

FACTORS INFLUENCING CHANGE MANAGEMENT IN A SELECTED HOSPITAL IN SAUDI ARABIA

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“DECLARATION

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Factors influencing change in a selected hospital in Saudi Arabia

ABSTRACT

Saudi Arabia has experienced a number of changes due to revolutionary new findings and technologies, discoveries and new research in the health care arena, which has proven and contradicted a new approach to health care delivery. Demands by patients who have become more educated, the emergence of new or modern disease profiles which demand a new way of approach and a quickening in the pace of change, hurled unfamiliar and often demanding and challenging conditions at management. One such change, as addressed in this study, is the change from a paper-based patient record system to a computer based patient information system to which all healthcare professionals in the multidisciplinary team had access to.

However, not all change is welcomed, accepted or viewed as necessary by those who have to carry out or use new technologies. Change is harsh, and part of the problem is identifying factors that influence change initiatives. This study addresses the perceptions of nursing personnel of the process of change from a paper-based to a computer based (Quadramed) patient record system. The study design used a quantitative and descriptive approach in which a structured, self-designed questionnaire was used to obtain data from 117 professional nurses at a selected healthcare facility in the Eastern province of the Kingdom of Saudi Arabia. The theoretical framework used for this study was the Model for Change Management as designed by the Prosci Institute for Research, also referred to as the ADKAR Model of Change Management (Awareness, Desire, Knowledge, Ability and Reinforcement).

The major findings of this study revealed that 97.44% of the respondents were non-Saudi individuals, and were mainly from the Philippines (69.24%), with (95.65% being female with an average age of 37-42 years. Most (47%) were in possession of specialty qualifications in medical, surgical nursing and experience between 8-10 years, of which 2-3 years had been in Saudi Arabia. In regard to 61.3% of the respondents it was found that they had no prior knowledge of computerised patient records. The nurse managers played a vital role in providing the most information and support to adjust to the system. With reference to the aspect of patient safety, positive feedback about the QCPR was provided by the majority of respondents. Most of the respondents experienced change positively, and 70% indicated that being involved played a major role in their positive attitude. Recommendations include that reasons for change should be more clearly communicated, suggestions for change should be valued more by managers and rumours and uncertainties about change should be addressed as and when appropriate.

Key terms: Computerised patient medical record system, Quadramed, ADKAR Model of Change Management, Models of Change Management, resistance to change, change management, Saudi Arabia

Faktore wat verandering beïnvloed in 'n geselekteerde hospitaal in Saudi Arabia

OPSOMMING

Saoedi-Arabië het 'n aantal veranderinge ondervind as gevolg van revolusionêre nuwe bevindings en tegnologie, ontdekings en nuwe navorsing in die gesondheidsorg arena, wat 'n nuwe benadering tot die lewering van gesondheidsorg bewys en weerspreek. Eise deur pasiënte wat meer geletterd is, en nuwe en moderne siekte profiele eis 'n nuwe benadering tot verandering. Die versnelling in die tempo van verandering is dikwels onbekend, veeleisend en uitdagende vir die bestuur van gesondheidsinstellings. Een so 'n verandering, soos dit in hierdie studie aangespreek word, is die verandering van 'n papier-gebaseerde na 'n rekenaar-gebaseerde pasiënt inligting stelsel wat aan alle lede van die multidissiplinêre gesondheidsorg span toegang verleen.

Nogtans word nie alle verandering verwelkom, aanvaar of as nodig beskou deur diegene wat die dienste uitvoer of die nuwe tegnologie moet gebruik nie. Verandering is gekompliseerde proses, en deel van die probleem is die identifisering van faktore wat 'n invloed op die veranderings inisiatiewe het. Hierdie studie fokus op die persepsies van die verpleegpersoneel tydens die proses van verandering van 'n papier-gebaseerde tot 'n rekenaar gebaseerde (Quadramed) pasiënt rekord stelsel. Die studie-ontwerp gebruik 'n kwantitatiewe, beskrywende benadering wat 'n gestruktureerde, self-ontwerpte vraelys gebruik om data te verkry van 117 professionele verpleegsters by 'n geselekteerde gesondheidsorg fasiliteit in die Oostelike Provincie van die Koninkryk van Saoedi-Arabië. Die teoretiese raamwerk wat gebruik word vir hierdie studie was die model vir veranderingsbestuur soos ontwerp deur die Prosci Instituut vir Navorsing, waarna ook verwys word as die "ADKAR Model of Change Management" (Awareness, Desire, Knowledge, Ability and Reinforcement).

Die belangrikste bevindings van hierdie studie het aan die lig gebring dat 97,44% van die respondentie was nie-Saoedi-individue nie, en was hoofsaaklik van die Filippyne (69,24%), met (95,65%) vroue met 'n gemiddelde ouderdom van 37-42 jaar. Die meeste (47%) was in besit van gespesialiseerde kwalifikasies in mediese, chirurgiese verpleeging. Die meeste van die respondentie het tussen 8-10 jaar ervaring in verpleegkunde gehad, waarvan 2-3 jaar in Saoedi-Arabië was. Met betrekking tot 61,3% van die respondentie dit is gevind dat hulle geen vorige kennis van die gerekenariseerde pasiënt rekords gehad het nie. Die saal bestuurder het 'n belangrike rol gespeel in die verskaffing van die meeste inligting en ondersteuning om aan te pas tot die nuwe stelsel. Met verwysing na die aspek van die veiligheid van pasiënte, is positiewe terugvoer oor die QCPR voorsien deur die meerderheid van die respondentie. Die meeste van die respondentie het ook die verandering positief ervaar, en 70% het aangedui dat hul betrokkenheid 'n belangrike rol gespeel het in hul positiewe gesindheid. Aanbevelings sluit in dat die redes vir verandering duidelik gekommunikeer behoort te word, voorstelle vir verandering moet erkenning kry deur bestuurders en gerugte en onsekerhede oor verandering moet aangespreek word soos en wanneer toepaslik.

Sleutel terme: Gerekenariseerde pasiënt mediese rekord stelsel, Quadramed, ADKAR Model van Verandering, Modelle van veranderingsbestuur, weerstand om te verander, Saoedi-Arabië.

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Table of Contents	Page
CHAPTER 1	
ORIENTATION TO THE STUDY	
1.1 INTRODUCTION	1
1.2 BACKGROUND TO THE STUDY.....	2
1.3 The computerised hospital informatics system (HIS).....	3
1.4 PURPOSE OF THE STUDY	5
1.4.1 Research question.....	5
1.4.2 Objectives.....	6
1.5 SIGNIFICANCE OF THE STUDY	6
1.6 THEORETICAL FRAMEWORK.....	6
1.7 DEMARCATON OF THE STUDY FIELD.....	7
1.7.1 Kingdom of Saudi Arabia	8
1.7.2 Culture and customs of Saudi Arabia	8
1.7.3 Healthcare in the Eastern Province of Saudi Arabia	9
1.7.4 Area and hospital under study	10
1.7.4.1 <i>Geographical environment</i>	10
1.7.4.2 <i>The hospital under study</i>	12
1.7.5 Nursing personnel.....	14
1.8 RESEARCH DESIGN AND METHODOLOGY	16
1.8.1 Population.....	16
1.8.2 Sample and sampling	17
1.9 DATA COLLECTION	17
1.10 DATA ANALYSIS.....	18
1.11 VALIDITY AND RELIABILITY	18
1.12 DEFINITION OF KEY TERMS.....	19
1.13 ETHICAL CONSIDERATIONS	22
1.14 LIMITATIONS OF THE STUDY	25
1.15 OUTLINE OF THE STUDY	25
1.16 CONCLUSION.....	25

Table of Contents	Page
CHAPTER 2	
LITERATURE REVIEW	
2.1 INTRODUCTION	26
2.2 NATURE OF CHANGE.....	27
2.3 CHANGES IN HEALTHCARE	28
2.4 PROJECT MANAGEMENT VERSUS CHANGE MANAGEMENT.....	31
2.5 PRIMARY PRINCIPLES OF CHANGE MANAGEMENT	33
2.5.1 Senders and receivers.....	33
2.5.2 Resistance and comfort.....	34
2.5.3 Authority for change.....	34
2.5.4 Value systems	34
2.5.5 Increment versus radical change.....	35
2.5.6 The right answer is not enough.....	35
2.5.7 Change is a process	36
2.6 MODELS OF CHANGE MANAGEMENT.....	36
2.7 THE ROLE OF LEADERSHIP IN CHANGE	44
2.8 APPLICATION OF ADKAR MODEL OF CHANGE MANAGMENT	48
2.8.1 Awareness of the need to change	48
2.8.1.1 <i>Factors leading to awareness to change</i>	49
2.8.2 Desire to support and participate in change	52
2.8.2.1 <i>Factors leading to a desire to change</i>	52
2.8.3 Knowledge to change	55
2.8.3.1 <i>Factors leading to knowledge to change</i>	55
2.8.4 Ability to change	58
2.8.4.1 <i>Factors influencing the ability to change</i>	58

Table of Contents	Page
2.8.5 Reinforcement to sustain change	61
2.8.5.1 <i>Factors leading to reinforcement of change</i>	61
2.9 RESISTANCE TO CHANGE.....	64
2.10 APPLICATION OF THE PRINCIPLES OF CHANGE	66
2.10.1 Application 1: Making sense of change	66
2.10.2 Application 2: Guiding change management plans.....	68
2.10.3 Application 3: Measuring progress.....	69
2.10.4 Application 4: Diagnosing gaps	70
2.10.5 Application 5: Developing corrective actions	70
2.10.6 Application 6: Enable managers and supervisors.....	71
2.11 CONCLUSION.....	71

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION	73
3.2 RESEARCH SETTING	73
3.3 STEPS OF THE RESEARCH PLAN.....	74
3.4 RESEARCH DESIGN	76
3.4.1 Rationale for the choice of the research design.....	77
3.4.2 Quantitative, exploratory and descriptive research.....	77
3.4.2.1 <i>Quantitative</i>	77
3.4.2.2 <i>Exploratory</i>	78
3.4.2.3 <i>Descriptive</i>	79
3.5 RESEARCH METHODOLOGY.....	79
3.5.1 Population.....	79
3.5.2 Sample and sampling	81
3.5.2.1 <i>Sample</i>	81
3.5.2.2 <i>Sampling</i>	81
3.5.2.3 <i>Sampling procedure</i>	82
3.5.2.4 <i>Eligibility criteria</i>	82
3.5.2.5 <i>Exclusion criteria</i>	83
3.5.2.6 <i>Sample size</i>	83
3.6 DATA COLLECTION	83
3.6.1 Development and structure of the research instrument.....	84
3.6.2 Pre-test	86

Table of Contents	Page
3.6.3 Rationale for the selected instrument	87
3.6.3.1 <i>Advantages of questionnaires</i>	87
3.6.3.2 <i>Disadvantages of questionnaires</i>	88
3.7 VALIDITY AND RELIABILITY	88
3.7.1 Validity	88
3.7.1.1 <i>Content validity</i>	88
3.7.1.2 <i>Face validity</i>	89
3.7.1.3 <i>Construct validity</i>	89
3.7.2 Reliability	89
3.8 DATA ANALYSIS.....	90
3.9 ETHICAL CONSIDERATIONS	90
3.9.1 Principle of beneficence.....	91
3.9.1.1 <i>Right to protection from exploitation</i>	91
3.9.1.2 <i>Right to freedom from harm and discomfort</i>	91
3.9.2 Respect for human dignity	92
3.9.2.1 <i>Right to self determination</i>	92
3.9.2.2 <i>Right to full disclosure</i>	92
3.9.3 Principle of justice.....	93
3.9.3.1 <i>Right to privacy</i>	93
3.9.3.2 <i>Right to fair and equitable treatment</i>	93
3.10 CONCLUSION.....	93
 CHAPTER 4	
 DATA ANALYSIS AND INTERPRETATION	
4.1 INTRODUCTION	94
4.2 RESULTS	94
4. 2.1 Section A: Respondents' biographical data	94
4. 2.1.1 <i>Respondents' age (item 1.1) (N=117)</i>	95
4. 2.1.2 <i>Respondents' gender (item 1.2) (N=117)</i>	96
4. 2.1.3 <i>Respondents' nationality (item 1.3) (N=117)</i>	97

Table of Contents	Page
4. 2.1.4 <i>Respondents' first language (item 1.4) (N=117)</i>	99
4. 2.1.5 <i>Respondents' specialty qualifications (item 1.6) (N=117)</i>	99
4. 2.1.6 <i>Respondents' years of experience as registered nurses (item 1.7) (N=117)</i>	100
4. 2.1.7 <i>Respondents' years of employment as registered nurses in the hospital under study (item 1.8) (N=117)</i>	101
4. 2.1.8 <i>Respondents' current positions (item 1.9) (N=117)</i>	102
4. 2.1.9 <i>Respondents' assignment as QCPR super user (item 1.10)</i>	103
 4. 2.2 Section B: Awareness of change	 104
4. 2.2.1 <i>Respondents' need to change to QCPR (item 2.1)</i>	104
4. 2.2.2 <i>Respondents' informed about changing to QCPR (item 2.2) (N=117)</i>	105
4. 2.2.3 <i>Respondents' given reasons for change to QCPR (item 2.3) (N=117)</i>	107
4. 2.2.4 <i>Respondents' perceptions of impact of change to QCPR (item 2.4)</i>	107
4. 2.2.5 <i>Communication during the implementation phase of QCPR (item 2.5)</i>	109
4. 2.2.6 <i>Time frame for implementing change (item 2.6) (n=110)</i>	110
4. 2.2.7 <i>Respondents' perceptions of benefits to patients of changing to QCPR (item 2.7)</i>	111
4. 2.2.8 <i>Respondents' perceptions of implications for not changing from paper based documentation to QCPR (item 2.8)</i>	113
4. 2.2.9 <i>Respondents' perceptions of channels used to build awareness to changing to the QCPR (item 2.9)</i>	114
 4. 2.3 Section C: Desire to change	 115
4. 2.3.1 <i>Respondents' personal approach to changes in the workplace (item 3.1)</i>	116
4. 2.3.2 <i>Respondents' personal desire to change (item 3.2)</i>	117
4. 2.3.3 <i>Respondents' views on changing to QCPR (item 3.3)</i>	117
4. 2.3.4 <i>Respondents' reasons for negative feelings towards changing to QCPR (item 3.4)</i>	119
4. 2.3.5 <i>Factors contributing to personal decision to support and participate in implementing QCPR (item 3.5)</i>	120
4. 2.3.6 <i>Individuals who contributed most to respondents' positive attitudes of changing to QCPR (item 3.6)</i>	121
4. 2.3.7 <i>Factors influencing respondents' personal desire to change (item 3.7)</i>	122
 4. 2.4 Section D: Knowledge to change	 124
4. 2.4.1 <i>Respondents' level of computer literacy during hiring process (item 4.1) (N=117)</i>	124
4. 2.4.2 <i>Phase during hiring process of determining level of computer literacy (item 4.2)</i>	126
4. 2.4.3 <i>Respondents tested for computer literacy (item 4.3)</i>	127
4. 2.4.4 <i>Respondents' phase of being tested for computer literacy (item 4.4)</i>	128
4. 2.4.5 <i>Respondents' prior experience of computerised patient documentation system (item 4.5) (n=111)</i>	128
4. 2.4.6 <i>Respondents' years of experience of computerised patient documentation systems (item 4.6)</i>	129
4. 2.4.7 <i>Respondents' prior information about QCPR (item 4.7) (N=117)</i>	130
4. 2.4.8 <i>Respondents' sources of prior information about QCPR (item 4.8) (n=96)</i>	131
4. 2.4.9 <i>Respondents' prior training in QCPR (item 4.9)</i>	132
4. 2.4.10 <i>Stage in which prior training in QCPR was provided (item 4.10) (n=108)</i>	133
4. 2.4.11 <i>Individuals providing training about QCPR (item 4.11)</i>	134
4. 2.4.12 <i>Respondents' information on operating and maintaining laptops used for QCPR (item 4.12) (n=116)</i>	135
4. 2.4.13 <i>Respondents' information on maintaining patient confidentiality in QCPR (item 4.13) (n=116)</i>	136
 4. 2.5 Section E: Ability to change	 137

Table of Contents

Page

	Page
4. 2.5.1 <i>Respondents' ability to use QCPR after training session (item 5.1) (N=117)</i>	137
4. 2.5.2 <i>Respondents' reasons for inability to use QCPR after training session (item 5.2) (n=22)</i>	138
4. 2.5.3 <i>Respondents' views on changing to the QCPR (item 5.3)</i>	139
4. 2.5.4 <i>Respondents' views on adequate time frame to train staff in the use of QCPR (item 5.4) (n=116)</i>	139
4. 2.5.5 <i>Respondents' views on persons providing the most support during the ability phase to change (item 5.5)</i>	140
4. 2.5.6 <i>Respondents' views on the role model identified in changing to QCPR (item 5.6)</i>	141
4. 2.5.7 <i>Respondents' availability of computer laboratory for learning about QCPR (item 5.7) (n=116)</i>	142
4. 2.5.8 <i>Respondents' knowledge of the location of the computer laboratory for learning QCPR (item 5.8) (n=100)</i>	143
4. 2.5.9 <i>Respondents' access to a computer laboratory (item 5.9) (n=114)</i>	144
4. 2.5.10 <i>Respondents' accompaniment to computer laboratory (item 5.10) (n=109)</i>	145
4. 2.5.11 <i>Respondents' frequency of attending computer laboratory sessions to learn about QCPR (item 5.11) (n=75)</i>	145
4. 2.5.12 <i>Respondents' during simulation sessions to practice skills necessary to operate QCPR (item 5.12) (n=112)</i>	146
4. 2.5.13 <i>Availability of manual or written procedures during practicing QCPR (item 5.13) (n=110)</i>	147
4. 2.5.14 <i>Demonstration of the QCPR use by the supervisor (item 5.14) (n=114)</i>	148
4. 2.5.15 <i>Feedback provided after simulation sessions (item 5.15) (n=113)</i>	149
4. 2.5.16 <i>Respondents' indication of who provided feedback after simulation sessions (item 5.16) (n=92)</i>	149
4. 2.5.17 <i>Respondents' frequency of practicing QCPR skills before being found proficient (item 5.17) (n=115)</i>	150
4. 2.5.18 <i>Contribution of simulation to the application of learned skills and clinical practice (item 5.18) (n=113)</i>	151
4. 2.5.19 <i>Respondents' perceptions of benefit of simulation sessions (item 5.19)</i>	152
4. 2.5.20 <i>Respondents' feeling competent after laboratory sessions (item 5.20) (n=107)</i>	153
4. 2.5.21 <i>Preceptors' techniques of assisting during QCPR use in clinical settings (item 5.21)</i>	153
 4. 2.6 Section F: Reinforcement of change.....	 154
4. 2.6.1 <i>Respondents' most knowledgeable individuals identified as reinforces towards change to QCPR (item 6.1)</i>	155
4. 2.6.2 <i>Respondents' most supportive individuals identified towards change to QCPR (item 6.2)</i>	156
4. 2.6.3 <i>Phase in which respondents felt most supported (item 6.3)</i>	157
4. 2.6.4 <i>Respondents' experience of input and suggestions being valued by superiors (item 6.4) (n=113)</i>	158
4. 2.6.5 <i>Respondents' indications of individuals who most valued input and suggestions (item 6.5)</i>	158
4. 2.6.6 <i>Respondents' continuous information received about QCPR (item 6.6) (n=112)</i>	159
4. 2.6.7 <i>Individuals who contributed most to supplying continuous information about QCPR (item 6.7)</i>	160
4. 2.6.8 <i>Factors contributing to the reinforcement of the use of the QCPR (item 6.8)</i>	161
4. 2.6.9 <i>Respondents' perception of the adequacy of the environment in which the QCPR is operated (item 6.9) (n=116)</i>	163
4. 2.6.10 <i>Factors negatively influencing the full use of the QCPR (item 6.10) (n=62)</i>	163
 4.3 CONCLUSION	 165

Table of Contents	Page
CHAPTER 5	
CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS	
5.1 INTRODUCTION	166
5.2 CONCLUSIONS	167
5.2.1 Respondents' biographical data.....	167
5.2.2 Awareness of change	167
5.2.3 Desire to change.....	168
5.2.4 Knowledge to change	169
5.2.5 Ability to change	170
5.2.6 Reinforcement to change.....	171
5.3 LIMITATIONS OF THE STUDY	172
5.4 RECOMMENDATIONS	173
5.4.1 ADKAR Model of Change Management	173
5.4.1.1 Awareness of change	173
5.4.1.2 Desire to change.....	174
5.4.1.3 Knowledge of change	174
5.4.1.4 Ability to change	175
5.4.1.5 Reinforcement of change.....	175
5.4.2 Further research	175
5.5 FINAL CONCLUSION.....	176
BIBLIOGRAPHY.....	177

List of Figures**Page**

Figure 1.1	Map of the Kingdom of Saudi Arabia.....	9
Figure 1.2	Sandstorm in the eastern region December 2011.....	10
Figure 1.3	Al Ghara Caves in Hofuf, Al Ahsa	11
Figure 1.4	Al Ahsa Palm Oases	12
Figure 2.1	Application of project and change management to facilitate change.....	32
Figure 2.2	Primary change management principles	33
Figure 2.3	Prosci's Roles in Change Management Model.....	45
Figure 2.4	Management's roles in change	46
Figure 2.5	Most effective leaders as senders of change messages.....	47
Figure 2.6	Factors influencing awareness of the need for change	49
Figure 2.7	Factors influencing desire to support and participate in change	53
Figure 2.8	Factors leading to knowledge to change	56
Figure 2.9	Factors influencing ability to implement a change.....	58
Figure 2.10	Factors that influence reinforcement to sustain change	61
Figure 2.11	States of change	67
Figure 2.12	Prosci's ADKAR Model of Change Management	67
Figure 4.1	Respondents' age (N=117)	95
Figure 4.2	Respondents' gender (N=117)	96
Figure 4.3	Respondents' years of experience as registered nurses (N=117).....	101
Figure 4.4	Respondents' years as registered nurses at the hospital under study (N=117)	102
Figure 4.5	Respondents' current position (N=117)	103
Figure 4.6	Persons who first informed respondents about changing to QCPR (N=117)	106
Figure 4.7	Respondents' personal feelings towards change to QCPR.....	118
Figure 4.8	Respondents' level of computer literacy upon application for a nursing position	124

List of Tables	Page	
Table 1.1	Nationality and number of nurses.....	14
Table 1.2	Nurses and their qualifications	15
Table 1.3	Nurses with advanced speciality qualifications.....	15
Table 1.4	Summary of the application of the Nuremberg Code principles	23
Table 2.1	Internet sources used for the literature review	27
Table 2.2	A summary of some of the contributors to change management	37
Table 2.3	Building blocks of the ADKAR Model of Change Management.....	48
Table 3.1	Steps followed in the research plan.....	74
Table 3.2	Population of professional nurses per ward/unit.....	80
Table 4.1	Respondents' nationality (N=117)	98
Table 4.2	Respondents' specialty qualifications (N=117).....	100
Table 4.3	Respondents' assignment as super users (item 1.10) (n=112)	103
Table 4.4	Respondents' need to change.....	105
Table 4.5	Communication about reasons for change (N=117).....	107
Table 4.6	Respondents' perceptions of who was most impacted by change to QCPR	108
Table 4.7	Respondents' indications of communication during the implementation phase of QCPR	109
Table 4.8	Respondents' time frame before implementing change (n=110).....	110
Table 4.9	Respondents' perceptions of benefits of the QCPR for patients	112
Table 4.10	Respondents' perceptions of what would have happened if there had been no change from paper based documentation to QCPR	113
Table 4.11	Respondents' indication of what channels were used to build awareness towards changing to QCPR	115
Table 4.12	Respondents' approach to changes in the workplace (n=116).....	116
Table 4.13	Respondents' views on whether desire to change is a personal choice (n=112)	117
Table 4.14	Respondents' reasons for negative feelings towards changing to the QCPR	119
Table 4.15	Factors that contributed to the respondents' personal decision to support and participate in implementing QCPR.....	120
Table 4.16	Individuals contributed most to the respondents' positive attitude towards changing to QCPR	122

