3.1: FOUR-PHASE MODEL FOR RESEARCH DESIGN ................................................. 41
FIGURE 3.2: METHODOLOGICAL FRAMEWORK FOR THE STUDY ............................................ 48
FIGURE 3.3: WORK BREAKDOWN STRUCTURE OF THE STUDY .............................................. 54

**Chapter 5**

FIGURE 5.1: SOME OF THE MOROGO VARIETIES ON ORANJE FARM ................................. 71
FIGURE 5.2: INFORMATION PYRAMID TO GUIDE DATA GATHERING ................................. 77
FIGURE 5.3: EXAMPLES OF BACTERIAL OVERGROWTH ON PLATES TAKEN FROM VARIOUS SURFACES IN 18 HOMESTEADS ................................................................. 83

**Chapter 6**

FIGURE 6.1: PROCESS FROM NEEDS ASSESSMENT TO DESIGNING THE INTERVENTION...94

**Chapter 7**

FIGURE 7.1: FIELD WORKER BUSY WITH AN INDIVIDUAL DIALOGUE SESSION ........ 118
FIGURE 7.2: SUMMARY OF IMPLEMENTATION ACTIVITIES .................................................. 120
Chapter 8

FIGURE 8.1: CONCEPTUAL FRAMEWORK FOR ‘EVALUATION’ AS DEALT WITH IN THIS STUDY ................................................................. 140

Chapter 9

FIGURE 9.1: OUTLINE OF CHAPTER 9 ................................................................................................................................. 167

Chapter 10

FIGURE 10.1: PROCESS FOLLOWED DURING CONSTRUCTION OF THE MODEL .................................................... 186
FIGURE 10.2: APPLIED FRAME OF REFERENCE .................................................................................................................. 205
FIGURE 10.3: FOCUS ON SITUATION ANALYSIS (PHASE 1) ................................................................................................. 206
FIGURE 10.4: FOCUS ON SITUATION ANALYSIS (PHASE 1) (continued) ............................................................................. 207
FIGURE 10.5: FOCUS ON DESIGN (PHASE 2) ......................................................................................................................... 208
FIGURE 10.6: FOCUS ON IMPLEMENTATION (PHASE 3) .......................................................................................................... 209
FIGURE 10.7: FOCUS ON EVALUATION (PHASE 4) ................................................................................................................ 210
FIGURE 10.8: FINAL COMPREHENSIVE MODEL FOR NUTRITIONAL INTERVENTIONS ... 211
LIST OF TABLES

Chapter 2
TABLE 2.1: SUMMARY OF EVALUATIVE TOOLS, METHODS AND APPROACHES (World Bank, 2002a) ................................................................. 31

Chapter 4
TABLE 4.1: TYPOLOGY TO MAXIMISE THE QUALITY OF DATA AND RESULTS (Adapted from Babbie & Mouton, 2001:276; De Vos, 2002:352; Smaling, 1992:316) ............... 61

Chapter 5
TABLE 5.1: HYGIENE SCORING GUIDELINE ................................................................. 83

Chapter 6
TABLE 6.1: RESOURCES NEEDED AND USED IN THIS STUDY .......................... 110
TABLE 6.2: EVALUATION PLAN FOR THE HYGIENE AND SANITATION INTERVENTION...111

Chapter 8
TABLE 8.1: REPORTED DIFFICULTY ON RECOMMENDED PRACTICES (n=16) .......... 153

Chapter 10
TABLE 10.1: RESPONSES OF EXTERNAL EVALUATORS FOR FIRST ROUND (N=45) ...... 188
TABLE 10.2: CRITERIA FOR PRIORITISING NEEDS AND PROBLEMS (Sort as cited in Caffarella, 1994:89) ................................................................. 198
LIST OF ADDENDA

ADDENDUM A: Household food security scale

ADDENDUM B: Educational support material - Poster designed for the Oranje farm community on hygiene and sanitation

ADDENDUM C: Hygiene and Sanitation - knowledge test

ADDENDUM D: Hygiene and Sanitation - behavioural scale

ADDENDUM E: Activity sheet on domestic hygiene

ADDENDUM F: Checklist for planning better sanitation projects
SUMMARY

BACKGROUND
This study commenced with a certain rationale in mind, emerging from a personal, felt responsibility, which were further embedded in global declarations by the FAO and the WHO, as well as commitments made during the World Food Summit in 1996 and 2002. Results from the most recent ‘National Food Consumption Survey’ also inspired the study and the intervention. This study has to be viewed against the background of community development, which in a broad sense connotes a process of social learning through participation. Within the context of this study, it means to identify and address felt needs of people within a particular community and to improve their lives for the better. A commonly accepted approach to rural community development was followed, namely to establish programmes, which were referred to in this study as the nutritional intervention.

AIM
The challenge was to design, implement and evaluate a community-based intervention, specifically with the aim to address nutrition-related problems in a rural community on a commercial farm in South Africa. It was not the intention to strive for external validity (generalise the findings to other rural communities) but to internalise the process of research (specifically Participatory Action Research) within a rural community, contributing to the body of knowledge on the relevance and success of interventions in rural communities within the realms of health and nutrition. This process provided opportunities for the research team to learn more about implementing Participatory Action Research in rural communities, to learn from the community itself and to apply that knowledge into a constructed model for future projects.

METHODOLOGY
The research study and intervention process were based on a four-phase approach, which included a situation analysis (also called needs assessment), design, implementation and evaluation. Findings from the needs assessment were prioritised and incorporated in the design and implementation of a relevant intervention. Qualitative data-gathering techniques were mainly used which included observations with field notes, group discussions and key informant interviews. Several techniques were deployed during the implementation-phase, of which the personalised, educational support material was considered an important outcome. Principles of evaluative research have been incorporated from the starting point to measure the success of the process as well as the outcomes of the intervention.
OUTCOME
The value of the study is found in the generic model that was structured as a visual presentation of a nutritional intervention in a rural area. The model was drawn from previously applied models, grounded in this research study and was further enriched with comments from a panel of external evaluators. It can be considered a comprehensive, logic methodological framework, ready for pragmatic testing. It addresses the entire continuum of processes involved in developing valid and reliable interventions for rural communities and should serve as guideline for similar projects in future times.

RECOMMENDATIONS
During this study certain insights were gained, which centred on the factors that motivated or hindered behavioural change. A list of lessons learned was formulated to guide future projects, which were set in terms of managerial aspects, financial aspects, methodology (instruments and methods) and enabling factors.