List of Tables	Page	
Table 4.17	Respondents' indication of their desire to change.....	123
Table 4.18	Respondents' computer literacy prior to employment (N=117)	125
Table 4.19	Phase during hiring process to test respondents' computer literacy level (n=110).....	126
Table 4.20	Respondents' tested for computer literacy (n=106).....	127
Table 4.21	Phase in the process of employment that computer test was taken (n=49)	128
Table 4.22	Respondents' previous experience of a computerised patient documentation system (n=111)	129
Table 4.23	Respondents' number of years of previous experience (n=56)	129
Table 4.24	Respondents' information received about QCPR prior to its implementation (N=117).....	130
Table 4.25	Respondents' indication of who provided them with information about QCPR (n=96)	131
Table 4.26	Respondents' training in QCPR prior to its implementation (n=116)	132
Table 4.27	Respondents' indication of when training in QCPR was provided (n=108)	133
Table 4.28	Respondents' indication from whom they received training about QCPR	134
Table 4.29	Respondents' indication whether information received on operating and maintaining the laptop used for QCPR? (n=116).....	135
Table 4.30	Respondents' indications of information provided on maintaining confidentiality in QCPR (n=116)136	
Table 4.31	Respondents' indication of their ability to use QCPR after attending the training session (N=117)137	
Table 4.32	Respondents' reasons for their inability to use QCPR after training (n=22)	138
Table 4.33	Respondents' views on changing to the QCPR.....	139
Table 4.34	Respondents' views on the time frame adequate for training in QCPR (n=116)	140
Table 4.35	Respondents' indication of persons who provided them with the most support during the ability phase of change to QCPR.....	141
Table 4.36	Respondents' indication of the role model in the change to QCPR	142
Table 4.37	Respondents' availability of a computer laboratory in which QCPR skills can be developed (n=116)143	
Table 4.38	Respondents' indication of where the laboratory is situated (n=100)	143
Table 4.39	Respondents' indication of access to a computer laboratory (n=114).....	144

List of Tables	Page	
Table 4.40	Respondents' accompaniment to the computer laboratory (n=109).....	145
Table 4.41	Respondents' frequency of attending computer laboratory sessions to learn about QCPR (n=75).....	146
Table 4.42	Respondents' opportunities to practice the skills needed to operate QCPR (n=112).....	147
Table 4.43	Respondents' indication of whether they had a manual or written procedures to follow when they practised QCPR during the simulation sessions (n=110)	148
Table 4.44	Supervisor demonstrated the skills before giving opportunity to practise QCPR (n=114)	148
Table 4.45	Feedback received on the respondents' performance after simulation sessions (n=113).....	149
Table 4.46	Respondents' indication who provided feedback after simulation sessions (n=92).....	150
Table 4.47	Respondents' indication of the number of times they had to practise QCPR before being found to be proficient (n=115).....	151
Table 4.48	Respondents' indication of whether simulation contributed to the application of skills in the clinical practise (n=113).....	151
Table 4.49	Respondents' opinion on what simulation sessions meant to them	152
Table 4.50	Respondents' indication of feeling competent after laboratory session (n=107)	153
Table 4.51	Respondents' views on preceptors' techniques to assist them in using QCPR in clinical settings	154
Table 4.52	Respondents' views on the most knowledgeable person in the process of changing to QCPR	155
Table 4.53	Respondents' views on who was most supportive in the process of changing to the QCPR system	156
Table 4.54	Respondents' indication of the phase in which they felt most supported	157
Table 4.55	Respondents' views of whether they felt their superiors valued their input and suggestions to improve QCPR (n=113)	158
Table 4.56	Respondents' indications of who valued their input and suggestions.....	159
Table 4.57	Respondents' views on receiving continuous information about QCPR (n=112)	160
Table 4.58	Respondents' views of continuous information on QCPR	161
Table 4.59	Respondents' indication of factors reinforcing the use of QCPR	162
Table 4.60	Respondents' perceptions of adequacy of environment in which QCPR operated (n=116).....	163
Table 4.61	Respondents' perceptions of factors that negatively influence the full use of QCPR (n=62).....	164

CHAPTER 1

Orientation to the study

"The future is coming so fast, we can't possibly predict it; we can only learn to respond quickly."

Steven Kerr

1.1 INTRODUCTION

Kotelnikov (in Kugler 2010:online) states that change is “*the window through which the future enters your life. It's all around you, in many types and shapes. You can bring it about yourself or it can come in other ways.*” The rate of change in today's world is constantly increasing. Everything that exists is getting older, wearing out, demands a new way of thinking, and should be replaced. This includes health care techniques and technology (Lorenz 2012:1). Revolutionary new findings and technologies, discoveries and new research, demanding patients who have become more educated, new modern disease profiles which demand a new way of approach, and a quickening in the pace of change, confront management with unfamiliar, demanding and challenging conditions (Chystalbridge 2010:1; Strenitzerova 2004:54).

However, not all change is welcomed, accepted or viewed as necessary by those who have to carry out or use new technologies. Sirkin, Keenan and Jackson (2005:1) state that two out of three change management projects fail because change is harsh, and part of the problem is identifying factors that influence change initiatives. Ineffective management of staff and resistance to change are the primary obstacles to effective change management (Christobek 2008:22). Ash (2009:1) refers to Kotter in the 1990's and McKinsey in 2008 who found that one in three change initiatives were actually successful and asked, “What are we doing wrong?” Hiatt (2006:1) states that successful change is “how to facilitate change with one person”.

1.2 BACKGROUND TO THE STUDY

The researcher is a Director of Clinical Nursing at a 245-bed hospital in the Eastern Province of the Kingdom of Saudi Arabia. The hospital was established in 2002 and the researcher had the privilege to be one of a few to commission this hospital. Since then the hospital has experienced a boom in multicultural foreign and local employment and new technology. The researcher noted that although technology and other changes could potentially contribute to improve patient care, alleviate the burden on healthcare providers, and improve the smooth running of the hospital, nurses and other healthcare providers resented change.

In 2008 the hospital adopted its first major change by implementing a computerised hospital informatics system (HIS). This system is referred to as the Quadramed Computerised Patient Records (QCPR). The objective of this change was to replace the paper-based patient information documentation. The implementation of the QCPR system was not the only change at the time. The introduction of new technology, such as the infusion smart pump with a drug library system, was also being planned. It is thus important to identify the factors that influence change management and to support staff in the use of state-of-the-art technology to successfully adapt to the change.

Because of the worldwide improvement in healthcare systems and the discovery of new technology and techniques in patient care, it is important for health care services managers to manage change and transition constructively (Kaiser Family Foundation 2007:1). Consequently, it is important to identify significant obstacles or barriers that affect people's reaction to change and to develop interventions that will reduce or prevent resistance to change (Landaeta, Mun, Rabadi & Levin 2008:75).

Consequently, the researcher wished to undertake a study of the factors that affect acceptance of change in a selected hospital in the Kingdom of Saudi Arabia. Hiatt and Creasey (2003) point out that in managing change it is important to consider the people side of change. According to Hiatt (2006:1), the ADKAR model of change management for change in business, government and our community is about managing the "people side of change". Hiatt (2006:1) maintains that "the secret to successful change lies

beyond the visible and busy activities that surround change. “Successful change at its core is rooted in something much simpler: how to facilitate change with one person.”

The ADKAR model of change management has five building blocks namely

- **A - Awareness** of the need for change
- **D - Desire** to participate in change
- **K - Knowledge** on how to change
- **A - Ability** to implement required skills
- **R - Reinforcement** to sustain the change (Hiatt 2006:2).

The ADKAR model of change management brings together aspects of change management such as readiness assessment, sponsorship, communications, coaching, training, and resistance management. The model provides a way of viewing change and allows managers to assess why some changes fail while others succeed. This model is a plain and holistic way to manage change in the workplace, community or home.

1.3 THE COMPUTERISED HOSPITAL INFORMATICS SYSTEM (HIS)

The QCPR system was implemented in the latter part of 2009 in the hospital under study (Al-Musalam & Fritz 2006:34). The QCPR electronic medical record system optimises the provision of care with the focus on the coordination of patient care activities and key clinical documentation (QuadraMed Corporation 2009:1).

In introducing the QCPR system, a team approach was followed which included all stakeholder groups from the hospital top management, and the company that installed and educated the individuals. Provision was also made for the training of “super users” who were able to provide ongoing problem-solving and education for staff post-implementation. In addition, “champions” were trained in the wards to assist and monitor daily recordings of information placed on the system.

The positive aspects of the QCPR system are that it ensures that results are routed for review to all caregivers of the patient and medical orders will automatically be discontinued if the doctor does not renew the orders.

In regard to nursing, the QCPR database assumes the following:

- Orders from physicians are entered into the QCPR either directly or as a verbal order according to protocol;
- Clinical personnel accept physician orders for procedures that fall within their scope of practice;
- Physicians electronically sign all orders, accept results from review queues and access chart reviews on-line in the QCPR;
- All nursing documentation will be performed on-line, in real time and electronically signed by the nurse who performs such tasks;
- Some exceptions will not be entered, namely adverse events relating to patient care, emergency response, and operative and intra-procedural documentations;
- All laboratory specimen collections will be documented on-line;
- In the case of a required resuscitation of a patient, all orders are entered into the QCPR in real time, with the exception of drug administration;
- During active resuscitation of a patient, all nursing documentation will use the existing paper-based records. This will expedite the resulting process during the code management;
- When a patient is admitted or transferred to another unit, electronic documentation of this procedure is recorded in QCPR and the patient's current location is updated automatically.

In Pittsburgh, Upperman, Stanley, Friend, Benes, Daily, Neches and Weiner (2005:e634) found that by implementing the computerised physician order entry by using change management, the success was evident in time, cost and prevention of errors. The study further indicated successes in realistic expectations and a positive work environment, which fostered hospital-wide participation and integration.

The system also allows access for students completing clinical placement and training, while an added value of the system is its audit functionality.

Hospitals worldwide and other healthcare facilities are starting to provide patients access to their healthcare information, including laboratory results, immunisation

records and other sources related to their health (Valerius 2007:56). However, confidentiality remains a serious concern.

1.4 PURPOSE OF THE STUDY

The purpose of this study was to explore and identify the factors that influence successful change management in a selected hospital in Saudi Arabia using the five concepts of the ADKAR model of change management.

A= Awareness: To identify whether the staff members were aware of the change from paper-based documentation to a computerised patient recording system (CPR), and to highlight the involvement of their direct supervisor in the process.

D= Desire: To identify whether staff members had the desire to change from a paper-based documentation approach to a computerised patient recording system (CPR).

K= Knowledge: To identify whether staff members receive adequate training to change from a paper-based documentation approach to a computerised patient recording system (CPR).

A= Ability: To identify whether the ability of staff members, to implement the change from a paper-based documentation approach to a computerised patient recording system (CPR) was tested..

R= Reinforcement: To identify whether the staff members felt supported during the change from the paper-based documentation approach to a computerised patient recording system (CPR).

1.4.1 Research question

In order to achieve the purpose of the study, the intent was to answer the following question:

What are the factors influencing change management in a selected hospital in Saudi Arabia?

1.4.2 Objectives

The objectives of the study were to:

- Identify the factors that have an effect on the acceptance of the current change from paper-based patient records to the HIS QCPR system using the ADKAR model of change management;
- Identify the importance of the direct supervisor as the voice and face of change.

1.5 SIGNIFICANCE OF THE STUDY

The researcher was of the opinion that this study would significantly contribute towards:

- Management awareness of factors influencing change in the selected health care facility;
- Creating awareness and desire with staff to prevent resistance to any new change initiatives.
- Developing educational activities, knowledge and testing the ability of staff to implement the required changes in practice prior to formally implementing the change in the workplace.

1.6 THEORETICAL FRAMEWORK

The ADKAR Model of Change Management formed the framework of the study. The model is made up of the following building blocks (Hiatt 2006:2; Hiatt & Creasey 2003:46):

- Awareness of the need to change;
- Desire to participate and support the change;
- Knowledge of how to change (and what the change looks like);
- Ability to implement the change on a day-to-day basis;
- Reinforcement to keep the change in place.

The ADKAR Model of Change Management is a goal-oriented model for change management that allows teams to focus on activities and desired outcomes. The model was initially developed by the Prosci Research Foundation in 1996 and has since been applied in more than 900 companies from 59 countries (Hiatt 2006:3). The elements of the model are sequential and cumulative meaning that an individual must obtain each element in sequence in order for change to be implemented and sustained.

The model is mostly used to identify gaps in the change management process by diagnosing employee resistance to change, supporting employees' transition through the change process, setting a plan of action and achievement, and developing a change management plan for employees (Change Management Learning Centre 2010c:2).

The model is based on two basic ideas: (1) it is people who change not organisations, and (2) successful change can only occur when an individual has moved through each of the stages, namely Awareness of the need to change, the Desire to make the change happen, Knowledge about how to change, Ability to implement new skills and behaviour and Reinforcement to retain change once it has been made (Ash 2009:70).

The reasons for choosing the ADKAR Model of Change Management was that during the time of reading and searching for an appropriate model for change management, the Prosci foundation was presenting workshops worldwide and also in the Kingdom of Saudi Arabia. This model was adopted in many private and public institutions in the Kingdom of Saudi Arabia as a new way of managing change. Secondly, there was no previous model used to manage change in the selected group of hospitals from which this study emanated for change management. Thirdly, this model was regarded by the researcher as a model which was simple, yet based on scientific grounding including basing the model on other models such as Lewin. In addition, this model is accessible, current and could be understood by those nurses working in the clinical practice.

1.7 DEMARCATON OF THE STUDY FIELD

This study was conducted in a selected hospital in the Eastern Province of Saudi Arabia. Since this is a country not accessible to routine tourists, a brief outline of the

country, the topography of the area, the hospital where the study was conducted and the profile of its people is provided.

1.7.1 Kingdom of Saudi Arabia

The Kingdom of Saudi Arabia covers about four-fifths of the Arabian Peninsula, a landmass constituting a distinct geographical entity. The Kingdom occupies approximately 2,250,000 square kilometres (868,730 square miles) (Metz 1992:5).

The Kingdom of Saudi Arabia, located between Africa and mainland Asia, lies in a strategically important position bordering on the Red Sea and the Arabian Gulf with the Suez Canal near its northwest border (*CIA World Fact Book* 2011:online). Geographically, Saudi Arabia is divided into four major regions (see figure 1.1 map of Saudi Arabia):

- The Central region, a high country in the heart of the Kingdom
- The Western region, which lies along the Red Sea coast
- The Southern region, in the southern Red Sea-Yemen border area
- The Eastern region, the sandy and stormy eastern part of Saudi Arabia and the richest of all the regions in petroleum.

1.7.2 Culture and customs of Saudi Arabia

Saudi Arabia is a modern nation that adheres to Islam, honours its Arab heritage and tradition, and presses vigorously forward in the service of Islam, while securing the welfare of its people. Saudi Arabian culture mainly revolves around the religion of Islam, based on the teachings of the Qur'an (*Oxford Advanced Learner's Dictionary* 2010:821).

The holy month of Ramadan is the ninth month of the Hijra calendar. During this month all Muslims fast during the hours of daylight. All eating, drinking and smoking is banned in public during this religious time. The twelfth month is the holy month of Hajj and the annual pilgrimage to the Holy Mosques, in Mecca and Medina. At this time the Saudi Government hosts the largest religious pilgrimage in the world as worshippers arrive from the four corners of the globe (*CIA World Fact Book* 2012:online).



Figure 1.1 Map of the Kingdom of Saudi Arabia

Source: <http://www.lonelyplanet.com/maps>

1.7.3 Healthcare in the Eastern Province of Saudi Arabia

Medical services are accessible through a number of hospitals and government health care centres that provide free-of-charge service to Saudi nationals. Three of the main government hospitals are King Fahd General Hospital in Hofuf, Prince Saud bin Jalawi Hospital in Mubarraz, and the Maternity and Children's Hospital (Sultan bin Salman bin Abdul Aziz 2011:14).

1.7.4 Area and hospital under study

This section gives a brief description of the geographical environment, the hospital and the personnel, especially the nursing component of the hospital relevant to this study.

1.7.4.1 Geographical environment

The hospital under study is situated in Al Ahsa. The word “Ahsa” means the rocky land, covered by a sandy layer that holds rain water (Sultan bin Salman bin Abdul Aziz 2011: 8). Al Ahsa is a vast stretch of land on the Eastern side of the country and borders with Abqaiq in the north, Empty Quarter in the south, the Dahna Desert in the west, and the Arabian and Salwa Gulfs in the east. It is 150 kilometres from Dammam and 328 kilometres from the capital city, Riyadh (Sultan bin Salman bin Abdul Aziz 2011:10). Al Ahsa has a continental climate with severe heat during the day and a sudden drop in temperature at night. The summers are dry and hot with cold and rainy winters and seasonal rainfall during autumn. Sandstorms occur and could last for days. The months of March, April, November and December are moderate and the ideal weather for outside recreational activities (Sultan bin Salman bin Abdul Aziz 2011:10, 11). Figure 1.2 provides a picture of a sandstorm on the road from Hofuf to Dammam.



Figure 1.2 Sandstorm in the eastern region December 2011

Source: Unknown

In 1994, Al Ahsa had an estimated population of 790,000. At present, the estimated population is over 1,119,412 with an increase of 4% per year (Sultan bin Salman bin Abdul Aziz 2011:12). The major cities in Al Ahsa region are Hofuf, Mubarraz, Omran, and Oyoun Jafer with a number of scattered villages and towns. The region has a diverse natural beauty (see Figure 1.3 and 1.4).



Figure 1.3 Al Ghara Caves in Hofuf, Al Ahsa

Source: Brand (2003)



Figure 1.4 Al Ahsa Palm Oases

Source: Brand (2003)

Al Ahsa is the largest palm oases in the world with an estimated two million palm trees. It is also the biggest exporter of dates in the world.

1.7.4.2 The hospital under study

The hospital was commissioned in 2002 with the arrival of a senior nursing management group and administrative staff in preparation for the official opening of the hospital. The hospital provides care to military personnel and their eligible dependants with primary, secondary and tertiary healthcare services. In addition, medical services may be provided to eligible citizens suffering from diseases requiring tertiary care.

Nursing services are committed to providing nursing care that is guided by evidence-based practice and scientific enquiry. To date, nursing staff members have been recruited from South Africa, Malaysia, the Philippines, Jordan, Saudi Arabia, North

America, Australia, the Czech Republic and the United Kingdom (Miller-Rosser, Chapman & Francis 2006:3).

The hospital under study upholds the following values in meeting the mission and goals of the organisation (*Hospital Information* 2012):

- Patient-focused care
- Quality and excellence
- Teamwork
- Research utilisation
- Teaching enhancement
- Financial stability.

The hospital's objective is to maintain high standards of patient care in primary healthcare programmes and services, while providing an optimal environment and achieving Saudisation (El-Sanabary 1993:1331-1343). Since 2004 the nursing services have catered to the clinical educational needs of Saudi nursing students, of whom 217 are currently placed in the hospital as part of their undergraduate programme. To ensure ongoing development of Saudi nursing students, there is close collaboration between the hospital and the College of Nursing of the Saud bin Abdulaziz University for Health Sciences, Al Ahsa.

Quality Improvement to promote the organisational commitment to positive outcomes in all services throughout the hospital's system and sub-systems, and accreditation with the Joint Commission International (JCI), the healthcare accreditation body, affirm that the hospital meets the required international healthcare quality standards for patient care and organisation management.

The hospital is built on three levels, on a total area of 35,000 square metres, with a capacity of 245 beds. The inpatient wards include obstetrics and gynaecology, medical/surgical, a business centre ward that caters for private patients, a paediatric ward and intensive care units for adults, paediatric and neonates. The hospital has state-of-the-art medical imaging, nuclear medicine, rehabilitation, pharmacy, laboratory and respiratory therapy departments. There are four operating theatres, day surgery operation theatres, endoscopy units, with an additional two operating theatres in the

labour and delivery unit. Over a period of ten years new services, such as oncology and cardiology have emerged, and future developments include the building of an additional 300-bed specialised medical centre.

In addition to the patient care facilities referred to above, the hospital provides shared apartment-style accommodation for its employees, covering a total area of 24,000 square metres, as well as basic facilities such as sport and recreation centres.

1.7.5 Nursing personnel

There are currently 635 nurses working in the various sections of the hospital (Hospital information 2012). The average age of the nurses is 38 years, and the nursing force consists mainly of Filipino nurses (59.4%), followed by Saudi prepared registered nurses (12.3%) and many other nationalities (see Table 1.1). The ratio is 5.51% males to 94.49% females Hospital Information (2012).

Table 1.1 Nationality and number of nurses

Nationality	Total
American	1
Australian	3
British	9
Czech	5
Canadian	1
Egyptian	4
Irish	1
Filipino	377
Indian	20
Jordanian	19
New Zealander	1
Palestinian	1
Malaysian	62
Saudi	78
Slovak	1
South African	52
Total	635

Source: Hospital Information (2012)

Table 1.2 indicates that most of the nurses are in possession of a Baccalaureate degree in nursing, while a significantly smaller number have an advanced or specialist qualification.

Table 1.2 Nurses and their qualifications

Nurses and their qualifications	Total
Master's degree	2
Bachelor degrees	2
Diploma only	106
Diploma and Bachelor degree	19
Bachelor and Master's degree	5
Bachelor degree only	501
	635

Source: Hospital Information (2012)

Table 1.3 lists the number of nurses with specialty qualifications. It should be noted that 56 of the 87 nurses hold additional qualifications in midwifery, but there are significantly lower numbers in other specialties.

Table 1.3 Nurses with advanced speciality qualifications

Total nurses with specialty qualifications	87
Specific Special Qualifications (one nurse has two to 4 specialties)	Total
Cardiopulmonary	1
Child nursing service	1
Community health nursing science	10
Coronary care nursing	1
Cardiac intensive care nursing	1
Critical care nursing	7
Diabetes	2
Health rescuer	1
Human resource mgt	1
Intensive care nursing	10
Management	6
Master's degree	9

Total nurses with specialty qualifications	87
Midwifery	56
Neonatology	6
Nephrology	2
Nursing administration	4
Nursing education	5
Oncology	2
Ophthalmic nursing	2
Orthopaedic nursing	4
Paediatric nursing	4
Peri-operative nursing	12
Psychiatric nursing	6
Rehabilitation	1
Teaching and assessing	1
Total	155

Source: Hospital Information (2012)

The hospital information on-line data source indicates that the average years of experience as a registered nurse in the hospital is 14 years, while the average years of employment as a registered nurse are only four years.

1.8 RESEARCH DESIGN AND METHODOLOGY

A research design is “a blueprint for conducting a study and maximises a researcher’s control over factors that could interfere with the validity of the findings” (Burns & Grove 2009:218).

In this study, the researcher selected a non-experimental, quantitative, explorative and descriptive design, utilising Polit and Beck’s (2008:48-53) framework for quantitative research. In Chapter 3, the research design and methodology is described in detail.

1.8.1 Population

The accessible population relevant to a study is the part of the target population that is accessible to the researcher for the purposes of research (Polit & Beck 2008:338). In this study, the population consisted of all the registered nurses in a selected hospital in Saudi Arabia that utilises the QCPR system on a daily basis.

1.8.2 Sample and sampling

Sampling is the process of selecting a certain portion of the population that accurately and characteristically represents the entire population (Polit & Beck 2008:765). In this study, simple random sampling was utilised (Burns & Grove 2007:246).

Sampling involves choosing a group of people, measures, behaviours or other elements with which to carry out a study (Burns & Grove 2009:343). In this study, the subset of the population consisted of daily users of QCPR and for the purpose of this study 140 of 635 registered nurses constituted the sample. This represented 22% of the nursing personnel using the QCPR system in the wards.

The names of all registered nurses using the QCPR system on a daily basis were entered into a computer and then randomly selected until the desired sample size of 140 participants was achieved (see Chapter 3, Section 3.5.3).

1.9 DATA COLLECTION

Data was collected by means of a structured self-administered questionnaire (see Appendix F). The sections were based on the ADKAR Model of Change Management, namely **Awareness**, **Desire**, **Knowledge**, **Ability** and **Reinforcement**. In addition, a section on demographic information for each respondent was added containing questions on age, years of experience in nursing, previous experience with technology, computer literacy and level of training in computer-based programs. The questionnaire is described in detail in Chapter 3.

The respondents were selected by applying the simple random sampling technique. Each respondent was given a structured questionnaire to fill in during his/her 12-hour shift. The researcher explained the purpose of the study, assured the respondents of privacy, confidentiality and anonymity, informed them that participation was voluntary, and obtained written consent from each respondent. The questionnaire and an

envelope with the researcher's name and contact number were handed out to the respondents. The data collection process is described in detail in Chapter 3.

The respondents were asked to put the sealed envelopes with their completed questionnaires in a sealed container after their shift. The researcher collected the sealed envelopes and kept them in her office.

The researcher also conducted a pre-test of the questionnaire with a small group of respondents not involved in the main study (see Chapter 3).

1.10 DATA ANALYSIS

Data analysis is conducted "to reduce, organise and give meaning to data" (Burns & Grove 2009:695).

In this study, the process of data analysis was carried out by using the Statistical Package for Social Sciences (SPSS) for Windows (version 17.0). The level of significance was set at 0.05. The statistical analysis was done in collaboration with the supervisor of the study and a statistician in South Africa.

The researcher handed the questionnaires to a person who entered the data on the SPSS Version 17 computer program. A statistician then conducted the statistical analysis. Once data recording was complete, the questionnaires were again sealed, returned to the researcher and stored in a locked cabinet to which only the researcher has access. Guidelines for compiling and adhering to the principles of data collection were followed according to Watson, McKenna, Cowman and Keady's (2008:29) principles, including secure storage for a period of five years, after which time the data will be destroyed (see Chapter 3 for a more detailed discussion in this regard).

1.11 VALIDITY AND RELIABILITY

The *validity* of a research instrument is the extent to which the instrument is accurate and reliable for measuring what it is supposed to measure (Burns & Grove 2007:365).

The statistician assessed the face and content validity of the instrument during the pre-test of the questionnaire. Pre-testing the instrument also contributed to the validity of the instrument (see Appendix D).

The researcher tested the questionnaire during the pre-test to ensure its *reliability*. As there was no suggestions from the group to modify the questionnaire it was used as is. This was done with reference to the literature reviewed and in consultation with experts in statistical analysis.

1.12 DEFINITION OF KEY TERMS

In this study the following terms are used as defined below:

- **Change management**

The *Oxford Advanced Learner's Dictionary* (2010:232) defines change as “[verb] to become different; to replace one thing, person, service, etc with something new or different; [noun] the process of replacing something with something new or different”.

Management is defined as “the act of running and controlling a business or similar organisation; the act or skill of dealing with people or situations in a successful way” (*Oxford Advanced Learner's Dictionary* 2010:902).

Hayes (2010:28) describes change management as a process “to seek a new configuration or organisational components in order to realign the organisation with its changing environment”. Recklies (2012: online) regards change management as an effort to plan, initiate, realise, control and finally stabilise change processes at both corporate and personal level. Change may cover diverse areas such as strategic management and personal development.

In this study, change management meant the implementation of steps in a hospital to create a new way of thinking and doing in order to improve patient care and to optimise personnel involvement.

- **Resistance to change**

The *Oxford Advanced Learner's Dictionary* (2010:1256) defines resistance as the “dislike of or opposition to a plan, an idea, etc; refusal to obey”. In psychology it is regarded as a process in which the ego opposes the conscious recall of anxiety producing experiences.

Kotelnikov (in Kugler 2010:1) states that resistance emerges when there is “a threat to something the individual values”. The threat may be a real or a perceived threat. It may arise from a genuine understanding of the change or from misunderstanding or ignorance about it.

In this study, resistance to change referred to refusing to accept, or a negative attitude towards accepting and fully utilising or changing to the QCPR system for the electronic recording of patient records in the hospital.

- **Awareness**

The *Oxford Advanced Learners Dictionary* (2010:88) defines awareness as “knowing something; knowing that something exists and is important; being interested in something”. The Change Management Learning Centre (2011d: online) defines awareness as “the thirst for understanding the ‘why’ behind change”.

In this study awareness was regarded as the process of communication about the implementation of the QCPR system in the hospital under study.

- **Desire**

The *Oxford Advanced Learners Dictionary* (2010:396) defines desire as “a strong wish to have or do something”. The Change Management Learning Centre (2011d: online) defines desire as “a personal decision, and only achieved when the individual acknowledges that he or she has the insight and is willing to change”.

In this study, desire implied the positive thoughts and actions of nursing personnel to the change of using the QCPR system to engage fully in learning and implementing this system.

- **Knowledge**

The *Oxford Advanced Learner's Dictionary* (2010:827) defines knowledge as “the information, understanding and skills that you gain through education or experience”.

In this study, knowledge referred to the information nurses possess to implement changing to the QCPR system in the hospital.

- **Ability**

The *Oxford Advanced Learner's Dictionary* (2010:2) defines ability as “the fact that somebody/something is able to do something”. The Change Management Learning Centre (2010b:online) refers to ability as “the demonstrated achievement of the change”.

In this study, ability referred to the knowledge, skills and attitudes nurses possess to implement change in the hospital under study.

- **Reinforcement**

The *Oxford Advanced Learner's Dictionary* (2010:1228) defines reinforcement as “the act of making something stronger, especially a feeling or an idea”. The Change Management Learning Centre (2010b:) states that reinforcement “encompasses the mechanisms and approaches so that the new way stays in place”.

In this study, reinforcement referred to the support nurses received from various individuals to master the QCPR system in the hospital under study.

- **Hospital information system (HIS)**

The *Oxford Advanced Learner's Dictionary* (2010:726) defines a hospital as “a large building where people who are ill/sick or injured are given medical treatment and care”. Information is referred to as “facts or details about somebody/something” (*Oxford Advanced Learner's Dictionary* 2010:770).

A system is “an organised set of ideas or theories or a particular way of doing something” (*Oxford Advanced Learner's Dictionary* 2010:1516).

A hospital information system (HIS) contains information of every aspect of the running of the hospital, from administration to the financial department. It also includes everything from patient entry and discharge to laboratory tests (Norris & O’Kane 1993:15). Its purpose is to coordinate and/or regulate information throughout the entire hospital. It is used by all health care professionals, such as medical personnel and nurses to be informed about an individual patient. The hospital information system (HIS) is implemented in order to do away with paper-based systems.

In this study, the HIS is a computerised patient record system referred to as the QCPR system in which patient information is electronically entered and shared by health care professionals in the hospital under study.

1.13 ETHICAL CONSIDERATIONS

Ethics deal with matters of right and wrong. The *Oxford Advanced Learner's Dictionary* (2010:500) defines ethics as “moral principles that control or influence a person’s behaviour”.

The Nuremberg Code was one of the first internationally recognised efforts to establish ethical standards (Polit & Beck 2008:168). The Nuremberg based standards were developed following the identification of the Nazi atrocities being made public during the Nuremberg trials.

The Helsinki Declaration and other international standards were subsequently developed. Research ethics involves protecting the rights of respondents and institutions in which research is done, including voluntary participation, anonymity, confidentiality, privacy and informed consent, and maintaining scientific integrity (Babbie & Mouton 2001:531; Burns & Grove 2007:181). A researcher is responsible for conducting research in an ethical manner. Failure to do so undermines the scientific process and might have negative consequences (Brink, Van der Walt & Van Rensburg 2006: 30).

Conducting research ethically begins with identification of the topic and continues through to the end when the findings are published. The conduct of a researcher therefore requires not only expertise and diligence, but also honesty and integrity (Burns & Grove 2007:191; De Vos, Strydom, Fouché & Delport 2002:24). This study was done in accordance with the Helsinki Declaration, South African Good Clinical Practice (SAGCP) and local ethical requirements.

Table 1.4 presents a summary of the ethical principles specified by the Nuremberg Code that the researcher adhered to during the study. In Chapter 3, Section 3.8, the ethical considerations relevant to this study are discussed in detail.

Table 1.4 Summary of the application of the Nuremberg Code principles

Principles of the Nuremberg Code	Application to this study
Voluntary consent is essential	None of the respondents in this study were subjected to any form of coercion or were obliged to participate in the research. Only individuals who were willing to participate in the study were used as respondents.
Study should yield fruitful results for the good of society	The results of the study were used to make recommendations for future changes in the workplace to improve the outcomes and acceptance of such changes.
Previous results should justify the study	The researcher conducted an in-depth literature review on the research topic and attended various workshops presented locally by renowned speakers and presenters.

Principles of the Nuremberg Code	Application to this study
Study should avoid unnecessary physical and mental discomfort, suffering and injury	There were no perceived risks of harm to respondents used for the research. Personal information was not revealed to the institution or any other third party. The study was also conducted in a comfortable and safe physical environment.
No study should be conducted if believed that it will cause negative consequences	As it is a non-experimental study and no human intervention was made. The responses to the questionnaire were anonymous and no harm to respondents or the institution occurred.
The degree of risk should never exceed benefits of the study	No risk was posed to the institution in which this study was conducted as the name of the institution was revealed or any data or information about the institution exposed. Information was revealed only if written consent of the highest authority of the institution was obtained. The respondents were not given any form of incentive to participate in this study.
The study should only be performed by qualified persons	The researcher is a qualified registered nurse and has successfully completed a research methodology module. In addition, the supervisor overseeing the researcher is a recognised researcher.
Subjects should be free to withdraw at any time	Consent to obtain information from the respondents was obtained from the institution as well as from the respondents in accordance with the ethics requirements of the institution. The respondents were free to withdraw from the research at any time without negative consequences or the need to provide reasons for such withdrawal.
The researcher should be prepared to stop the study if a continuation of the research is likely to cause harm	The Health Research Ethics Committee of the University of Stellenbosch (see Appendix A) as well as the Institutional Review Board National Guard Health Affairs and Research of the institution (see Appendix B) gave written approval for the study. Once written consent had been obtained the researcher started with the research process.
Consent for using the ADKAR Model of Change Management	Written consent was obtained from the Change Management Learning Centre in New York to use the ADKAR Model of Change Management in this study (see Appendix C).

Source: Burns and Grove (2007:177).

1.14 LIMITATIONS OF THE STUDY

The researcher acknowledges that, in view of the fact that only one hospital was selected for this study, it could be difficult to generalise the findings to other parts of the country or even to the same group of hospitals in Saudi Arabia. However, the findings may be valuable to other nurses when confronted with the challenge of implementing change. In Chapter 5, the limitations relevant to this study are discussed in detail.

1.15 OUTLINE OF THE STUDY

The Chapter outline of this study is as follows:

- Chapter 1 briefly describes the background to, purpose and significance of the study, the research design and methodology, limitations and ethical considerations;
- Chapter 2 covers the literature review conducted for the purpose of this study;
- Chapter 3 describes the research design and methodology applied;
- Chapter 4 discusses the data analysis and interpretation, and the results obtained, with specific reference to the literature reviewed;
- Chapter 5 concludes the study, provides a discussion of the limitations of the study, and presents recommendations to be considered for practice and further research.

1.16 CONCLUSION

This chapter introduced the study and briefly described the purpose, objectives, research design and methodology, including the conceptual framework, validity and reliability of the study, as well as the ethical principles that guided and informed the research process.

In Chapter 2, the literature review undertaken for this study will be addressed.

CHAPTER 2

LITERATURE REVIEW

“Change is a law of life and those who look only to the past or present are certain to miss the future.”

John F Kennedy

2.1 INTRODUCTION

The *Oxford Advanced Learner’s Dictionary* (2010:869) defines *literature* as “pieces of writing that are valued as works of art, especially novels, plays, poems, pieces of writing or printed information on a particular subject”. *Review* is defined as “an examination of a situation, with the intent of changing it if necessary; a report on a subject, e.g. a review of recent cancer research” (*Oxford Advanced Learner’s Dictionary* 2010:1267). A literature review is conducted to establish what is currently known about a topic.

The literature review conducted as part of a study is a critical step in the writing process. Becker (1986:140) points out that none of us “invent it all from scratch when we sit down to write. We depend on our predecessors. We couldn’t do our work if we didn’t use their methods, results and ideas. Few people would be interested in our results if we didn’t indicate some relationship between them and what others have said and done before us.”

The purpose of a literature review in quantitative research guides the development and implementation of a study. Most of the reading is done prior to the study and limited review is continued during the generalisation phase, as the researcher integrates knowledge from the literature with new knowledge gained from the study (Burns & Grove 2009:90).

In order to be able to provide an authoritative understanding of change management and to identify the factors that influence personnel in the healthcare environment, the researcher undertook a comprehensive review of the literature on the subject under study. The literature review provided a general overview of what organisational change

entails, summarised some of the models of change and focused on the model that the researcher regarded as the most relevant for the purpose of this study, namely the ADKAR Model of Change Management also referred to as the *Prosci's Change Management Model* (Change Management Learning Center 2010c: online).

In addition, the literature review guided the focus on change management in hospitals as well as the compilation of the questionnaire used as the data-collection instrument. The researcher obtained literature relevant to change management and the factors influencing change from the Internet sources indicated in Table 2.1.

Table 2.1 Internet sources used for the literature review

Search engines	Key word search
<ul style="list-style-type: none"> • MEDLINE (Medical Literature Online) • CINAHL (Cumulative Index to Nursing and Allied Health) • OASIS University of Stellenbosch • Nurse One Canada portal Library • The Academic Institutions' Library On Line • Change Management Learning Centre on line 	<ul style="list-style-type: none"> • Change management nursing medical • Patient electronic records • QCPR/QUADRAMED system • Prosci change management • Models of change • Perceptions change • Nursing change • Change Management Learning Centre • Resistance to change

2.2 NATURE OF CHANGE

Sullivan and Decker (2005:217) emphasise that change is difficult to define, but for simplicity, change can be defined as “making something different from what it was”. The outcome could be the same, but the process could be different to reach the desired outcome. Lorenzi and Riley (2003:198) refer to change as “a process of assisting individuals and organisations in passing from an old way of doing things to a new way of doing things”. Hayes (2010:16) refers to change as a “break with the past”.

2.3 CHANGES IN HEALTHCARE

Rapid changes and improvement in healthcare settings require constant individual responses. Luthans and Jensen (in Kelly 2008:273) state that the healthcare industry “is suffering from unprecedeted shortage of qualified nurses as well as increasing demands and complexity due to technological innovations and changing consumer expectations”. Hawkes, Kolenko, Shockness and Diwaker (2009:1186) concur, adding that this shortage of nurses is often due to “circular migration” where as much as one fifth of the nursing force may be lost to wealthier countries. Luthans and Jensen (in Kelly 2008:273) point out that patients are better informed about their medical conditions and treatment options and therefore view themselves as partners in healthcare rather than being receivers or consumers only.

Kotter (1998:27) asserts that no “organisation today - large or small, global or local – is immune to change”. Glaser (2005:82) agrees and states that an improvement of technology occurs almost on a daily basis. In addition, Glaser (2005:84) warns that failure of health information technology also occurs which is often the result of actions or inactions of leadership. Kotter (1998:27) identifies common mistakes managers make during implementation and stresses that producing change is “about 80% leadership and 20% management”.

Lambert (2010:5) states that the healthcare system has witnessed a variety of rapidly changing scenarios, which are driven by forces motivating change. The healthcare focus today is on the process of managing change and is concerned with how individuals or groups can be encouraged and empowered to work with new resources, technology, procedures and new ways of thinking, doing and promoting quality and retaining staff. Change is concerned with the implementation of support strategies needed to overcome resistance to change, methods of consultation, prolonged support, identification of the roles of management and the influence of the organisational climate, as well as the structures in place to facilitate and manage change (Marquis & Huston 2009:166).

In recent years, most healthcare organisations have focused on the improvement of the organisational structure, quality improvement, and staff retention. Marquis and Huston (2009:166) state that these changes are usually planned and are in contrast with

“change by drift” or “accidental changes”. Planned change is facilitated by visionary leaders who make an effort to apply knowledge and skills to make something happen that is different from what it was (Marquis & Huston 2009:166; Rivers, Blake & Lindgren 2012:1).

Kelly (2008:273) maintains that evidence-based practice changes the decision making in healthcare. For example, in the past some surgical interventions and diagnostic investigations required the patient to be hospitalised while today many procedures are conducted in the outpatient setting. This results in patients no longer experiencing lengthy hospitalisation due to the impact of technology and managed care applied (Kelly 2008:273).

Globalisation has led to individuals travelling and working abroad, thereby contributing to changing demographics resulting in diversity of languages and cultures. The challenge for healthcare professionals and organisations lies in understanding these cultures, customs and communication (Kelly 2008:273).

Applying change management to a project is not free and takes time, energy and resources that are all costly commodities to apply (Change Management Learning Centre 2011b:online). Due to the costly healthcare system, many patients who cannot afford healthcare insurance delay in seeking care. This frequently results in more seriously ill patients being admitted to hospitals with life-altering consequences which demand optimal care from highly qualified nurses and other healthcare personnel. Patient safety and medication errors are related to costly health care and affect the way nurses function in the healthcare environment and care for their patients. These are preventable interventions that can be altered and improved through change management and leadership (Szydlowski & Smith 2009:4).

Valerius (2007:58) points out that the call for improved managed healthcare unquestionably adds to improved patient care. Szydlowski and Smith (2009:3) use an example of the deaths of 98,000 patients in the United States of America (USA) who succumbed due to preventable medical errors. The lack of complete patient information and therefore optimal managed care is a contributory factor leading to substandard healthcare to patients. Mekanontchai (2009:9) emphasises that inadequate health information systems affect the quality of patient care and therefore the quality of life

negatively. Weir, McCarthy, Gohlinghorst and Crockett (2000:2) use the example of the physician order-entry system, maintaining that this system may increase contemporaneous and efficient records and recording, which can enhance patient safety. Furthermore, patient electronic medical records may lead to increased communication and interdisciplinary communication, responsibility and knowledge. Sattinger (2006:1322) maintains that automated systems can help eliminate the problem of illegible handwriting in instructions, prescriptions and records. Moreover, chart chasing is eliminated, as is duplicate data entry of the same information on multiple forms.

According to Torrey (2012:online), the benefits of the use of electronic patient records include more efficient control of patient information; access to good care becomes easier and safer when records can easily be shared; important information, for example blood type, prescribed drugs, medical conditions and other aspects of the patient's medical history, can be accounted for much more quickly; existing electronic medical records can save time by providing quick access to records that can be lifesaving if an emergency occurs, and records can also be shared between different institutions that could secure more effective and efficient patient care. At the same time, however, Torrey (2012: online) points out that there are limitations to keeping patient records, such as maintaining confidentiality (see Chapter 4, Section 4.3.2.7).

Hassol, Walker, Kidder, Rokita, Young, Pierdon, Deltz, Kuch and Ortiz (2004:505) found that only a minority of users were concerned about the confidentiality of their information or about seeing abnormal test results after receiving only an explanatory electronic message from their provider (see Chapter 4, Section 4.3.2.8).

According to Edwards, Moloney, Jacko and Sainford (2008:719), the information technology explosion has changed the healthcare industry forever. This has led to a reduction in inefficient patient care; supported improved management and control of costs, and improved of the quality of patient care. However, Szydlowski and Smith (2009:7) report that healthcare organisations often spend large amounts of money on technology that fail due to poor management and in particular change management. Frisse (2009:379) adds that simply spending large amounts of money without improving effective initiatives will not guarantee greater health outcomes. For this reason the implementation of organisational change in healthcare systems needs four essential

determinants for success, namely a well-established organisational culture; the commitment of the total organisation; efficient change management, and the contribution and support from skilled personnel (Change Management Learning Centre 2011b:online; Frisse 2009:379; Marquis & Huston 2009:167).

Marquis and Huston (2009:167) warn that change is not easy. Change can only take place if staff members experience a sense of accomplishment and satisfaction as well as if the organisation contributes to limited stress when implementing change. Change is typically the result of the reaction to specific problems or opportunities for improvement to the current state of affairs to a more desired state (Lambert 2010:5). It is not enough to merely prescribe change and expect it to happen. Creating change in any organisation takes hard work and when change is attempted or takes place in a “high-stress arena” it is doomed to fail (Lorenzi & Riley 2003:197).

2.4 PROJECT MANAGEMENT VERSUS CHANGE MANAGEMENT

Hiatt (2006:1) states that enabling change involves two fundamental disciplines, namely project management and change management (see Figure 2.1). Every activity performed to implement change requires certain processes, systems, organisation structures and job roles. These elements will have a technical side and a “people’s side” to manage (Hayes 2010:61). Both project management and change management have evolved as disciplines to provide the structure and the tools needed to facilitate successful change in any organisation. Initiating and coordinating change requires visionary leadership that encourages action from all parties (Hayes 2010:61; Marquis & Huston 2009:167).

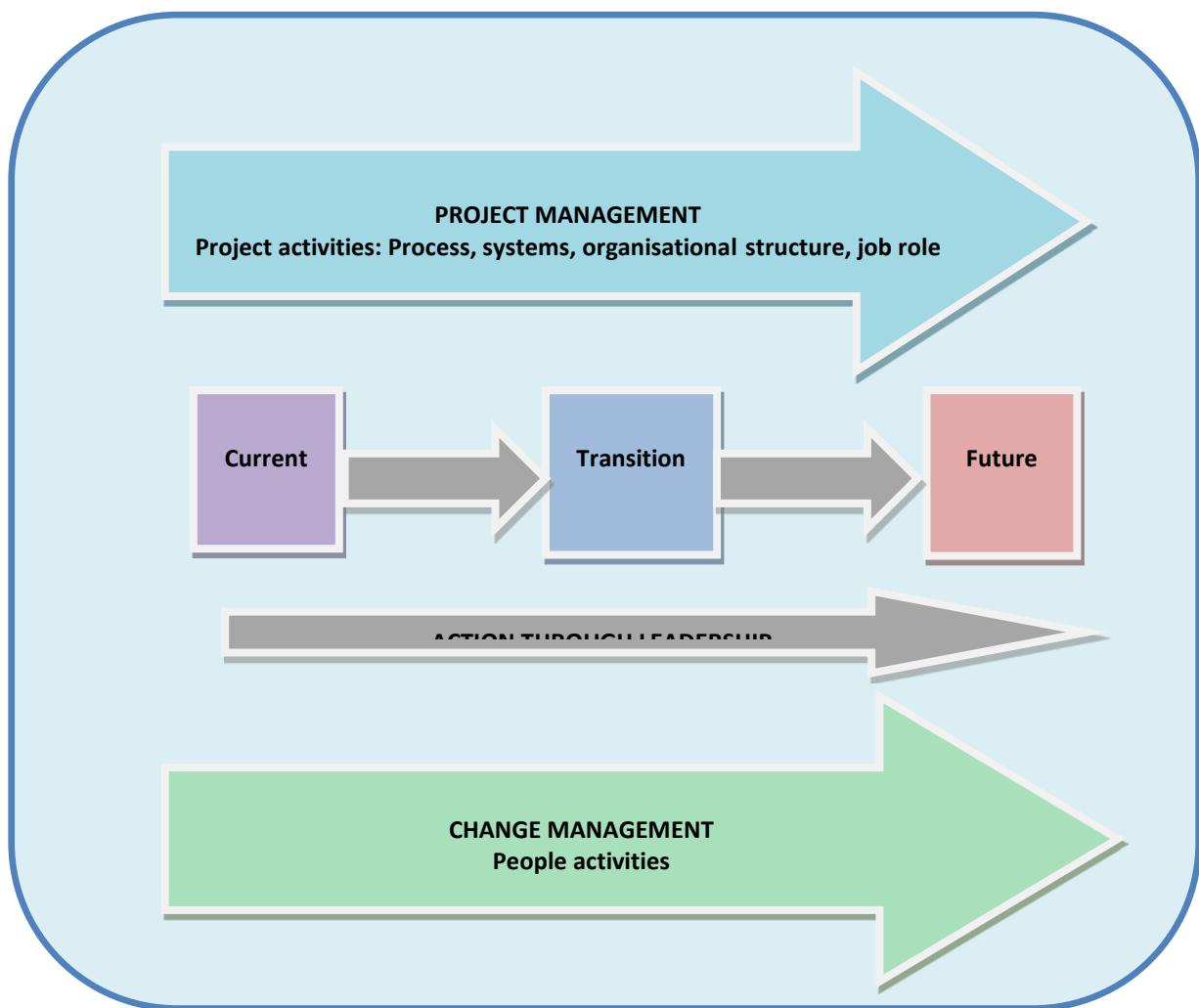


Figure 2.1 Application of project and change management to facilitate change

Source: Creasey (2010:2); Hiatt (2006:6)

From Figure 2.1, it is evident that project management and change management are distinctive and intertwined disciplines in which action is taken to move the organisation from a current state of affairs through a transition state to a future state or new process, systems, organisational structure or role.

Project management is the application of knowledge, skills, tools and techniques to project activities to meet the requirements of the project (Creasey 2010:2). Project management is accomplished through the application and integration of the processes of initiating, planning, executing, monitoring, controlling, and closing. *Change management* is the process, tools and techniques to manage the “people side of change” to achieve the required outcome. It involves those organisational tools that are utilised to achieve successful personal transitions resulting in the acceptance and realisation of change.

2.5 PRIMARY PRINCIPLES OF CHANGE MANAGEMENT

Effective and successful change management requires adherence to certain principles (Hiatt & Creasey 2003:15). The primary principles of change management are illustrated in Figure 2.2 and briefly discussed below (see Section 2.6.1-2.6.6).

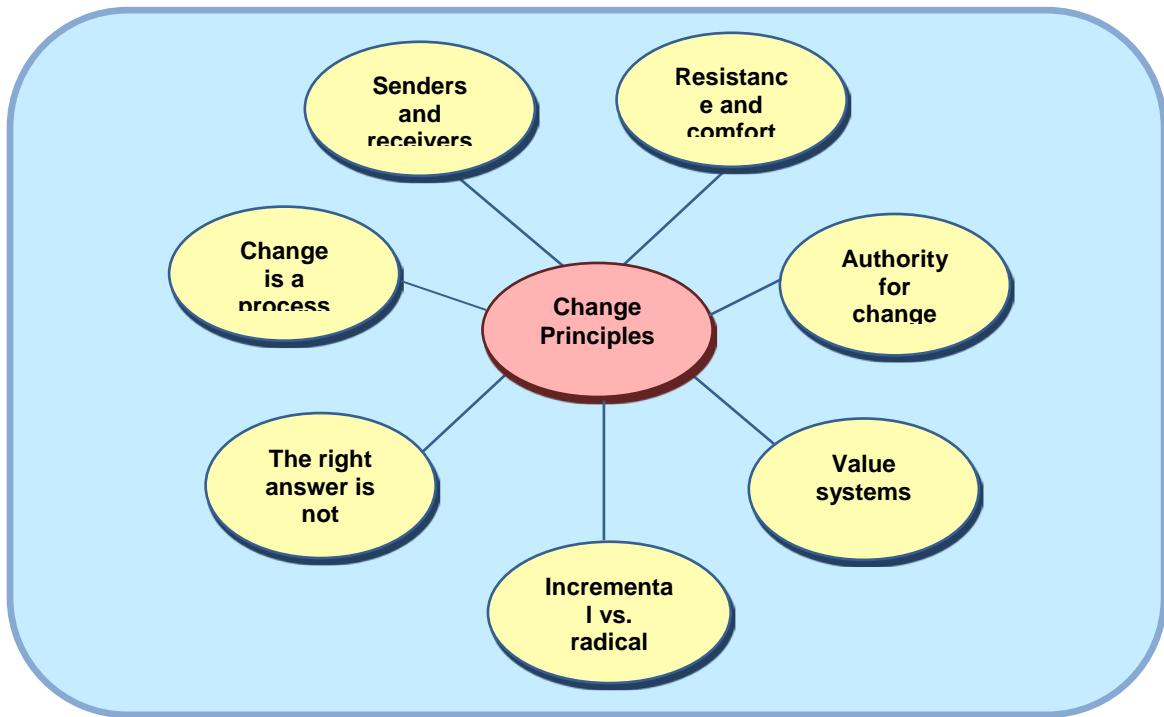


Figure 2.2 Primary change management principles

Source: Hiatt and Creasey (2003:17)

2.5.1 Senders and receivers

Hiatt and Creasey (2003:16) emphasise that key messages need to be exchanged between senders and receivers. Often, however, the dialogue is not conducted at the onset of the change thereby leading to the understanding of two different messages. Hiatt and Creasey (2003:16) refer to various factors which may influence what the employee hears and how it is interpreted as well as how it is communicated to others such as the family and other employees. This may impact the changes that need to be understood and implemented. Hayes (2010:194) states that miscommunication is a major source of resistance to change because people will perceive that the change will cost them more than they will gain. Farrell, Flood, McCurtain, Hannigan, Dawson and West (2005:22) agree and state that successful organisations have to exchange

information to prevent the failure of changes they wish to implement. Farrell et al (2005:22) emphasise further that “when a plan is viewed as everyone’s plan, it can be embraced by everyone”. Kotter (2007:5) states that all parties must share the same vision to help clarify the direction in which the organisation needs to move.

2.5.2 Resistance and comfort

Hiatt and Creasey (2003:20) state that those who want to implement change often underestimate the level of discomfort that people experience with change. Factors that may lead to resistance may be personal (for example, personal history and current events in their lives) or organisational (for example, current changes at work, and how much other change is going on in the workplace). Some employees will resist change, irrespective of what it entails. Managers should not meet resistance with surprise, but expect and plan for it. Hayes (2010:192) refers to the “*psychological contact*” between employees who must implement the change and the managers and state that if employees feel that managers have kept their side of the psychological contact, they are more likely to respond positively to change.

2.5.3 Authority for change

Regarding change management, Hiatt and Creasey (2003:22) state that employee “resistance to change increases as the authority and sponsorship for change decreases”. This refers to incompetence and a known history of implementing change. Therefore, successful change depends on the level on which it is implemented. Hayes (2010:144) found that managers who secure the assistance of powerful stakeholders and build a critical mass of support for the change bring about successful change.

2.5.4 Value systems

Values of control, consistency and predictability are key elements in creating an environment in which change will take place and be accepted (Hiatt & Creasey 2003:24). People, who do not “own” the change and are not included in the accountability and authority structure, are not empowered to make the right decisions at the right time during the change process. Hayes (2010:193) states that people resist change when they believe the change will cause them to lose something of value –

therefore the change is not in line with their self-interest. Heath (2011:18) states that “even when people try to cover up their negative values, they can’t. They leak out. They become visible.”

2.5.5 Increment versus radical change

Hiatt and Creasey (2003:6) refer to two types of change, namely increment change that takes place over a long period and radical change that is implemented immediately and dramatically. In the event of radical change, management is a critical factor while during increment change there is more time available to adjust to change. According to Hayes (2010:97), adaptability to change will determine whether or not the organisation will be able to maintain change over a long period. Luecke (2003:8) refers to four types of change, namely structural, cost-cutting, process, and cultural change. **Structural change** is when overall performance of an organisation is required and is aided by consultants. Examples of this are mergers, acquisitions and consolidations. **Cost cutting change** occurs when organisations face challenging times and is the elimination on non-essential things in the organisation. **Process change** is changes due to the rethink of the process of how things are done and aims at becoming a more effective organisation. **Cultural change** is looking into the “human side” of change. This may involve, for example, relooking into the relationship issues between management and employees.

2.5.6 The right answer is not enough

Giving the right answer is no guarantee that resistance to change will be overcome. Employee buy-in is essential and not simply the assumption by management that the change “is the right thing” to do (Hiatt & Creasey 2003:28). In addition, Hayes (2010:198) asserts that a lack of trust and misunderstanding are a frequent source of failure of a change. The Change Management Learning Centre (2011e:online) notes that change management is not a one-person job or the job of one team. The roles require all senior leaders, front-line supervisors, and middle managers, specialists in human resources, employees and designated resources on a project team. It also requires an orchestration of all activities by all team players throughout the organisation.

2.5.7 Change is a process

Breaking change down into sections and discrete time periods overcomes many of the pitfalls in change (Hiatt & Creasey 2003:6). In the ADKAR model of change management, Hiatt and Creasey (2003:6) describe five key steps in the process of change: awareness of the need to change; a desire to participate and support the change; knowledge of how to change; the ability to implement new skills and behaviours, and reinforcement to keep the change in place (see Section 2.8). Hayes (2010:42) adds that a well-aligned and planned change will reinforce and not disrupt loss of energy and resources. Khan (2011: online) emphasises that change must be feasible, focused and flexible, and minor adjustments must be anticipated and included in the planning activity.

2.6 MODELS OF CHANGE MANAGEMENT

In order to understand where change management originated and how it has grown in recent years, the researcher has included number of change management models. It should be noted, however, this is by no means an exhaustive list of current change management models.

According to Cellars (2010: online), there is a wide range of models, approaches and tools available that can be used to improve organisations to optimise change. Creasey (2010:1) points out, however, that all of the models ultimately prescribe adjustments to one or more of the following four parts of any organisation: processes, systems, organisational structure, and job roles. Pryor, Taneja, Humphreys, Anerson and Singleton (2008:1) state that change models and research conducted using these models are still relevant and can be used today as in the past, but with one exception: the speed which the steps, stages or phases of the model occur. The pace of change is rapidly changing; there are new technology, research findings, sophisticated communication and other variables that make the preparation for the future more complex and faster.

In his book, “*The Rites of Passage*” published in 1909, Arnold van Gennep (Barton 2007:338) described change by dividing it into three distinct phases while studying

groups around the world. Thereafter other theories emerged, such as Lewin's "Force Field Model" in 1951 (Kelly 2008:274; Kritsonis 2004:3; Marquis & Huston 2009:167) and Kotter's Eight Step Change Model in 1994 (Kotter 1996:4; Kotter 2007:8). The Change Management Learning Centre, a research company specialising in change management, began studying the ADKAR model for change in collaboration with Hiatt, an engineer who initially developed the model (Hiatt 2010:2). The model is now known as the ADKAR model of change management. Table 2.2 presents a brief summary of the major contributions of the models.

Kritsonis (2004:-2) states that it is important to note that some of the theories share commonalities. For the purpose of this study, some of the commonalities are highlighted. From Table 2.2, it can be concluded that Lewin's model is a rational, goal- and plan-orientated model. However, this model does not take into account those factors that may affect change. Conversely, social cognitive theory proposes that behavioural change is affected by environmental influences, personal factors and attributes of the behaviour itself.

Lippitt's phases of change model are an extension of Lewin's three-step model, and focuses on the change agent rather than the change itself. Lewin's model attempts to analyze the driving and restraining forces that impact change (Leis 2012: online). The Change Management Learning Centre (2012:online) identifies a direct correlation between achieving the business objectives of a change and effectively managing the "people side of that change".

Table 2.2 A summary of some of the contributors to change management

MODELS	DESCRIPTION
Arnold Van Gennep - Rites of Passage -1909 Source: <i>Encyclopaedia of Death and Dying</i> (2011:online); Bigger (2010:online); Zumwalt (1982:1, 4)	<p>Arnold Van Gennep was born in 1873 and died in 1957. He was never accepted into Emile Durkheim's circle of sociologists. The anthropologist Rodney Needham speaks of this as "an academic disgrace". Nevertheless, Van Gennep's 1909 "Rites of passage" represents his prime contribution to thanatology, and subsequently became a major means of interpreting funeral rituals. Rites of passage are transition rituals that move the individual from one social status to another in a three-phased schema of:</p> <ul style="list-style-type: none"> • Separation • Segregation • Incorporation

MODELS	DESCRIPTION
<p>Kurt Lewin - 1948</p> <p>Source: Change-Management Coach (2011:2); Kelly (2008:274); Bigger (2010:online); Kritsonis (2004:-1)</p>	<p>Kurt Lewin developed his change management model in 1951 (Syque, 2007). Lewin recognised three stages of change, which are still widely used today.</p> <p>According to Bigger (2010:4), Lewin's work was ground-breaking on response, change, action research and the "social field" - that is, that individual behaviour is intertwined with the social context.</p> <p>Lewin's (1951) three-step change model views behaviour as a dynamic balance of forces working in opposite directions (Kelly 2008:274). Driving forces facilitate the change because they push employees in the desired direction. Restraining forces hinder change because they push employees in the opposite direction. Therefore these forces must be analysed and Lewin's three-step model can help shift the balance in the direction of the planned change (Change Management Coach 2011:2).</p> <ul style="list-style-type: none"> ● Unfreezing <p>Most people are hesitant to change and are comfortable with the status quo and therefore they need motivation. Lewin refers to this stage as "unfreezing".</p> <p>Kelly (2008:274) states that freezing means the current or old way of doing is flawed. People begin to be aware of the need for doing things differently, that change is needed for a specific reason. Current structures have to be "unfrozen" (separating people from how things used to be).</p> <p>Kritsonis (2005:4) states that according to Lewin, the first step in the process of changing behaviour is to unfreeze the existing situation or status quo. The status quo is considered the equilibrium state. Unfreezing is necessary to overcome the strains of individual resistance and group conformity.</p> <p>Unfreezing can be achieved by the use of three methods:</p> <ul style="list-style-type: none"> ○ Increase the driving forces that direct behaviour away from the existing situation or status quo. ○ Decrease the restraining forces that negatively affect the movement from the existing equilibrium. ○ Find a combination of the two methods listed above. <ul style="list-style-type: none"> ● Change or transition <p>The change occurs in the transition period and Lewin sees it as a voyage and not a step. This could take time, because people do not like change (Syque 2007:online). As motivation is important for the unfreezing state so is leadership important in the transition phase and reassurance to both the company and employees. Involvement and change are communicated and staff members are made aware of the benefits and implementation of change (Kelly 2008:274).</p> <p>Lewin's second step in the process of changing behaviour is movement. In this step it is necessary to move the target system to a new level of equilibrium.</p> <p>Three actions can assist in the movement step:</p> <ul style="list-style-type: none"> ○ Persuade employees to agree that the status quo is not beneficial to them; encourage them to view the problem from a fresh perspective, work together on a quest for new, relevant information, and connect the views of the group to well-respected, powerful leaders that also support the change.

MODELS	DESCRIPTION
	<ul style="list-style-type: none"> • Freezing <p>This is the stage where the company becomes stable (Syque 2007: online). New ways and means are incorporated in the daily activities of the people involved (Kelly 2008:274). At the point of transition the old has to transform into the new.</p> <p>This step needs to take place after the change has been implemented in order for it to be sustained or “stick” over time. It is highly likely that the change will be short lived and the employees will revert back to their old equilibrium if this step is not taken.</p>
Lippitt - 1958 Source: Kelly (2008:276); Leis (2012:online)	<p>Lippitt's phases are built on Lewin's model (Kelly 2008:274). Lippitt emphasises the importance of communication through all seven phases of change.</p> <p>Lippitt, Watson and Westley (1958) (in Leis 2012:online) extended Lewin's three-step change theory and created a seven-step theory that focuses more in the role and responsibility of the change agent than on the evolution of the change itself. Information is continuously exchanged throughout the process. The seven steps are:</p> <ul style="list-style-type: none"> • Diagnose the problem • Assess motivation and capacity for change • Assess change agent's motivation and resources <p>This includes the change agent's commitment to change, power and stamina.</p> <ul style="list-style-type: none"> • Select/Choose progressive change object <p>In this step, action plans are developed and strategies are established.</p> <ul style="list-style-type: none"> • Choose appropriate role of change agent <p>The role of the change agent should be selected and clearly understood by all parties so that the expectations are clear. Example of roles: facilitator and expert.</p> <ul style="list-style-type: none"> • Maintain change <p>Communication, feedback and group coordination are essential elements in this step of the change process.</p> <ul style="list-style-type: none"> • Terminate helping relationship <p>The change agents should gradually withdraw from their role over time. This will occur when the change becomes part of the organisational culture.</p> <p>Lippitt et al (1958) (in Leis 2012: online) point out that change is more likely to be stable if spread to neighbouring systems or to subparts of the system immediately affected.</p>
Havelock – 1973 Source: Kelly (2008:276); Tyson (2010:online) (Sullivan & Decker, 2005)	<p>Havelock designed a six-step model of the change process. This model is based on Lewin's model, but Havelock included more steps in each stage. Havelock's theory of change is a linear model that generally resembles Lewin's model, although with an emphasis on <i>planning</i> and <i>understanding</i> of the possibility that people and systems may be resistant to change. Havelock's theory of change provides one way of looking at change in a six-step process that acknowledges resistance to change and the need to carefully plan for change (Tyson 2010:online).</p> <p>The planning stages include:</p>

MODELS	DESCRIPTION
	<ul style="list-style-type: none"> • Build relationship Havelock states that a relationship with the system in need of change needs to be established. This could be regarded as a stage of "pre-contemplation" where things are going along as usual • Diagnose problem Once the agent of change is comfortable with the system as it is, the person or entity needing change is evaluated to see if there is any awareness need for change. During this contemplation phase, the subject of change must decide whether or not change is needed or desired. Often the change process can end prematurely here because the subject decides that change is either not needed or not worth the effort to correct • Acquire resources At this stage, the need for change is understood and the process of developing solutions begins by gathering as much information as possible that is relevant to the situation that requires change <p>The <u>moving</u> stage then follows:</p> <ul style="list-style-type: none"> • Choose solution The fourth stage of Havelock's change theory is when a pathway of change is selected from available options and then implemented • Gain acceptance Once the change has been put in place, it must be established and accepted. Individuals of organisations are often resistant to change, so careful attention must be given to make sure that the change becomes part of new routine behaviour. After change has been accepted, the change process can be declared successful. <p>The last stage is the <u>refreezing</u> stage</p> <p>Stabilise and self-renew/Maintenance and separation Now that the change is successful, the change agent should monitor the affected system to make sure that it is successfully maintained. Once the change becomes the "new normal", the change agent can separate from the person or organisation that was changed. At this stage, the person or organisation has hopefully learned enough about themselves and the change process that they can maintain their new behaviour</p> <p>Havelock emphasises the planning stage. He believes that resistance to change can be overcome if there is careful planning and inclusion of the affected personnel (Kelly 2008:275). The more people affected by the change participate in the change, the more they are likely to make the change successful and to support the necessity for the change (Sullivan & Decker, 2005) This theory is often applied to educational change management.</p> <p>Through Havelock's theory of change it can be deduced that the emphasis and importance of planning is an orderly process from recognition of the need for change to the subjects' abilities to maintain a changed system.</p>

MODELS	DESCRIPTION
<p>McKinsey 7-S Model - 1978 Source: Hiatt (2010:3); Cellars (2010:online)</p>	<p>This model, created by Robert Waterman, Tom Peters (while working for McKinsey & Company), Richard Pascale, and Anthony Athos during a meeting in 1978. (Cellars 2010:online) Seven different factors are part of the model, namely</p> <ul style="list-style-type: none"> • Shared values Shared values are the cornerstone of this model because that is what the organisation believes in and stands for; such as, the company's mission. • Strategy Strategy represents what the company plans to do to react to any changes of its external surroundings. • Structure Structure refers to the organisational structure of the company. • Systems Systems are the portion of the model that represents the "procedures, processes and routine that characterise how the work should be done". • Style Style signifies the organisational culture and management styles that are utilised within the organisation. • Staff The concept staff refers to people who are employed in the organisation and what they do within the organisation. • Skills Skills indicate the abilities and competencies of either the employees or the organisation holistically.
<p>William Bridges - 1980 Transitions Source: William Bridges, Managing Transitions, (1991:47-49); William Bridges- Navigating the transitions of change (Strategies for Managing Change:online)</p>	<p>Bridges, a business consultant and authority on change and managing change, offers well-tested, effective tactics to make change more comfortable for everyone (Bridges1991:47-49). William Bridges focuses on transition and the psychological changes behind significant organisational change. His theory involves a three-phase process:</p> <ul style="list-style-type: none"> • Ending, losing and letting go Bridges states that psychological transition starts with an ending - letting go of the old reality. Staff must be allowed to come to terms with their own "endings". Helping people deal with their tangible and intangible losses and be mentally prepared to move on (William Bridges: online). • The neutral zone Once staff have understood and come to terms with the loss of the old way, they enter a "neutral zone" when the old way has gone, but the new way doesn't feel comfortable yet. It is a difficult time - anxiety rises, motivation fails, people are disorientated and teamwork can suffer. Critical psychological realignments and re-patterning take place. This is all about helping get people through it, and capitalising on all the confusion by encouraging them to be innovators. • The new beginning Beginnings cannot be made to happen by word or act. They

MODELS	DESCRIPTION
	<p>happen when the timing of the transition process allows them to happen.</p> <p>To make a new beginning, Bridges advises leaders to think along the lines of the four Ps: purpose, picture, plan, and part to play. Helping people develop a new identity, experience the new energy and discover the new sense of purpose that make the change begin to work</p> <p>Unlike earlier models, such as Lewin's, which speak of institutionalising or "freezing" behaviours, Bridges focuses on helping people discover, accept and embrace their new identities in the new situation.</p>
<p>Rogers -1983</p> <p>Source: Kelly (2008:276)</p>	<p>In 1983, Rogers published his "Diffusion of Innovations Theory". Though based on Lewin's model, this theory is much broader in scope and approach. Rogers believes that the change can be rejected initially and then adopted at a later time. His theory is more useful in individual change.</p> <p>The Diffusion of Innovation Theory addresses five factors (Kelly 2008:276):</p> <ul style="list-style-type: none"> • Awareness • Interest • Evaluation • Trial • Adoption
<p>John P Kotter 1995</p> <p>Kotter (1996:36); Cellers (2010:online); Ash (2009:418) Campbell (2008:23)</p>	<p>In 1994 John Kotter wrote an article for the <i>Harvard Business Review</i> entitled "Leading Change: Why Transformation Efforts Fail" and in 1995 he published his book "<i>Leading Change</i>" that was a successful best seller (Kotter 1996: ix).</p> <p>Kotter remains one of the most respected experts on the subject of change management. He began writing about change management in the mid 1990s when he first declared that only one change initiative in three actually achieved its stated objects. In 2008 McKinsey did a global survey of change and found about the same results as Kotter had twelve years before.</p> <p>Kotter's Eight-Step Model</p> <ul style="list-style-type: none"> • Increase urgency for change Establishing a sense of urgency is crucial to gaining the needed cooperation (Kotter 1996:36). This means that management needs to convince employees that this change is necessary for the company to survive (Rose 2011:online). This also means having to communicate that the change is achievable without any detrimental effects on their jobs. • Build a team for the change Building an effective team is based on trust and a common goal. When trust is present, you will usually be able to create teamwork. (Kotter 1996:61). The next step is to build a team for the change, which has to be of some respected employees in the company. • Construct the vision In a change process a good vision serves three important purposes: <ul style="list-style-type: none"> ◦ It clarifies the general direction for change ◦ It motivates people to take action in the right direction, even if the initial steps are painful.

MODELS	DESCRIPTION
	<ul style="list-style-type: none"> ○ It helps coordinate the actions of different people, even thousands and thousands of individuals, in a remarkably fast and efficient way (Kotter 1996:69); <p>The third step is to construct vision, which will show clear vision as to how the change will better the future of the company and their jobs.</p> <ul style="list-style-type: none"> ● Communicate <p>Nothing undermines the communication of a change vision more than behaviour on the part of key players that seems inconsistent with the vision (Kotter 1996:97);</p> <p>The fourth step is to communicate this vision. In order for the vision to work it must be fully understand by the employees, which means that it's necessary for the leaders of the change group to follow this vision.</p> <ul style="list-style-type: none"> ● Empower <p>With the right structure, training, systems and supervisors to build on a well-communicated vision, increasing numbers of firms are finding they can tap enormous sources of power to improve organisational performance (Kotter (1996:115).</p> <p>The fifth step is to empower the employees to execute the change. It is still important that the management follow the same guidelines as the employees.</p> <ul style="list-style-type: none"> ● Create short-term goals <p>By creating short-term goals, we assist the employees to accept the change by showing them progress. Rewards are very important at this stage too.</p> <ul style="list-style-type: none"> ● Be persistent <p>The seventh step is about persistence because we should influence more change even after the short-term goals are met or the original plan for change will cease and die.</p> <ul style="list-style-type: none"> ● Make the change permanent <p>The final step is to make the change permanent by moving and fitting it into the company's culture and practices, such as promotion (Chapman 2006:online).</p> <p>Leaders establish the vision for the future and set the strategy for getting there; they cause change. They motivate and inspire others to go in the right direction and they, along with everyone else, sacrifice to get there. (Kotter 1996:12).</p>
Prosci Change management model or ADKAR Model of Change Management Hiatt (2006:1)	<p>The idea of change occurring in three distinct phases is found in most change management literature, dating back to the cultural anthropologist Arnold van Gennep who studied rites of passage in cultures around the globe in the early 20th century. From Kurt Lewin to William Bridges, Richard Beckhard to Daryl Conner, Jeanenne LaMarsh to Prosci - the explanation of change as a movement (Transition) from how we had done things (Current) to a new way of doing things (Future) is prominent. (Hiatt 2006:1).</p> <p>Prosci, a research company specialising in change management, began formally reconstructing the evolution and history of change management. After completing research with more than 700 organisations applying change management, Prosci released the first integrated process for individual and organisational change</p>

MODELS	DESCRIPTION
	<p>management in 2003. Since 1994, Prosci has conducted five longitudinal studies in change management with more than 1600 organisations from 59 countries (Hiatt 2006:3)</p> <p>Hiatt (2006:1) is the author of ADKAR Change Management in business, government and our community, and the founder of the Change Management Learning Center, where he has led research projects with more than 1600 companies in 59 countries on change management.</p> <p>Prosci separated change and defined each state accordingly and identified what is needed to reach each of the identified states by applying the ADKAR Model of Change Management (Hiatt 2006:2).</p> <p>Current state - how the situation is today According to Prosci, <i>awareness and desire</i> to change is needed to move a person out of the current state (see Figure 2.3).</p> <p>Transition state - how to change the situation from the current state to the future state <i>Knowledge and ability</i> to change is needed to move a person through the transition state</p> <p>Future state- how the situation could be <i>Ability and reinforcement</i> to change is needed to make the change successful (Hiatt 2006:3).</p>

2.7 THE ROLE OF LEADERSHIP IN CHANGE

Hospitals are businesses in a network of service delivery that requires visionary management and leadership. Providing optimal levels of service delivery ultimately demands change to retain the competitive edge that optimises patient care and employee efficiency and satisfaction. According to Szydlowski and Smith (2009:5), with the increasing demands for services, the explosion of new knowledge and the world of ever-growing new technologies, innovative strategies limit or prevent resistance to change by personnel which may create an erosive environment of negativity and which may jeopardise the health and well-being of patient care. Kotter (2007:1) is of the opinion that leaders are central to change but that transformation requires much more than leadership, as change requires restructuring, financial expertise, reengineering, knowledge and strategic insight. Leadership is thus a team effort of a variety of individual input. Goldsmith (2003:1) adds that leadership must be energised by change, but, in turn, must be executed with honesty, and be smart, seasoned and committed.

The Change Management Learning Centre (2007:online) states that change management was viewed in the past as “the soft, touchy-feeling things that people in

HR do”, but over the past decade change management has materialised as a structured discipline that leaders regard as a “*must have*” when any project or initiative is launched. However, Bacal (2009:online) adds that in an organisation where there is faith in the abilities of formal leaders, employees will look towards the leaders for a number of things. During the execution of drastic change, employees will expect timely effective and sensible planning, confident and effective decision-making, and regular, complete communication. Also, during times of change, employees will perceive leadership as supportive, concerned and committed to their welfare, while at the same time recognizing that tough decisions need to be made (Hannah, Ball, Lorenzi, Ash, Eindbinder & McPhee 2005:122). In other words, there is a climate of trust between leader and the rest of the team. The existence of trust brings hope for better times in the future, and that makes coping with drastic change much easier.

The ADKAR Model of Change Management has five roles/teams, which relate to change management. These are depicted in Figure 2.3.

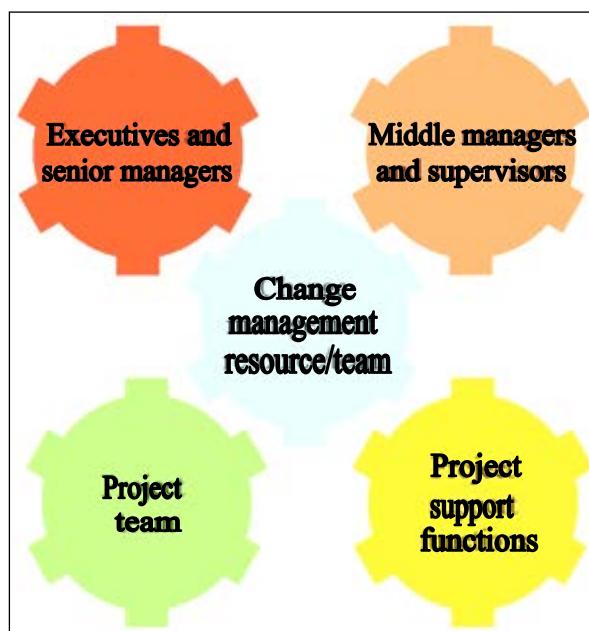


Figure 2.3 Prosci's Roles in Change Management Model

Source: Change Management Learning Centre (2011a:online)

Each of the roles or teams is vital and has a distinctive and significant contribution to driving successful change. Some team members engage employees directly while several of the team members do more of their work behind the scenes.

The executives and senior managers and middle managers and supervisors are the two at the top of the model and they are the employee-facing team members in change management. These two groups have direct interactions with employees impacted by change. They are the voice and face of change. This is illustrated in Figure 2.4.

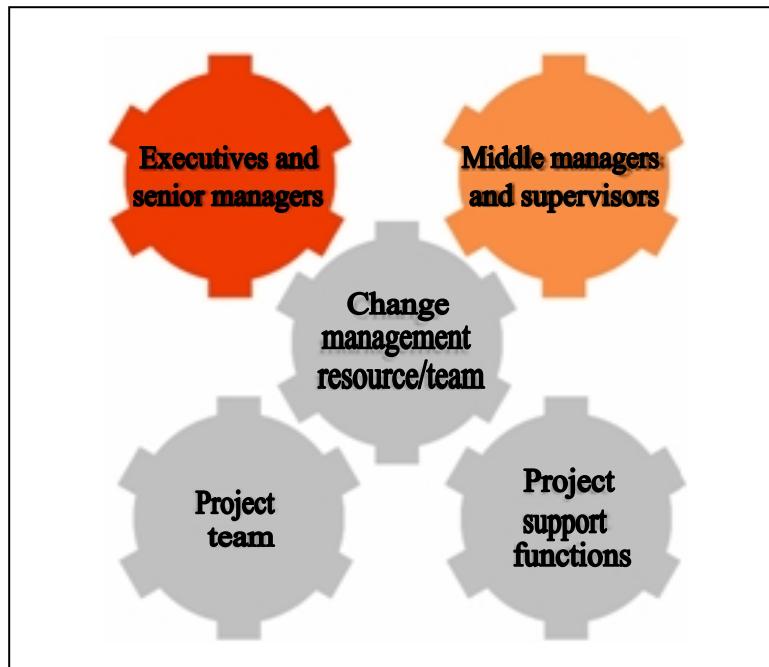


Figure 2.4 Management's roles in change

Source: Change Management Learning Centre (2011a:online)

Employees often do not know the project manager, the change management specialist, the human resource specialist or the communication specialist assigned to the project. Employees know their immediate supervisors, and they do know who they consider "in charge" of their division of the organisation. The employee-facing team members are determined by the nature and the relationships in the organisation, not by a random team model or structure created for a given plan (Change Management Learning Centre 2011a:online).

The Change Management Learning Centre's (2011a:online) benchmarking data indicates clearly that employees rather want to hear change messages from their supervisor and the person they consider "in charge" (see Figure 2.5). Direct supervisors or managers are instrumental in helping employees attain every element of the ADKAR principles in practice. Figure 2.5 presents findings from the Change Management Learning Centre (2011a:online) benchmarking study, which reveal that the most

effective senders of business messages about the change are senior leaders and immediate supervisor for personal messages about change.

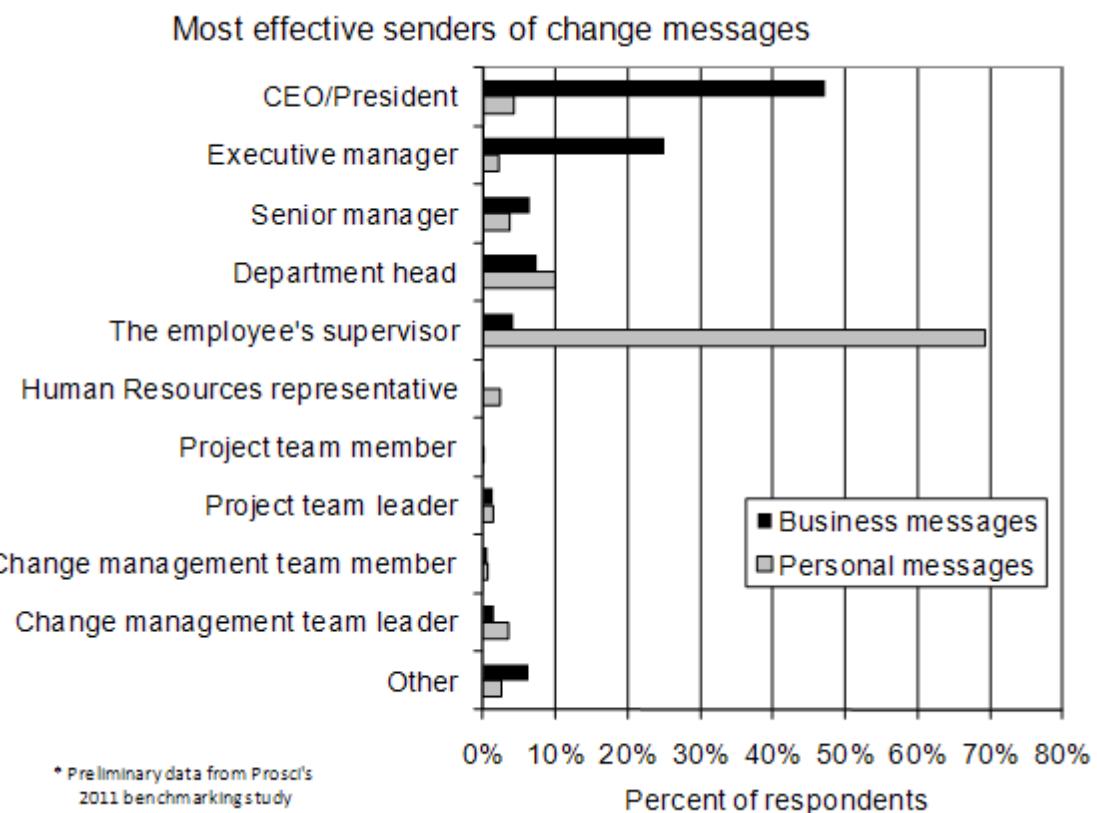


Figure 2.5 Most effective leaders as senders of change messages

Source: Change Management Learning Centre (2011a:online)

From Figure 2.5 it is evident that the top management plays the most important part in the sending messages related to the business to employees followed by the executive manager. However, the employees' supervisor (or in this study, the ward manager) plays the most important role in sending out more personal message. Conrad and Sherrod (2011:47) emphasise the important role of the nurse manager as a "front-liner" in change management as they have great influence on quality, efficiency and integration of technology in the new healthcare dimension and can be leaders in the use of electronic technologies. Moreover, nurse managers are creative and visionary and have the ability to move staff into the electronic information age, but they themselves must be able to change and have the education to move others towards change.

2.8 APPLICATION OF ADKAR MODEL OF CHANGE MANAGEMENT

This section discusses the application of the ADKAR Model of Change Management and it is on this model that the study is based. The Prosci model for change management consists of the acronym ADKAR that stands for Awareness, Desire, Knowledge, Ability and Reinforcement. Table 2.3 lists the ADKAR acronym's five building blocks. All five building blocks must be in place for change to be facilitated. The building blocks are discussed in Sections 2.8.1 to 2.8.5.

The building blocks of the ADKAR Model of Change Management fall into a natural sequence of how people experience change. For example, desire cannot come before awareness because awareness of the need to change stimulates the desire to change or a lack of awareness could trigger the resistance to change (Hiatt 2006:3).

Table 2.3 Building blocks of the ADKAR Model of Change Management

- A **Awareness** of the need to change
- D **Desire** to support and participate in the change
- K **Knowledge** of how to change
- A **Ability** to implement required skills and behaviours
- R **Reinforcement** to sustain the change

Source: Hiatt (2006:2)

2.8.1 Awareness of the need to change

The *Oxford Advanced Learners Dictionary* (2010:88) defines awareness as “knowing something; knowing that something exists and is important; being interested in something”. According to Hiatt (2006:5), awareness is the initial step towards change and is the basis on which personal choices towards change are established. The Change Management Learning Centre (2011d:online) defines awareness as “the thirst for understanding the ‘why’ behind change”.

2.8.1.1 Factors leading to awareness to change

According to Hiatt (2006:10) awareness is the first building block and is achieved when the person understands the need to change and has knowledge about the risk of not changing. Awareness is not only a matter of good communication; multiple factors influence people to see the need for change (see Figure 2.6). This includes the person's view of the current state, how the person perceives problems, credibility of the sender, and the contestability of the reasons for change.

In a 2005 study of 411 companies undergoing major changes, the Change Management Learning Centre (2012:online) found that the most important reason given was a lack of awareness of why change was being made.

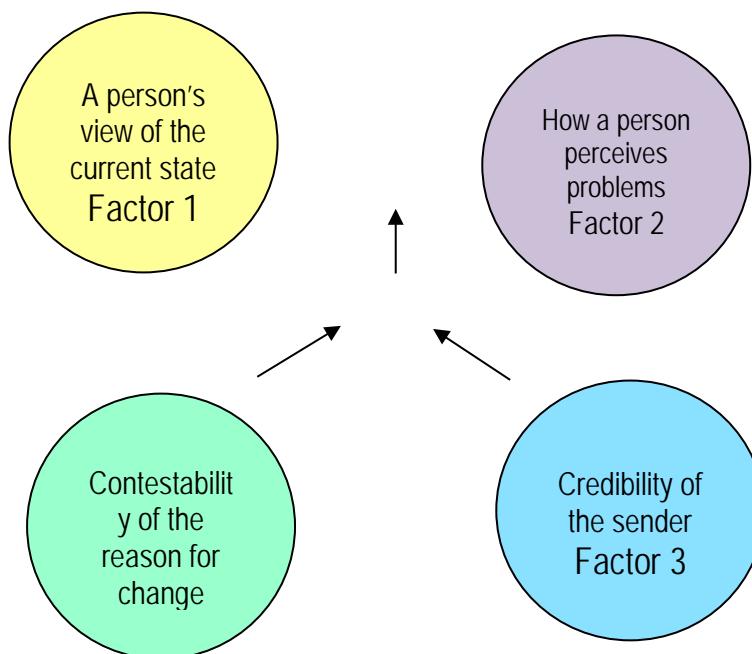


Figure 2.6 Factors influencing awareness of the need for change

Source: Hiatt (2006:10)

- **Factor 1: A person's view of the current state**

A person who is content with the current state is more likely to ignore the reason for change and may make statements such as: “*We always did it this way since I joined the company*” or “*If it is not broken, why fix it?*” (Hiatt 2006:10).

The opposite is individuals who are not content with the current state. These individuals will use change as an opportunity to inform others that change is “long overdue” and that it “is time that someone listened” (Hiatt 2003:11). The current state determines how people respond to awareness of change. Hiatt (2006:11) states that when people are comfortable and have invested in the current state, they are more likely to ignore or deny that change is necessary. Those who are unhappy with the current state are more likely to listen and internalise the reasons to change the current state.

Bates (2000:5) states that awareness to change is often unplanned and starts when individuals question current practices. Furthermore, decision makers who want to see change happen overnight limit the time frame.

- ***Factor 2: How a person perceive problems***

This factor relates to a person’s understanding and problem-solving skills. People deal with things in different ways and in their own time. Some people might be more alert and expect changes to come where others might miss the warning signs. Kirton (2003:16) states that people whose style is more adaptive are more aware of internal threats while those who are innovative are more aware of external drivers for change.

Heath (2011:18) states that people’s perceptions of problems are often changed when words are put into actions. The manager who acts sets a model on which trust and communication can be built. Ting-Ting (2004:232) states that once people begin with awareness to change, they develop an attitude towards it based on perceptions. They then decide either to accept or reject the innovation and make the decision whether they will develop further towards change (Ting-Ting 2004:232).

- ***Factor 3: Credibility of the sender***

The credibility and the respect that employees have for the sender will have an impact on how personnel will perceive the awareness message as well as the history of how the company dealt with changes in the past (Hiatt 2006:12). Kotter (1996:115) states that nothing “*disempowers people the way a bad boss can*”. Pryor et al (2008:12) state that internationally renowned organisations are known for their customer-focused

workplaces and their vision to empower their employees.

- ***Factor 4: Circulation of misinformation or rumours***

Hiatt (2006:13) states that the circulation of misinformation or rumours relates to misinformed managers that are not transparent when dealing with change and the awareness message could be received in a negative way and create barriers for change. Managers then have to spend more time correcting the situation than they would have in clear and transparent communication in the first place. Khan (2011:online) concurs and adds that eliminating the jargon associated with change and explaining the process in the simplest way leads to a more acceptable approach to change.

- ***Factor 5: Contestability of the reasons for change***

It is more difficult to build awareness for change with internal drivers or reasons that are debatable than it is with external and observable drivers (Hiatt 2006:13). External factors are those that control the change or are driven by forces outside the organisation; for example, legislation or regulations set by the authorities to which the organisation must comply.

Hiatt (2006:5) maintains that meeting the human need to know “why” is a crucial factor in managing change. Once a person is aware of and understands the nature of change and why it is needed and the risks of not changing, the rest of the process of change may run smoothly. At the first awareness of change individuals will ask questions such as “*Why is change necessary?*; *Why is change happening now?*; *Why change – what is wrong with what we have now?*, and *What will happen if we don’t change?*” The following factors influence the awareness of the need to change:

- A person’s view of the current state influences the awareness to change and here already people may deny the reasons for change (*What is wrong with what we have been doing now?*). According to Kotter (2007:101), the main benefits of early involvement of personnel are designed around communication and a sense of ownership.

- The perception of how a person cognitively perceives the problems (Kirton 2003:132). In addition, Kotter (2007:2) found that people in large organisations where restructuring and implementation on a large scale will take place, will change if they are shown the truth which, in turn, will influence their feelings.
- Credibility, authority and respect for and of the person/institution demanding the change is the ultimate test for the leader (Kotter 2007:3).
- Circulation of misinformation or rumours often leads to misunderstanding and preconceived ideas and may lead to failure of change. Lorenzi and Riley (2003:197-198) point out that reasons for failure to change include lack of communication, complexity of the technology, and leaders who themselves are not convinced of the change.
- Contestability of the reasons for change is found when individuals are overwhelmed by changes and the horizontal communication and reasons are not sufficiently explained (Lorenzi & Riley 2003:200).

2.8.2 *Desire to support and participate in change*

The *Oxford Advanced Learner's Dictionary* (2010:396) defines desire as "a strong wish to have or do something". The Change Management Learning Centre (2011d:online) defines desire as "a personal decision and only achieved when the individual acknowledges that he or she has the insight and is willing to change". Hiatt (2006:2) describes desire to change as a "willingness to support and engage in change".

2.8.2.1 *Factors leading to a desire to change*

Desire is the second building block in the ADKAR Model of Change Management and is a personal decision to participate in change. Desire is thus not under our direct control and is therefore not as easy as creating awareness for change is. Many business leaders make the mistake of assuming that creating awareness also means creating desire to participate in change (Hiatt 2006:18). Figure 2.7 depicts the factors influencing the desire to change.

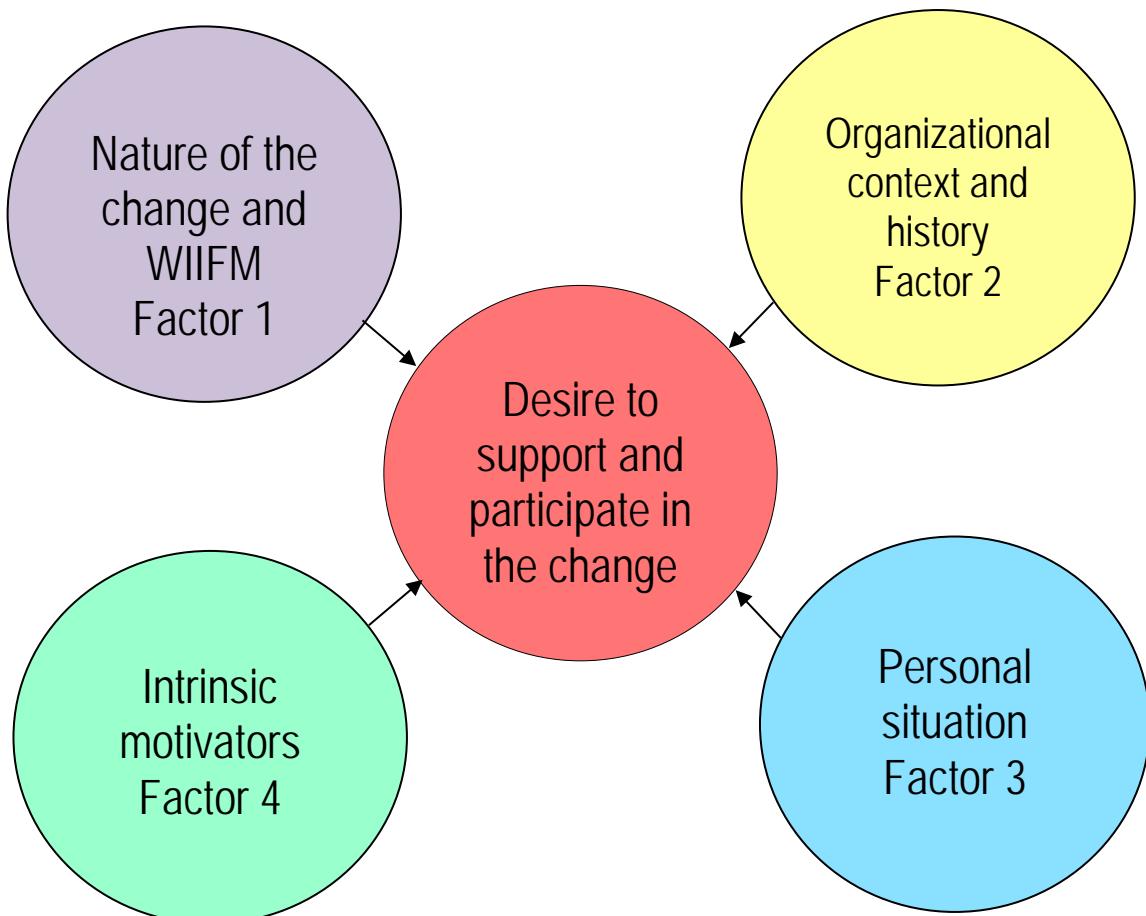


Figure 2.7 Factors influencing desire to support and participate in change

Source: Hiatt (2006:18)

- **Factor 1: Nature of the change and what personal value there is for the individual (WIIFM – what's in it for me?)**

When people do not see the personal value of change, they will resist the change (Warrilow 2012:6). Warrilow (2012:6) found that resistance to change was the primary obstacle to successfully implementing change and contributed six times more than any other factor to the failure rate of change. The levels that a person or group assesses the nature of change on could be: "What is the change and how will it impact me?" This is often referred to as WIIFM (*what's in it for me?*).

- ***Factor 2: Organisational or environmental context***

The organisational or environmental background symbolises how a person or group analyses the environment that is central to the change. This is a personal experience and could vary from person to person. An organisation's culture and history of past changes and how they were managed should not be overlooked as the history will play a key role in building desire to change (Hiatt 2006:19).

- ***Factor 3: An individual's personal situation***

The third factor that plays a role to create desire in a person to change is the individual's personal situation. Personal situations include family status, whether they have the ability to move around, age, career, work history, upcoming events, promotions, financial security, educational background, work and social relationships. An individual's personal situation plays a pertinent role in the decision making process linked to change (Hiatt 2006:20).

- ***Factor 4: What motivates people?***

According to Hiatt (2006:20), personal motivators make us the persons that we are. They could be seen as our internal compass that direct us in what we do every day and could range from the desire to help others, to avoiding pain or negative consequences. Some people want to have more power, financial security. These motivators not only include what we value, but also our internal belief that we can achieve what we want if we choose to do so.

The desire to change represents the motivation and ultimate choice to support and participate in the change (Hiatt 2006:17). Managers can introduce new technology but they cannot force their employees to support and engage in these changes. The desire for support and participation depends on four factors:

- The nature of change and whether the change is seen as an opportunity or threat. Individuals often ask questions such as how change will affect them.

- The organisational environment and the rewards that the change will bring. Valerius (2007:58) states that when moving from a hard copy system to an electronic patient management system, the reward lies in the newfound benefits that such a system holds.
- The history of previous attempts to change is important. Lorenzi and Riley (2003:198) point out that the inappropriate use of technology can be destructive and, according to Wagstaff (2006:12-13), may create barriers in further attempts to implement change.
- According to Hiatt (2006:18) an individual's intrinsic or personal motivation includes factors which may influence change such as age, physical abilities, family status, and personal rewards.

2.8.3 Knowledge to change

Knowledge is defined by the *Oxford Advanced Learner's Dictionary* (2010:827) as "the information, understanding and skills that you gain through education or experience" Hiatt (2006:2) refers to knowledge as all the training, information and education that would be regarded as necessary to apply the change. The Change Management Learning Centre (2010b:online) refers to knowledge on "how to change - transition state" and knowledge on "how to perform effectively in the future state". The Change Management Learning Centre (2010b:online) A common mistake that many managers make is to assume that people have the knowledge to adjust or accept the change, while the opposite is often the case when employees find out with surprise and are unprepared to accept and apply the change.

2.8.3.1 Factors leading to knowledge to change

Knowledge is an important outcome for change to be understood, not only for the individual, but for the organisation as a whole. Knowledge in the transition state is different from knowledge on how to perform effectively in the future state (see Figure 2.8).

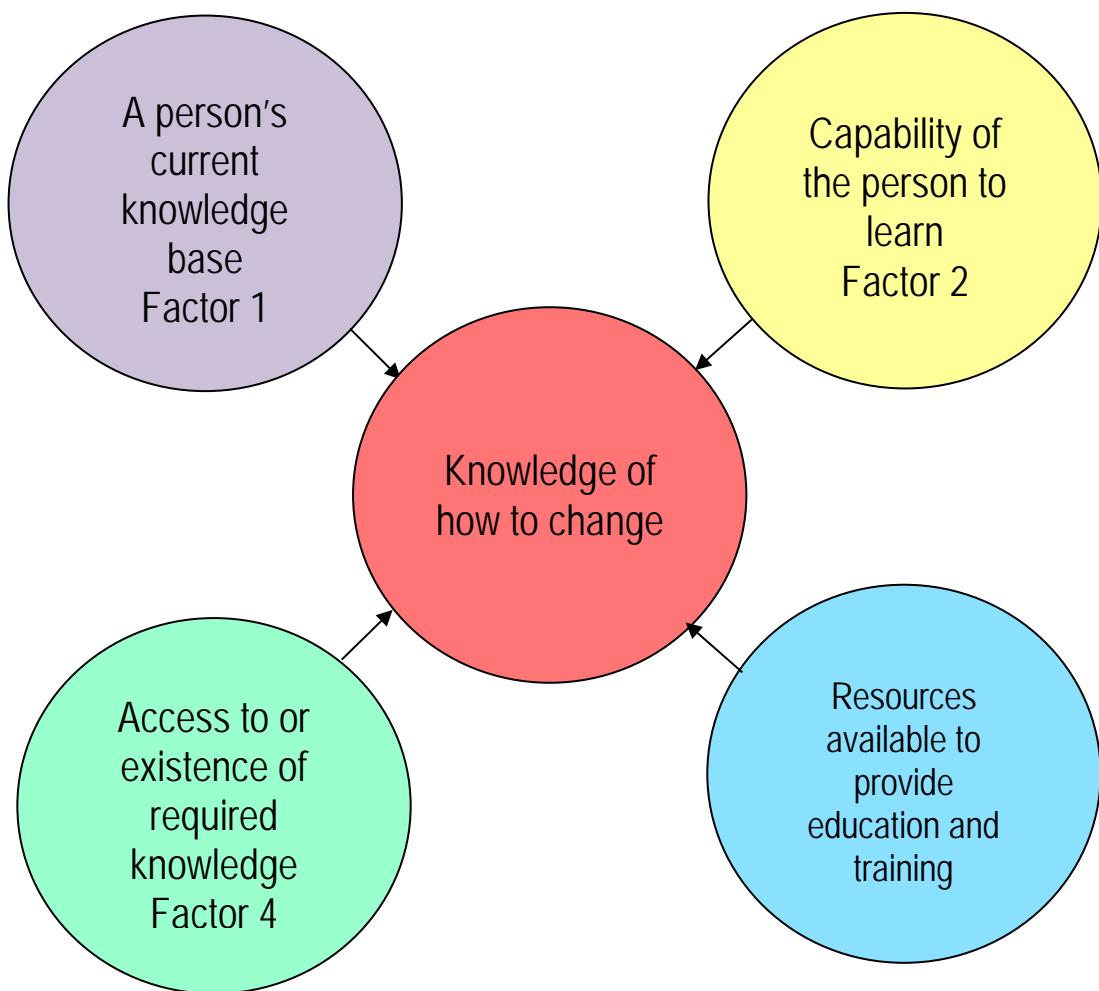


Figure 2.8 Factors leading to knowledge to change

Source: Hiatt (2006:27)

- ***Factor 1: A person's current knowledge base***

A person might have the knowledge or there could be a gap in the required knowledge that change brings.

- ***Factor 2: Capability of the person to learn***

Learning new skills may be easier for some while others may experience difficulty in grasping the content. Not one person learns at the same pace. It is not only the knowledge gap that brings the challenge but where some people are more likely to learn new concepts but struggle with the technical skills (Hiatt 2006:28).

- ***Factor 3: Resources available to provide education and training***

The third factor is the resources available to educate the staff. Some companies have plenty of resources and others struggle to provide any structured education. Resources include availability of instructors, classrooms, books equipment and materials for student use (Hiatt 2006:28).

- ***Factor 4: Access to or existence of required knowledge***

Organisations without internet access have limitations in the provision of access to knowledge.

Hiatt (2006:29) maintains that knowledge is dependent on the level of training and education, skills and behaviours needed for the change. Acceptance of change is dependent on detailed information on how to use new changed processes, systems and tools. Knowledge is also the ability to understand the new roles and relationships associated with change. To successfully implement change, the following elements of knowledge should be taken into account:

- The current knowledge base of the individuals implementing the change (Hiatt 2006:28).
- The capacity and capability of the person to gain additional knowledge. For example, the Institute of Medicine (2000) found many medical errors by doctors that resulted in either negligent or inefficient knowledge.
- The resources available for education and training are conveyed through communication, professional relationships and the resources available for the dissemination of information (Alpay, Toussaint & Zwetsloot-Schonk 2004:1).
- The access to or existence of the required knowledge is encouraged by means of professional collaboration with highly professional individuals and a proper understanding of workflow and quality care (Aarts, Ash & Berg 2007:4). In addition, knowledge can limit risks affecting patient care.

2.8.4 Ability to change

The *Oxford Advanced Learner's Dictionary* (2010:2) defines ability as "the fact that somebody/something is able to do something". The Change Management Learning Centre (2010b:online) refers to ability as "the demonstrated achievement of the change".

Hiatt (2006:2) defines the ability to change as the "realisation or execution of the change". Ability can only be achieved if the individual turns the knowledge into action by using information of processes, tools, systems, skills and job roles to implement the change.

2.8.4.1 Factors influencing the ability to change

The fourth element in the ADKAR Model for Change Management is *ability* and this demonstrates that the person has the needed qualities to implement the change (Hiatt 2006:32).

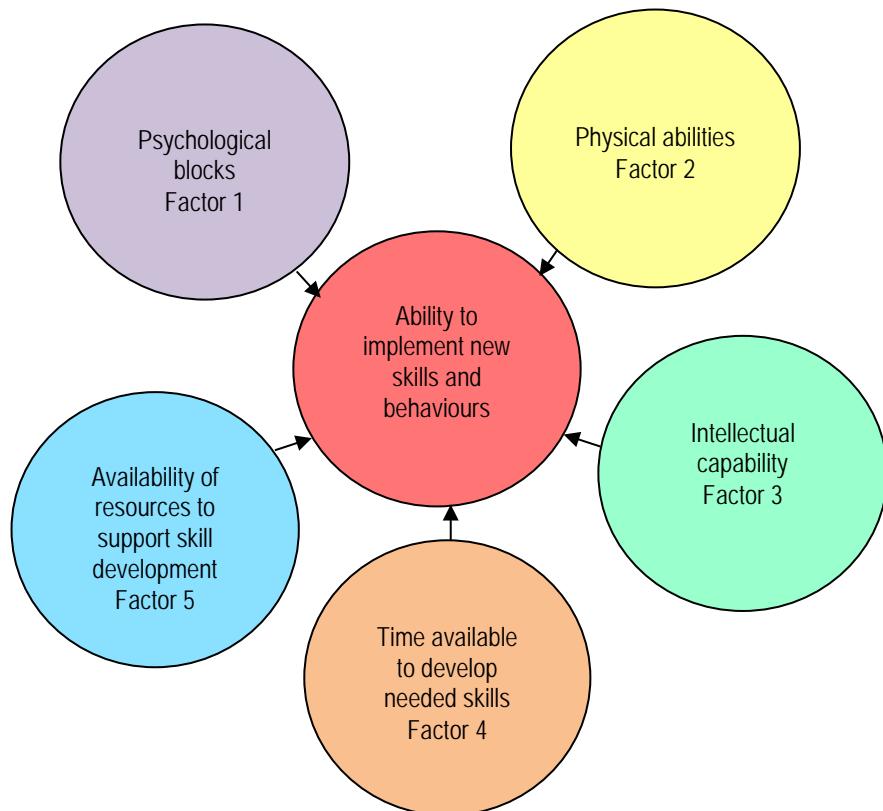


Figure 2.9 Factors influencing ability to implement a change

Source: Hiatt (2006:32)

- ***Factor 1: Psychological blocks***

Psychological barriers to change are multifaceted issues that manifest themselves as real in terms of their end result. However, people are not always sure how to manage them. Khan (2011:online) states that psychological blocks can be overcome when people are given recognition and rewards when short-term targets are met in change management.

- ***Factor 2: Physical ability***

If an individual has any physical limitation such as dexterity or arthritis it may prevent them from accepting change. They could fear losing their job and therefore rather resist change than show their inability to master the change. Strength, physical agility, manual dexterity, physical size and hand-eye coordination could be identified as physical limitations in the workplace (Hiatt 2006:34).

- ***Factor 3: Intellectual capability***

Due to different personalities and abilities not all individuals are good at maths and excel at innovation and creativity. Some individuals can put their thoughts in writing while others find it difficult to put their ideas and thoughts in writing, and that could lead to a mental block when implementing change (Hiatt 2006:34).

- ***Factor 4: Time available to develop the needed skills***

Time constraints could lead to the failure of change. Not all individuals might acquire the needed skills in the same time frame and when change is driven by time it is out of the hands of the supervisor or managers to allow more time even if the individual might have the potential to develop these abilities given more time (Hiatt 2006:34).

- **Factor 5: Availability of resources to support the development of new abilities**

The availability of resources like finance, proper tools, personal coaching and access to experts to mentor the individual play a role in developing new skills and abilities. This could also address any knowledge gaps identified during the change process

The ultimate goal of change is to improve the organisation by altering how work is done (Change Management Learning Centre 2010b:online). Hiatt (2006:31) add that to change, knowledge alone is not enough. The individual required to implement the change must also have the **ability** to do so. Tsiknakis and Kouroubali (2009:39) state that adoption in a hospital environment depends on the fit between the attributes of the individual, attributes of technology and attributes of the hospital tasks and processes. Ability is the demonstrated achievement of the change. The individual's ability to implement change depends on the following factors:

- Psychological barriers are evident in all change. Kotter and Schlesinger (2008:41) state that change creates fear because individuals are threatened by the influence on their jobs and the ways of change in what they have always been doing.
- Physical abilities to change may hamper change (Hiatt 2006:31).
- Intellectual capabilities are a challenge. According to Plug (2007:online), the perceptions of healthcare personnel and the ease of the use of information and communication technologies play a vital role in its successful implementation.
- Time available to develop skills. Blumenthal, DeRoches, Donelan, Ferris, Jda, and Kaushal (2006:online) state that if health organisations invest more time in health information technology, then the potential to advance healthcare quality will increase.
- Availability of resources. Formidable barriers exist in changing technologies and the cost of investing in health information technology is often vast (Blumenthal et al 2006:online; DePhillips 2007:6).

2.8.5 Reinforcement to sustain change

The *Oxford Advanced Learner's Dictionary* (2010:1228) defines reinforcement as “the act of making something stronger, especially a feeling or an idea”. The Change Management Learning Centre (2010b:online) states that reinforcement “encompasses the mechanisms and approaches so that the new way stays in place”.

Hiatt (2006:3) refers to reinforcement as those internal and external factors that keep the change alive and to sustain the interest in the change active for example internal satisfaction of achievement or other benefits derived from changing.

2.8.5.1 Factors leading to reinforcement of change

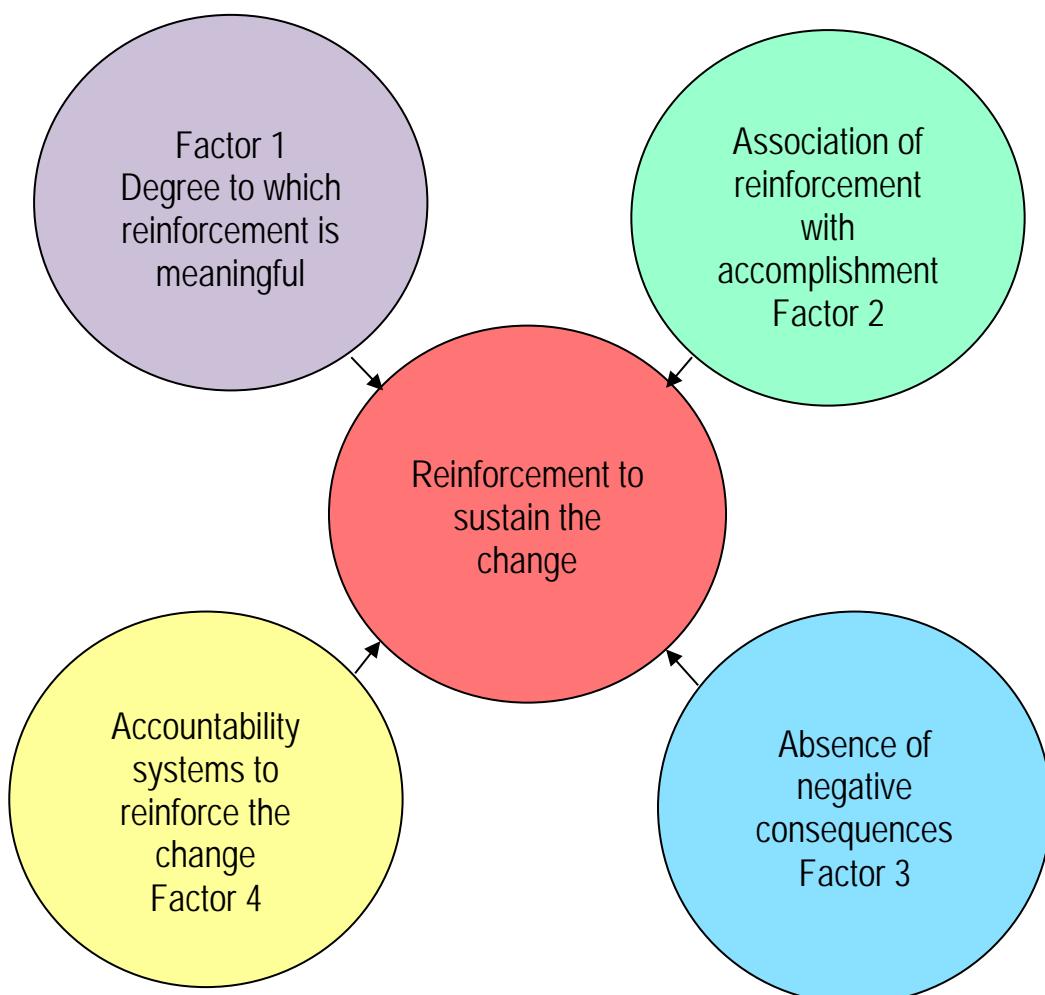


Figure 2.10 Factors that influence reinforcement to sustain change

Source: Hiatt (2006:38)

Hiatt (2006:38) describes the following factors that reinforce change.

- ***Factor 1: Meaningful reinforcement***

In general, change is reinforced when rewards and acknowledgment are meaningful to an individual. The following could be meaningful to a person:

- Recognition or rewards for the person
- The one providing the reward or acknowledgment is someone for whom the individual has respect
- Reward is relevant to the receiver

- ***Factor 2: Association of the reinforcement with accomplishment***

Staff members know when they succeed but still want to be recognised for what they achieve. This lets them know someone cares and that the change is important. At the same time, however, a co-worker may struggle with the change and no one notices this and the lack of reinforcement is a barrier to sustaining the change.

The potential for celebrating success could be the turning point for the change while without achievement any reward or recognition could backfire and reduce the value of recognition now and in the future.

- ***Factor 3: Absence of negative consequences***

When a person experiences a negative outcome for demonstrating the desired behaviour, the change process is barricaded. In the workplace some workers insist in doing things the old way and apply peer pressure to colleagues to do the same.

- ***Factor 4: Accountability systems***

Liability for sustained performance is one of the strongest reinforcements. In the workplace, accountability systems are often linked to job performance and measurement.

According to the Change Management Learning Centre (2011c:online), Prosci's three phase process namely preparing for change, managing change and reinforcing change is an example of individual change that describes **the ends** while an organisational change management model describes **the means**.

The three phases encompass specific actions that a change management team would use to help individuals build Awareness, Desire, Knowledge, Ability and Reinforcement during a particular project. Reinforcement includes any action or event that strengthens and reinforces the change with an individual or organisation (Hiatt 2006:37). Reinforcement does not always require major events but can be achieved by giving recognition and expressing appreciation to employees. This tells employees that their contributions are being noticed and that their contributions matter. The factors that contribute to the effectiveness of reinforcements include:

- The degree to which the reinforcement is meaningful to the person impacted by the change; for example, rewards that are meaningful. DesRoches et al (2008:50), it was found that physicians did not use electronic patient records effectively. The findings indicated that reinforcement by expressing satisfaction by other healthcare professionals contributed to improved adherence.
- Demonstrated progress or accomplishment, such as feedback of results, is rewarding (Edwards et al 2008:718-719). Edwards et al (2008:719) found that witnessing patient care and patient safety policies brought about an increased streamlining of systems and created reinforcement of an electronic patient record system.
- The absence of negative consequences, such as peer pressure, can compel individuals who insist on doing things the old way to change (Hagen 2008: online).
- Accountability systems to reinforce change, such as job performance measures, have motivated individuals to change accordingly (Hiatt 2006:41).

2.9 Resistance to change

Lee and Ferris (2010:2965) state that resistance to change is “inevitable and typically found where people have to move away from established and familiar ways”. In the United Kingdom (UK), Gollop, Whitby, Buchanan and Ketley (2004:108) found that management embarked on a major programme of reform and modernisation and expected that personnel would embrace the improvements and modernisation which would have benefited personnel and patients. However, these changes are often met with scepticism and resistance within the healthcare system. Zandieh, Yoon-Flannery, Kuperman, Langsam, Hyman and Kaushal (2008:755) found that resistance to change is often the result of not understanding the psychology of how people are influenced by change and the stages they pass through during the change process. Gollop et al (2004:108) assert that promoting the engagement of personnel at the onset of planned change by creating an attraction and being prepared to explore the rationality of others' point of view is a framework that is also advocated. The ADKAR Model for Change Management (Change Management Learning Centre 2011f:online) indicates that in many cases neither the manager nor the frontline employee is knowledgeable about managing change.

Wynn (2010:online) states that out of ten reasons why individuals resent or resist change, the two main ones are that they lack of awareness about the change and that they are comfortable with the ways things are and fear the unknown. According to Kotter and Schlesinger (2008:42), resistance to change is due to four main aspects: (1) people desire not to lose something of value; (2) misunderstanding about the change and its implications for them; (3) a view that change does not have any benefit for the company, and (4) a low tolerance for change.

Gollop et al (2004:108) state that although resistance to change in health care is often interpreted in negative terms, research into broader organisational change has demonstrated its value in a number of ways. According to Schuler (2010:online), the presence of personnel who challenge and question proposed change is healthy and should be encouraged and they “*become the reformers*” in an organisation. Resistance can lead to a search for better methods that encompass conflicting opinions. Managing scepticism and resistance in positive ways is an essential part of the process of gaining support for change.

Kotter and Schlesinger (2008:45) stress that dealing with resistance to change should not be underestimated. Managers may sometimes not have an accurate understanding of the reasons behind resisting change. Kotter and Schlesinger (2008:45) list the following strategies to handle resistance to change:

- **Education and communication**

Education and communication prior to implementation of change is imperative. These could be verbal (for example, group discussions, and individual interviews) or non-verbal (for example, education material or memos). Scheid (2009:online) adds that individuals who are ready to accept change, have knowledge of change, and have been included in change will buy-in to the changes to be implemented.

- **Participation and involvement**

Potential resistors should be involved in some aspects of the design and implementation of the change. This way, resistors can add value by giving their own opinions and feel free to voice their concerns. Lisatong (2011: online) concurs and emphasises that openness and transparency is essential in the change process.

- **Facilitation and support**

Being supportive of every individual who will be involved in the process of change is essential. This might be in the form of training in new skills, giving people time off after a demanding period, or simply listening to the concerns they have. This will lessen the fears and anxiety that are often evident in the change in the workplace.

- **Negotiation and agreement**

Incentives for active or potential resistors can be considered; for example dealing with the unions on a salary increase in return for implementing change. Negotiated change can be a powerful tool in the change process. Lisatong (2011: online) agrees and adds that removing barriers and rewarding actions should be considered when planning and implementing change.

- **Manipulation and co-optation**

Khan (2011: online) states that to implement change in any organisation it is important to motivate the team members to accept the change. Where appropriate, some instances require that management resort to covert attempts to influence others. This will require a selective use of information and the conscious structuring of events. Co-optation is one form of manipulation and involves giving certain people a desirable role in the design and implementation of change. Giving a key person, who is respected in the company, some authority and responsibility, will determine how change is met by others.

- **Explicit and implicit coercion**

There are times when dealing with resistance to change is by coercing people or forcing employees to change. This could be in the form of threats such as a loss of jobs, delayed promotion, or firing or transferring them. Using coercion is risky but often the manager's only option (Kotter & Schlesinger 2008:45).

2.10 Application of the principles of change

In this section, the principles of change will be discussed shortly.

2.10.1 *Application 1: Making sense of change*

To make sense of change, the ADKAR Model of Change Management uses various models to refine the ADKAR model. In the early 1900s Arnold van Gennep tried to make sense of change by breaking it into three phases while studying groups around the world and publishing "Rites of Passage". Kurt Lewin (in Cellars 2010:online) followed in 1948 with "Resolving Social Conflicts", and Bridges with "Transitions" in 1980. Lewin and Bridges identify three distinct phases of change highlighting how difficult it is for the individual to step out of the current state (Cellars 2010:online).

Figure 2.11 depicts the framework that the Change Management Learning Centre

(2011c:online) uses to describe how individuals step out of the current state, into the transition state, and finally into the future state.



Figure 2.11 States of change

Source: Change Management Learning Centre (2011c:online)

The Change Management Learning Centre (2011c:online) states that “to move out of the current state, an individual needs *awareness* of the need for change and the *desire* to participate and support the intended change. Successfully moving through the transition state requires *knowledge* on how to change and the *ability* to implement the required skills and behaviours. In the future state that *ability* to change is utilised and *reinforcement* is required to sustain the change.”

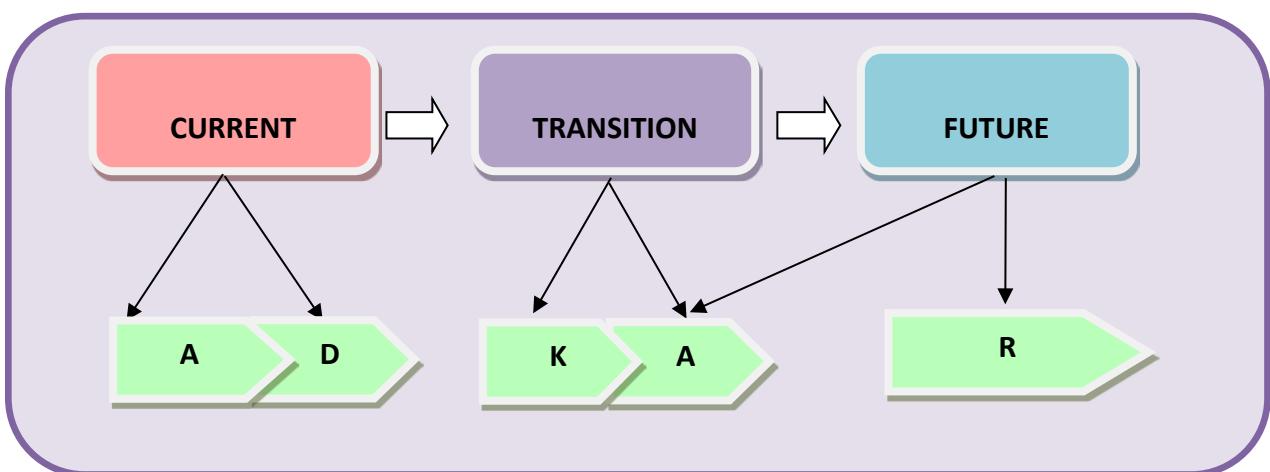


Figure 2.12 Prosci's ADKAR Model of Change Management

Source: Change Management Learning Centre (2011c:online)

According to the Change Management Learning Centre (2011c:online), the reason why change often fail while others succeed is not only poor communication between management and employees, but could also be attributed to inadequate training. In

order to overcome the obstacles related to these issues, the question should be asked, "How can management facilitate change within one person?" (Hiatt 2006:1).

The ADKAR principles provide a universal model of change that could be justified in that it "just makes sense" for change management practitioners. The application of the ADKAR principles increases awareness that "makes sense at the individual level" and therefore once exposed to this model, it becomes easy to break down change into the five building blocks (Change Management Learning Centre 2011c:online; Hiatt 2006:2).

Warrilow (2012:14) identifies five guiding principles that need to be taken into account in making sense of change: (1) the clarity of the message, which must be a reassurance, and recognition of individuals and their emotional resonance for changing; (2) the resonance of the message – this must be clear; (3) accurate targeting – meaning reaching the right people with the right message; (4) time scheduling is essential to achieve timely targeting of messages, and (5) feedback to ensure genuine two-way communication.

2.10.2 Application 2: Guiding change management plans

According to the Change Management Learning Centre (2011c: online), the ADKAR principles are used to guide change management plans. Communication and training plans are familiar components of a change management plan. Prosci's Model of Change Management (Change Management Learning Centre 2011c: online) describes five key plans that are part of an effective change management plan, namely:

- Communication plan
- Sponsorship roadmap
- Coaching plan
- Training plan
- Resistance management plan.

The ADKAR Model of Change Management is an outcome- orientated model, which describes the building blocks used by individuals to make change successful (Change Management Learning Centre 2011c:online).

The building blocks of the ADKAR model follow in sequence. For example, **awareness** cannot be achieved before the “**desire**” to change has been established because “**awareness**” creates the desire in individuals to implement change or resistance to change (Hiatt 2006:3). “**Ability**” cannot come before “**knowledge**” because you “cannot implement what you don’t know” (Hiatt 2006:3). “**Reinforcement**” follows the ability stage of change because an individual can only value what has been achieved. There must be a need for change to activate the ADKAR principles. From the first building block (awareness) to the last building block (reinforcement) the focus is on how people change (Change Management Learning Centre 2011c:online; Hiatt 2006:3).

2.10.3 Application 3: Measuring progress

The Change Management Learning Centre (2011c: online) states that during a change management process questions that may be useful could indicate how the progress of the change is made. Such questions could be: “How do I measure if my change management approach is effective?” or “How did we, senior leaders, communicate the need for change, have meetings to follow progress of training people?” The Change Management Learning Centre (2011c:online) states that measuring is not enough because management often do not let employees know if the actions are having the projected effects or that progress is made.

ADKAR can be a good measuring stick to weigh up if change management activities are indeed reaching their objectives and whether the intended results have been achieved. For example, after a decision to initiate a major change an assessment to evaluate the levels of awareness and desire to support the change could be conducted to indicate how well the change management activities have been received by the employees impacted by the change. At regular intervals throughout the life cycle of a change, the ADKAR principles can be used to determine how well employees are making their own transition, what their thoughts are, what their perceptions of change are and how they perceive the efforts made to keep them informed. Once this is achieved, successful implementation and progress could be achieved. In the end it is each employee’s own change that contributes to the change and adds value to the project. ADKAR as a model of successful individual change is a powerful instrument for measuring change management progress (Change Management Learning Centre 2011c: online).

2.10.4 Application 4: Diagnosing gaps

The ADKAR Model of Change Management (Change Management Learning Centre 2011c: online) is a useful instrument for understanding why a change is not taking place. ADKAR can also be used to understand why change is not happening since it describes the necessary building blocks to make change happen. The question that can be asked is: “Is the change failing because of a lack of *awareness* of the need for change?” or “Does the participant lack *desire* to participate?” Another useful question that managers could find answers for is: “Is lack of *knowledge, ability* or *reinforcement* stopping the change process?” All these questions need to be answered in a logical way in order to determine the gaps in the change management application.

The building block in the ADKAR model that is not sufficient for the change to take place is defined as the barrier point. By using an ADKAR assessment, the building block that causes the obstacle can be identified to show where the barrier point is in the implementation or successful application of the intended change. Once the gaps or obstacles are understood, and the links that are absent in the application of the ADKAR process are identified, management can develop the remedial actions to help the individual make the change (Change Management Learning Centre 2011c: online).

2.10.5 Application 5: Developing corrective actions

Developing corrective actions should first start with an effort to find solutions when the cause for the problem is not known. Managers must find the “*why*” the change is not successful to know the “*how*” to fix it (Change Management Learning Centre 2011c: online).

To correct the building block at the “*knowledge*” level when the “*ability*” building block is defective could lead to frustration of the staff involved in change. If the correct building block is not identified, it could lead to resistance to change. Since ADKAR describes the “*ends*” it also supports employees to select the correct “*means*” if a change is not working. The individual can only move forward if the gap in the ADKAR model is identified and corrected (Change Management Learning Centre 2011c: online).

2.10.6 Application 6: Enable managers and supervisors

Leadership is a critical component of the change process and is the final application of the ADKAR model. Employees do not have a relationship with the director of a company, but with their direct supervisor. They look up to these role players for information and direction. These immediate supervisors, therefore, have a huge amount of influence on the individual's acceptance of change. Change management is a unique competency in many ways and not all managers and supervisors have a chance to develop it.

Prosci's (Change Management Learning Centre 2011c: online) benchmarking results indicate five distinct roles for managers and supervisors in times of change:

- Communicator
- Advocate
- Coach
- Liaison
- Resistance manager

Of the above mentioned roles, the two that pose the biggest challenge are the “coach” and “resistance manager” (Change Management Learning Centre 2011c: online). The most effective tools an organisation can give their managers and/or supervisors are to educate them to understand how employees experience the change process. Learning the ADKAR Model of Change Management and how to use it is one of the first steps to building personal change management competencies for manager and supervisors (Change Management Learning Centre 2011c: online).

2.11 CONCLUSION

It is important to note the value and strength of the ADKAR model of Change Management, and why the researcher focussed extensively on the model.

The ADKAR model of Change Management has the ability to identify any gaps that could occur in the change process, to understand where the process of change is failing, causing the employee to move backwards and to correct that stage before moving to the next step. (Strenitzerova 2004:56).

This chapter discussed the literature review relevant to the topic of change management.

In Chapter 3, the research design and methodology used for this study will be discussed.

CHAPTER 3

Research design and methodology

“If you don’t like something, change it. If you can’t change it, change your attitude.”

Angelou

3.1 INTRODUCTION

The research methodology refers to the steps, strategies and procedures used for data gathering and analysis in research (Polit & Beck 2008 b:758). This chapter describes the research design and methodology used in this study, including the population and sampling frame, data collection, data analysis, validity and reliability, and the ethical considerations.

The purpose of this study was to explore and identify the factors that influence successful change management in a selected hospital in Saudi Arabia. Once these factors are known and understood, a coherent strategy can be implemented to address the problems of resistance to change.

The objectives of the study were to:

- Identify the factors that have an effect on the acceptance of the current change from paper based patient records to the HIS QCPR system;
- Identify the importance of the direct supervisor as the voice and face of change.

3.2 RESEARCH SETTING

Polit and Beck (2004:28) describe the research setting as a place that is used for data collection. Burns and Grove (2003:497) refer to a setting as a location for conducting research. In this study data was collected from respondents at a selected hospital in the

Kingdom of Saudi Arabia where the researcher works. Data collection was done from 1st to 15th November 2011.

3.3 STEPS OF THE RESEARCH PLAN

A research plan indicates how a researcher intends to conduct the research study. Fox and Bayat (2007:14) state that all projects have a life cycle that runs to a conclusion and "although the planning phase has to be as near to accurate as possible, early adjustment may have to be made when implementing the project". Furthermore, "no project runs itself" (Fox & Bayat 2007:14). The process of monitoring and control is a process where the research has to be monitored and, if necessary, adapted and adjusted on a continuous basis.

Table 3.1 indicates how the research plan was implemented based on Fox and Bayat's (2007:14) prescriptions. The research plan is also an indication of how the chapters of the study were divided.

Table 3.1 Steps followed in the research plan

Step	Description	Application to this study
Envisage	Developing an interest and an idea to develop a clear view of the problem or research question Developing a topic of interest (Chapter 1)	The researcher is a health services manager at a selected hospital in the Kingdom of Saudi Arabia. A new patient record system (Quadramed or QCPR) was implemented. The researcher was interested in how the nurses in the selected hospital experienced the change from a paper-based patient recording to an electronic computerised system (topic). The researcher then developed a research problem and objectives based on the topic of research. The researcher was interested in change management, searched for literature on the topic, and discovered Prosci's Change Management Model, the ADKAR model of change management. The ADKAR model of change management has the ability to identify gaps that could occur in the change process and to correct that stage before moving on to the next step. (Strenitzerova 2004:56) This was the deciding factor on which the researcher based the research.
Planning	This step involves	From the research question and objectives, the

Step	Description	Application to this study
	<p>the selection of the activities that need to be established to execute the research. From this the required resources need to be planned and their availability determined. In addition the research design (methodology and techniques) need to be described.</p> <p>(Chapter 2)</p>	<p>researcher made sure that the resources (population and sample) were available and willing to participate in the study. The researcher addressed the problem at various meetings and obtained agreement from managers and nurses using the Quadramed system that the research was, indeed, necessary and should be conducted. The researcher then decided that the population could be researched by means of a structured questionnaire, as all the nurses are English speaking. A structured questionnaire would also give all respondents an equal chance to participate in the study and answer the same questions. The structured questionnaire was based on the five principles of Prosci's Change Management Model referred to as ADKAR (see Appendix F).</p> <p>The researcher selected an explorative and descriptive design, and conducted an extensive literature review on change management.</p>
Implementation	<p>After the planning of the study, the implementation is set in motion. Fox and Bayat (2007:14) state that "although the planning phase has to be as near to accurate as possible, early adjustment may have to be made when implementing the project".</p> <p>(Chapter 3)</p>	<p>After the researcher planned the study, she discussed the intended study with colleagues, the study leader and knowledgeable people and prepared a research proposal, which was submitted to the various institutions of interest such as the University of Stellenbosch and King Abdullah International Medical Research Centre - Eastern Region. After consultation with various categories of colleagues the researcher refined the questionnaire and pre-testing took place. The questionnaire was refined in collaboration with a statistician and finalised. The collection of data commenced on 1 November 2011 and continued to 15 November 2011.</p>
Monitoring and control	<p>Fox and Bayat (2007:14) state that "no project runs itself". The process of monitoring and control is a process where the research has to be monitored and if necessary adapted and adjusted on a</p>	<p>The data-collection process was followed rigorously and systematically under strict control of the assigned study leader. In addition, the researcher had the input and support of the Management and the research advisory group from the selected hospital.</p> <p>The researcher also presented various recommendations regarding the implementation of Prosci's Change Management Model at meetings and in-service training as well as at the College of Nursing in Al Ahsa work group (sees Appendix D).</p>

Step	Description	Application to this study
	continuous basis. (Chapter 4)	<p>The researcher communicated with the Change Management Learning Centre about the study and the Centre gave her valuable input and written permission to use the model (see Appendix C).</p> <p>During this time, the researcher conducted and refined the literature review and confirmed the systematic process followed in this study.</p> <p>The researcher collected the structured questionnaires in sealed envelopes and handed them to a person who entered the data on the SPSS Version 17 computer program. The data was then handed to a statistician who conducted the statistical analysis. Then the researcher conducted the data analysis and reporting under the supervision of the statistician. The research results were carefully recorded and supported with additional relevant and scientific findings on similar topics.</p>
Termination	Fox and Bayat (2007:14) state that “all projects have a life cycle that runs to a conclusion”. It is the responsibility of the researcher to decide if such a study should be aborted or should run its full course. (Chapter 5)	<p>During this stage the researcher decided that the results were useful and that the study and its results were so significant that it could change the manner in which changes in the selected hospital would be addressed in future. It also had the potential to lead to a new way of thinking and management. The researcher then commenced and concluded the study by writing specific recommendations based on the results of the study. Burns and Grove (2009:45) state that research is not considered complete unless the findings are communicated. An article reflecting the research findings will be published in an international journal. In addition, a workshop will be conducted for the managers of the hospital under study.</p>

Source: Burns and Grove (2009:43-44); Fox and Bayat (2007:14)

3.4 RESEARCH DESIGN

A research design is “a blueprint for conducting a study and maximises a researcher’s control over factors that could interfere with the validity of the findings” (Burns & Grove 2007:236; 2009:218).

A research design is an overall plan for addressing a research problem and obtaining answers to research questions (Polit & Beck 2004:730).

Goddard and Melville (2009: 32) state that empirical research includes experimental, *ex post facto*, and descriptive research designs. The research design refers to the framework of theories and principles on which methods and procedures are based (Holloway & Wheeler 2002:287). Babbie and Mouton (2001:272) state that two steps need to be followed in the research design: the researcher must identify what he or she wants to find out and then determine “the best way to do it”. In this study, the researcher selected a quantitative, explorative and descriptive design, utilising Polit and Beck’s (2008:48-53) framework for quantitative research (see Table 3.1 for application in the study).

The researcher followed Fox and Bayat’s (2007:14) guidelines to ensure that a step-wise process was followed. The process is described in detail in Table 3.1.

3.4.1 Rationale for the choice of the research design

Literature on change management in business, financial management, and project management has been widely studied since 2000. However, the researcher found little data on the application of change management in hospitals, particularly on factors influencing nurses on change management and its impact, and especially in the Kingdom of Saudi Arabia. Therefore an exploratory and descriptive design was deemed the most appropriate design for this study, because the researcher wished to obtain new information on an area of interest (Wood & Ross-Kerr 2006:121; Burns & Grove 2009:246).

3.4.2 Quantitative, exploratory and descriptive research

The selected research design was quantitative, exploratory and descriptive.

3.4.2.1 Quantitative

Burns and Grove (2009: 45) state that quantitative researchers may conduct four types of research, namely descriptive, correlational, quasi-experimental, and experimental.

Quantitative research uses a range of methods that utilise measurement to record and investigate aspects of social reality (Bless & Higson-Smith 2000:156). The advantage of using measurement is that numbers are exact and can be analysed using descriptive and inferential statistics. Quantitative research was appropriate for this study because it explored and described numerical data on the factors that influence change management in the hospital under study. Polit and Beck (2004:15) refer to quantitative research as a set of orderly and disciplined procedures used to gain knowledge. Quantitative research designs are traditional, positivistic and scientific methods are used to conduct research by using a series of steps according to a plan of action (Polit & Beck 2004:15).

A high-quality quantitative research design has a high degree of generalisability. Polit and Beck (2004:16) describe generalisability as the degree to which findings of a study can be applied to individuals other than those who participated in the study. In this study, the researcher used self-administered questionnaires to collect data to make recommendations on how change management can be implemented in the selected hospital under study. However, due to the limited scope of the area of study, the findings could not be generalised to other similar settings.

3.4.2.2 *Exploratory*

An exploratory research design is used “to search for accurate information about the characteristics of particular subjects, groups, institutions or about the frequency of a phenomenon’s occurrence, particularly when little is unknown about the phenomenon” (LoBiondo-Wood & Haber 2006:240). Exploratory designs are used to gain a broader understanding of a situation, phenomenon or a community (Bless & Higson-Smith 2000:41). The need for such study could arise from the lack of basic information on a new area of interest, or in order to become acquainted with a situation so as to formulate a problem or develop a hypothesis. In this study literature was reviewed to determine the factors that influence change management in a selected hospital in the Kingdom of Saudi Arabia.

3.4.2.3 Descriptive

Burns and Grove (2009:45) state that the purpose of a descriptive design is to “explore and describe phenomena in real-life situations”. LoBiondo-Wood and Haber (2006:240) explain descriptive designs in the health care area as a “collection of detailed descriptions of existing variables and the use of data to justify and assess current situations and practices in order to make plans for improving health care practices”. Burns and Grove (2001:795) add that descriptive designs provide an accurate account of the characteristics of particular individuals, situations and groups. Brink et al (2006:103) state that structured observation such as questionnaires, interviews and surveys are methods that could be used to gather data from a representative sample of the population when applying a descriptive method.

This study explored, described and documented aspects related to the perceptions of nurses of change management specifically pertaining to implementing the Quadramed patient recording system where the traditional paper-based patient record system was replaced by a computerised system in a selected hospital in Saudi Arabia.

3.5 RESEARCH METHODOLOGY

The research method addresses the development, validation and evaluation of research tools and methods to be used to gather and analyse the information obtained during the study (Polit & Beck 2008:328). Burns and Grove (2001:223) describe the research method as the entire plan of the study, which includes the steps of the research process from problem identification to the actual data collection.

In this study, the methodology of quantitative research as outlined in Table 3.1 on the phases of the research guided the research, and is discussed in Sections 3.4.1 to 3.8.

3.5.1 Population

Burns and Grove (2009:43) describe a *population* as “all the elements (individuals, objects and substances) that meet certain criteria for inclusion” in a particular study. Polit and Beck (2008:337) describe a *population* as “the aggregate of cases which the

researcher is interested in, that meet a designated set of criteria" and possess certain characteristics. Parahoo (2006:256) defines a *population* as "the total number of units from which data can be potentially collected, which could be units, individuals, organisations, events or artefacts". According to Woods and Catanzaro (1998:99), the research problem, the research design and the availability of participants guide the selection of a population.

Gerrish and Lacey (2006:175) state that the researcher must distinguish between a target population and a study population (often referred to as the sample of a study), as this will impact on the generalisability and transferability of the study findings.

In this study, the target population consisted of all the professional nurses employed by the selected hospital under study. Table 3.2 illustrates the number of professional nurses at the hospital at the specific point in time for the purpose of this study.

Table 3.2 Population of professional nurses per ward/unit

WARD/UNIT	NUMBER
Ward 1 Obstetrics and Gynaecology	43
Ward 1 High Dependency Unit	3
Ward 2 Female Surgical	19
Ward 2 Female Surgical Step down	8
Ward 3 Female Medical/Long term	27
Ward 3 Female Medical Step down	8
Ward 4 Paediatric	31
Ward 4 Paediatric Step down	6
Ward 4 Paediatric Intensive care	17
Ward 5 Oncology	14
Ward 6 Business Centre	31
Ward 7 Male Medical	15
Ward 7 CCU	22
Ward 8 Male Surgical	30
Ward 8 Male Medical/Surgical Step down	14
Trauma and Emergency Unit	59
Intensive unit (Adults)	38
Haemodialysis Unit	20
Endoscopy Unit	4
Intermediate Care nursery	36
Neonatal Intensive Care	36
Labour and Delivery Unit	32

Operating Room/Theatre	33
Post Anaesthesia Care Unit	15
Out Patient Department	39
Day Surgery	13
Nursing Administration	13
Nursing Education	9
Total	635

Source: Hospital information (2012)

3.5.2 Sample and sampling

This section describes the sample and the sampling procedure applied in this study.

3.5.2.1 Sample

Burns and Grove (2009:42) define a sample as a “subset of the population”. According to Brink et al (2006:124), a *sample* is a part of the population selected by the researcher to participate in the study. A sample consists of a selected group or subset of the population or elements or units of analysis from the defined population (Polit & Beck 2004:731).

The sample is selected through a sampling process. It is important for the researcher to select a representative sample from the population. This sample should accurately and directly represent the characteristics as reflected by the population (Polit & Beck 2004:291). For the purposes of this study, the sample was selected from the total population of professional nurses that complied with the inclusive criteria for this study.

3.5.2.2 Sampling

Burns and Grove (2009:42) define *sampling* as the process of selecting individuals, events or any other phenomena to be included in a study of interest and who are representative of the population being studied. Garrish and Lacey (2006:175) describe a sampling frame as a comprehensive itemised list of all individuals or other elements applicable to the research from which a sample will be selected.

In this study, a random sampling was used by means of computer selection of all professional nurses who complied with the selection of the sample (635) until the desired number of 140 was obtained. The researcher could not guarantee which members of the population would be selected and the selection process is therefore regarded as an impartial process.

3.5.2.3 *Sampling procedure*

Permission was obtained from the King Abdullah International Medical Research Centre – Eastern Region and the Associate Executive Director: Nursing Services of the hospital under study to access the list of all professional nurses employed by the particular hospital under study. The list was arranged alphabetically on a spreadsheet. The researcher then applied the inclusive criteria by going through the list and deleting those who did not comply. The list was also compared to the records of the professional nurses who were on leave, sick leave or absent during the data collection period, and the names of these nurses were also deleted from the list. A temporary list was compiled depending on the permission obtained from the respondents.

3.5.2.4 *Eligibility criteria*

Eligibility criteria define who is included in the population for a study (Burns & Grove 2009: 345; Polit & Beck 2008:338). Stommel and Wills (2004:305) state that eligibility criteria define who is eligible to become a selected subject and who is not. Burns and Grove (2009:345) point out those eligibility criteria include a list of characteristics essential for eligibility for membership in the target population. To be included in the study the professional nurses had to:

- Be registered as a professional nurse by the Saudi Council for Health professionals;
- Be a full-time employee of the selected hospital;
- Be willing to participate in the study after the consent form had been explained to them (see Appendix E);
- Be literate in English;
- Be users and registered to operate the computerised patient system;

- Have at least six months experience and training in the use of the Quadramed system.

3.5.2.5 *Exclusion criteria*

Exclusion criteria define the potential participants who may be excluded from a study. The following exclusion criteria were applied for this study:

- All professional health care personnel not classified by the Saudi Council for Health Professionals as professional nurses;
- All professional nurses who were not registered to enter patient data on the Quadramed system, as they might not understand the topic under study;
- All professional nurses who did not undergo training in the use of the Quadramed system;
- All professional nurses who did not have at least six months' experience in the independent entering of data on the Quadramed system.

3.5.2.6 *Sample size*

The researcher handed over 140 questionnaires to respondents and 117 were returned by the deadline of 12 pm on 15 November 2011.

3.6 DATA COLLECTION

Polit and Beck (2004:716) describe data collection as “the method used to collect information required to conduct the research study”. The research objectives were accomplished with the collected data (Burns & Grove 2001:50). The data was collected using a structured questionnaire with closed questions. The following process was followed to collect the data:

- Each ward/unit was visited by the researcher and the research topic, objectives and process were explained to the randomly selected staff;

- Those who agreed to participate in the study were given a consent form and after signing the form, the names of those who did not consent were deleted from the list (see Appendix E);
- A list of the respondents' names and allocated numbers was finally compiled;
- The researcher then placed each questionnaire in an envelope with the respondent's number according to the list on the envelope and handed the questionnaires per hand to the particular respondent;
- The researcher collected the sealed questionnaires every morning on her rounds to the wards/units and marked the numbers off the final list;
- The researcher locked the final list containing the names and numbers allocated to each respondent in a secure cabinet, which was not accessible to any other person;
- The questionnaires were placed in a sealed box kept in a locked cabinet;
- Once all the questionnaires were collected, the person who entered the data on the SPSS Version 17 computer program collected the box containing the questionnaires. The data was then handed to a statistician who conducted the statistical analysis.

3.6.1 Development and structure of the research instrument

The researcher, with the assistance of the supervisor for this study and a professional statistician, prepared the questionnaire for data collection.

The following aspects guided the researcher in the development of the instrument:

- The research problem, purpose and objectives of the study;
- The ADKAR Model of Change Management;
- The literature review on change management, resistance to change and change in hospital settings and amongst nurses;
- Discussions with peers and nursing researchers.

The sections in the questionnaire were based on the ADKAR Model of Change Management, namely **A**wareness, **D**esire, **K**nowledge, **A**bility and **R**einforcement. In addition, a section on personal information was added. Watson, Mckenna, Cowman and

Keady's (2008:29) guidelines for compiling and adhering to the principles of data collection were followed.

The questionnaire consisted of the following sections:

- **Section A: Biographical profile**

Section A comprised of ten questions (1.1 to 1.10) on the respondents' biographical information pertaining to age, gender, nationality, first language, basic and speciality qualifications, years of experience as a nurse and employment in the hospital under study.

- **Section B: Awareness to change**

Section B comprised of nine closed-ended questions (2.1 to 2.9) with various sub-sections. The respondents were asked about the need to change, informed about the change, reasons, impact and communication about the change, the time frame for changing, and the benefit of the change to the QCPR system for patients and the channels through which individuals were informed about the change and what would have happened if change was not implemented.

- **Section C: Desire to change**

Section C comprised of seven closed questions (3.1 to 3.9) on the desire to change to the QCPR system in which the respondents were asked to indicate their approaches to change, personal choice to change, reasons for supporting and participation in the implementation to QCPR and the individuals who supported respondents most in the process towards moving to change. In addition, the respondents were asked to indicate whether they felt positive to change to the QCPR approach.

- **Section D: Knowledge to change**

Section D comprised of twelve (4.1 to 4.12) closed item questions about the respondents' knowledge to change. The questions covered the respondents' level of computer literacy, testing of computer literacy level during employment process, previous experience of computer systems and computerised patient record systems, information provided about the QCPR, and operating and maintenance of computers. The respondents were also asked about patient confidentiality in computerised patient records.

- **Section E: Ability to change**

Section C comprised of twenty one closed questions (5.1 to 5.21) on the ability to change to the QCPR system. The questions covered ability to operate the QCPR, training in regard to the QCPR, support to develop the ability to use the QCPR, role models available during training, the role of the simulation laboratory, feedback and confidence to use the QCPR in practice.

- **Section F: Reinforcement to change**

Section F comprised of ten closed-ended questions (6.1-6.10) about the respondents' reinforcement to changing to the QCPR system. The questions pertained to the person most knowledgeable to changing to the QCPR, support provided during change, feelings of being supported and valued, and willingness to take suggestions into consideration. The respondents also had to indicate whether they were provided with continuous support, and whether various methods were applied to reinforce the process of change to the QCPR system.

3.6.2 Pre-test

The researcher conducted a pre-test with five participants who were not included in the final study. The participants were the most senior nurses of five wards that were involved in the change from paper-based patient documentation to computerised patient record (CPR) system. These wards included two medical, one surgical, one obstetrics and one gynaecology ward.

The five participants in the pre-test are known as “super-users” of the Quadramed system, which means that they have been trained to supervise the quality of the entries and have access to all data entered. They are also involved in the training and in-service education of all users of the Quadramed system.

After conducting the initial pre-test, a meeting was held with the five participants to suggest changes to the questionnaire. The preliminary questionnaire was then sent to four lecturers at the King Saud bin Abdulaziz University for Health Sciences who commented on the questionnaire. The questionnaire was then submitted to the supervisor, where after the questionnaire was formatted and printed (see Appendix F).

3.6.3 Rationale for the selected instrument

According to Polit and Beck (2008:414), when self-administered structured questionnaires are used, the respondents are asked to respond to similar questions, in the same order and with the same set of response opinions.

3.6.3.1 *Advantages of questionnaires*

Questionnaires have the following advantages:

- Minimise researcher bias and enable a more objective comparison of the results;
- Are a quick way of obtaining data from a large group of people;
- Are less expensive in terms of time and money;
- Self-administered questionnaires ensure a feeling of anonymity and respondents are likely to provide honest answers;
- The format is standard for all subjects and not dependent on the mood of the interviewer (Brink et al 2006:147);
- Enable the researcher to ensure that all items of the questionnaire are considered without omissions (Bless & Higson-Smith 2000:109; Brink et al 2006:147).

3.6.3.2 Disadvantages of questionnaires

Questionnaires have the following disadvantages:

- The development of a structured instrument needs much effort in terms of content, form and wording of questions;
- The respondents are unable to elaborate on responses or ask for clarity;
- The researcher cannot use probing strategies (Burns & Grove 2001:426; Polit & Beck 2008:414);
- The respondents may provide socially acceptable answers rather than true answers (Brink et al 2006:147);
- The response rate may be low;
- Non-verbal behaviour and mannerisms cannot be observed.

3.7 VALIDITY AND RELIABILITY

The quality of a research instrument is determined by its validity and reliability.

3.7.1 Validity

Validity of a research instrument is determined by its ability to accurately measure what it is supposed to measure (LoBiondo-Wood 2006:338). The research instrument is valid if it reflects the concept it is supposed to measure. The important aspects of validity are content, face and construct.

3.7.1.1 Content validity

Content validity represents the universe of content, which provides the framework and basis for formulating the items that will be adequate to represent the content (LoBiondo-Wood & Haber 2006:338).

3.7.1.2 *Face validity*

Face validity is concerned with how the research instrument appears to the respondents (Bless & Higson-Smith 2000:133). According to LoBiondo-Wood and Haber (2006:338), face validity in tool development determines the readability and clarity of the content.

3.7.1.3 *Construct validity*

Construct validity refers to the ability of the research instrument to measure the theoretical constructs it purports to measure (Burns & Grove 2001:230). Content validity was assured by conducting a literature review on the area of study as well as on the Prosci Model for Change Management in order to ensure that all the different aspects were covered in the questionnaire. The supervisor of this study with research experience, as well as the professional statistician assisted the researcher in formulating the questionnaire, and it was given to independent experts and the statistician to evaluate the face, content and construct validity and to check for conceptual and investigative bias.

3.7.2 Reliability

Reliability of the data collection instrument is determined by its ability to yield the same results each time it is repeatedly applied to the same objects (Babbie & Mouton 2004:141). De Vos, Strydom, Fouche and Delport (2005:162) add that reliability is stability or consistency of the measurement. If the same variable is measured under the same conditions, a reliable instrument produces identical measurement and the measuring instrument is able to yield consistent numerical results each time it is applied (Burns & Grove 2001:396). Reliability of the questionnaire was assured by accurate and careful phrasing of each question to avoid ambiguity. Pre-testing of the instrument ensured accuracy and dependability of the instrument.

3.8 DATA ANALYSIS

Data analysis is the “systematic organisation and synthesis of research data, and in quantitative studies, the testing of the hypothesis using those data” (Polit & Beck 2008:751). The purpose of data analysis is to reduce, organise and give meaning to data (Burns & Grove 2001:794).

In this study, a statistician analysed the data using the SPSS Version 17.0 computer program. The analysis included descriptive statistics and logistic regression. Descriptive statistics allow the researcher to organise the data in ways that give meaning and facilitate insight and to examine a phenomenon from a variety of angles. Descriptive statistics include frequency distributions, measurements of central tendency, measurement of dispersion and standardised scores (Burns & Grove 2001:795). According to Burns and Grove (2003:337), logistic regression is used to predict values of a dependent variable measured at the ordinal level.

In this study, descriptive statistics were used to describe and summarise the data obtained from the structured questionnaires in order to answer the research question. The results were presented in frequencies, percentages, graphs and tables (see Chapter 4 for a detailed discussion).

3.9 ETHICAL CONSIDERATIONS

In order for a researcher to maintain high standards of research, expertise and diligence are not enough; integrity and honesty are of the utmost importance (Burns and Grove 2001:191). Ethical considerations in research are also essential to generate sound knowledge for practice. To ensure that ethical considerations were maintained in this study, the research proposal was submitted for approval to the Research and Ethics Committee at the Department of Nursing at the University of Stellenbosch prior to commencement of the study, as well as to the King Abdullah International Medical Research Centre - Eastern Region.

In research, there are moral principles governing the manner in which the research takes place. The Belmont Report stipulates three primary ethical principles upon which

standards of ethical conduct are based, namely beneficence, respect for human dignity and justice (Polit & Beck (2008:170). As highlighted by various professionals, the respondents' rights to self-determination, privacy, anonymity and confidentiality were protected (Burns & Grove 2001:194, 2003:166; Stommel & Wills 2004:373; Holloway & Wheeler 2002:47; De Vos et al 2002:76).

3.9.1 Principle of beneficence

The ethical principle of beneficence is the most fundamental ethical principle and refers to at least "doing no harm", or the ability of the researcher to refrain from exploiting the study participants, but to rather promote both individual and societal benefits (Stommel & Wills 2004:377).

3.9.1.1 Right to protection from exploitation

The researcher concluded that in this study exploitation appeared to be a minimal risk factor; because the respondents were assured that the information obtained would not be used against them. The risk/benefit ratio of the study was considered, and the conclusion was reached that the benefits outweighed the risks. The nursing profession and, in particular, the institution under study will benefit from the findings and recommendations of this study (see Chapter 1, Section 1.5 for significance of the study).

The researcher ensured that the respondents were debriefed prior to commencement of the study in order to allow the respondents to have time for clarity-seeking questions, and the respondents were further informed that their participation was voluntary and that they were free to withdraw at any time if they so wished without fear of losing any benefits or being discriminated against. The questions were also phrased in such a way that respondents could not be identified and that the questions could not impose harm.

3.9.1.2 Right to freedom from harm and discomfort

Discomfort and harm may be physical, spiritual, economic, social or legal (Polit & Beck (2006:87). In this study, the right to freedom from harm and discomfort was protected by conducting the study in the respondents' natural environment in the hospital under

study. With the assistance of the supervisors of this study, the researcher framed the questionnaires carefully so that no harm would be done to the respondents.

3.9.2 Respect for human dignity

The researcher respected the dignity of all respondents, and treated them as persons who had the right to make their own decisions and to express their personal opinions (Polit & Beck 2006:88). This principle was maintained by withholding the identities of all the respondents. This principle involves the right to self-determination (autonomy) and the right to self-disclosure.

3.9.2.1 *Right to self-determination*

The respondents were informed that their participation was voluntary. The respondents were given the opportunity to consent to take part in the study and were assured that they could withdraw from the study at any time without stating the reasons and without incurring any negative consequences (Polit & Beck 2006:88-89) (see Appendix E). Anonymity was ensured by stating in the letter provided to potential respondents that the data obtained from them might be reported in scientific journals, but no information would be disclosed that could identify any of the respondents, because code numbers were used instead of names.

3.9.2.2 *Right to full disclosure*

Burns and Grove (2001:206) emphasise that when conducting ethical research it is essential to obtain informed consent from participants. An informed consent letter was developed by the researcher, which contained information on the title, purpose and objectives of the study and the rights of respondents in the study. A copy of this letter was given to each respondent, and they were requested to read and sign the letter of consent once they had agreed to participate, and were assured that there would be no discrimination of anyone who wished not to participate (Polit & Beck 2006:88). This was stated to ensure that respondents participated voluntarily. The full nature of the research, the responsibilities of the respondents and the possible risks and benefits were disclosed to all concerned.

3.9.3 Principle of justice

The principle of justice refers to the right to privacy and fair and equal treatment of all respondents in research (Polit & Beck 2006:90).

3.9.3.1 *Right to privacy*

With regard to the ethical responsibility of the researcher towards the respondents in this study, each respondent was treated with respect and dignity. In the light of the confidential nature of the information of this study, and the possible legal consequences of any breach of confidentiality, the researcher maintained a high professional standard regarding all issues of confidentiality. The respondents were assured of privacy, anonymity and confidentiality because they did not have to provide their names, but were referred to by numbers. No responses could be linked to particular respondents. Data collected was within the scope of this study. The collected data was not shared with outsiders except people who were involved in this study. The respondents were informed that the research findings would be published without linking the findings to individual respondents.

3.9.3.2 *Right to fair and equitable treatment*

The respondents' right to fair and equitable treatment was ensured by using selection criteria that were in line with the purpose and objectives of the study.

3.10 CONCLUSION

In this chapter, the research design and methodology that guided this study were discussed. Chapter 4 presents the data analysis and interpretation of the findings.

CHAPTER 4

Data analysis and interpretation

“Man is still the most extraordinary computer of all.”

John F Kennedy

4.1 INTRODUCTION

This chapter discusses the data analysis, interpretation and findings of the study. The data was analysed and interpreted by using tables, percentages and graphs. The findings are discussed with reference to the literature review. The purpose of the study was to explore and identify the factors that influence successful change management in a selected hospital in Saudi Arabia.

4.2 RESULTS

The results are presented from section A-biographical data, B-awareness up to F-reinforcement management

4.2.1 Section A: Respondents' biographical data

Section A of the questionnaire covered the respondents' age, gender, nationality, first language, basic and specialty qualifications, experience as a registered nurse, employment history, current position and assignment as a QCPR super user.

Kingma (2006:1) states that nursing is regarded as a “mobile profession” because thousands of nurses - mostly female - migrate each year in search of a better future. The reasons given often include improved compensation, a better quality of life, better working conditions, professional development, and for the adventure.

Historically, there has been a tendency for international nurses to be a North-North phenomenon (industrialised countries) and South-South phenomenon (developing countries). The WHO (2006b:1) estimates that approximately 30,000 nurses and

midwives who received education in sub-Saharan Africa are now employed in seven Organisation for Economic Co-operation and Development (OECD) countries. Furthermore, this global migration flow of nurses often has a serious effect on non-affluent countries as it creates workforce imbalances.

4.2.1.1 Respondents' age (item 1.1) (N=117)

In item 1.1 the respondents were required to indicate their age (see Figure 4.1). The respondents' biographical data was important, as Saudi Arabia draws nurses from many countries with diverse backgrounds and educational levels, which could influence their views on and experience of change.

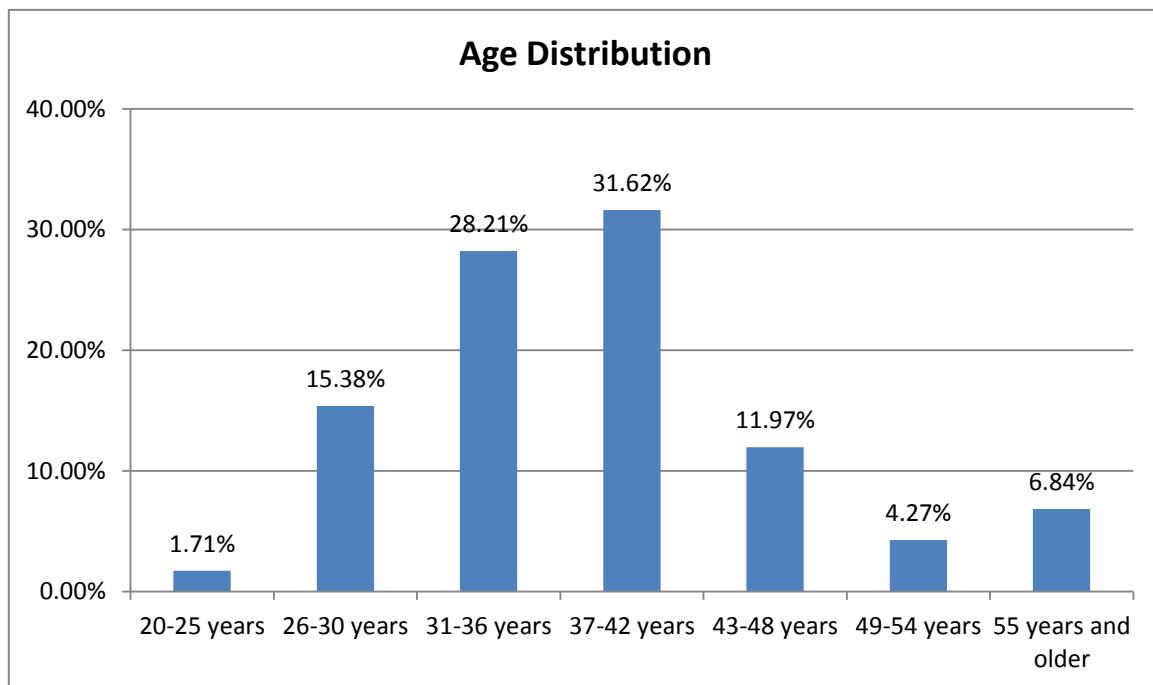


Figure 4.1 Respondents' age (N=117)

Of the respondents, 1.71% (n=2) were 20-25 years of age; 15.38% (n=18) were 26-30 years; 28.21% (n=33) were 31-36; 31.62% (n=37) were 37-42; 11.97% (n=14) were 43-48; 4.27% (n=5) were 49-54, and 6.84% (n=6) were 55 years and older.

These results are consistent with hospital data obtained on 25 June 2012, which indicated that the average age of staff is 38 years (Hospital Information, 2012).

In a study on the age of nurses migrating from India, Hawkes, Kolenko, Shockness and Diwaker (2009:1186) found that the median age of nurses was 38 years compared to those who did not migrate, who were in the median age group of 26 years. In the Philippines, however, Lorenzo, Galvez-Tan, Icamina and Javier (2007:1406) found that nurses leaving their countries to work abroad were primarily female, in their early twenties, single, and came from middle-income backgrounds.

4.2.1.2 Respondents' gender (item 1.2) (N=117)

Figure 4.2 depicts the respondents' gender distribution. Of the respondents, 95.65% (n=112) were female while only 4.35% (n=5) were male.

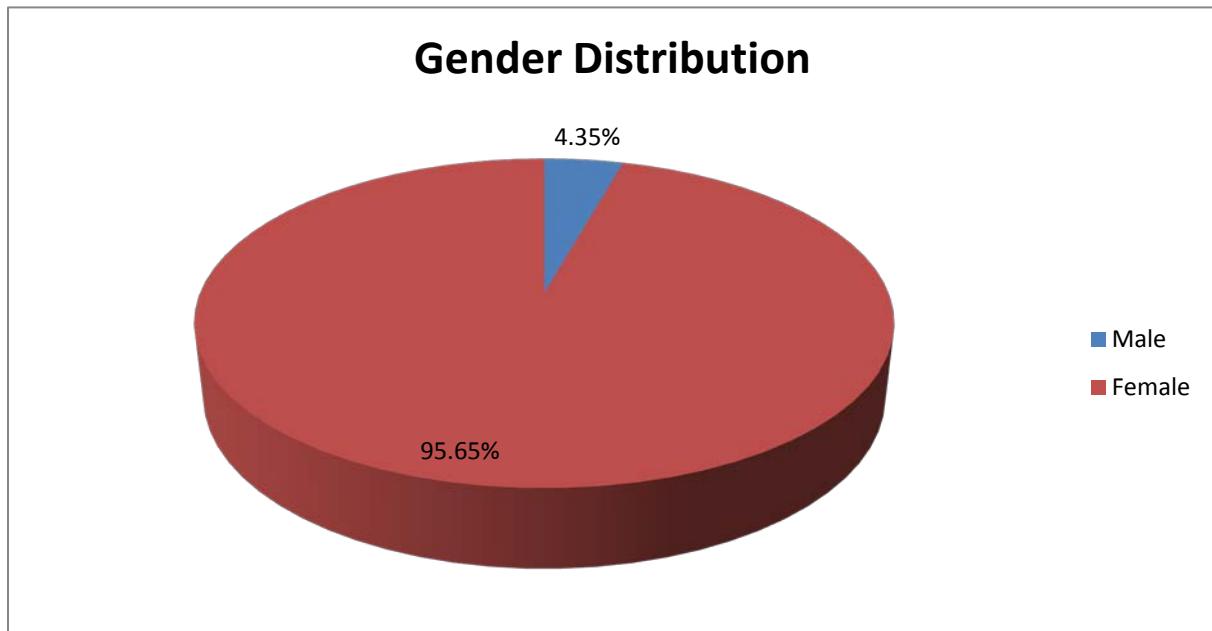


Figure 4.2 Respondents' gender (N=117)

According to Ivković (2011:54), the majority of immigrants are female today, predominantly in North America, Europe, and the Middle East. Lorenzo et al (2007:1406) found an increase in the number of females migrating globally in recent years. Ivković (2011:56) states that although male nurses also migrate, their share on a global level is still minuscule. According to the United Nations (2006:1), nearly half of all migrants worldwide are women. In developed countries they outnumber male migrants.

Professional Connections (<http://www.profco.com/>), the recruitment specialist agency which recruits nurses from the United States of America (USA), Canada, Australia,

Sweden, Switzerland and Ireland, states there are limited posts for male nurses in Saudi Arabia, as the country consists of an Islamic society and males cannot nurse females or children. This, therefore, reduces the flexibility of the placement of male nurses in Saudi Arabia and other Islamic conservative countries. Males are more likely to be hired on occasion to serve in male wards and some critical care areas such as the operating room, emergency room and intensive care units. In the hospital under study, females represent 94.49% of the workforce and males only 5.51% (Hospital Information, 2012).

Cordier and MacNaughton (2012:1) state that men have been in the nursing profession for centuries, but that their roles have been historically minimised. Throughout the world nursing is seen as an extension of the domestic role of females and this could therefore also have contributed to the superiority of women in matters of emotional caring.

4.2.1.3 Respondents' nationality (item 1.3) (N=117)

In Saudi Arabia, King Fahd bin Abdulaziz, has issued a decree, which prioritises "Saudisation" as an initiative aiming to increase employment of Saudi nationals across all sectors of the domestic economy and to wean Saudi Arabia from depending on cheap foreign labour (ZaZona 2004:1). Expatriate nurses recruited from Asia, Africa, and other countries form a large proportion of the nursing workforce in Saudi Arabia's healthcare facilities with Saudis comprising only 29.1% of the total nursing workforce. Despite the fact that the proportion of Saudi Arabian nurses is generally very low, it is even lower in the private healthcare sector (Almalki, FitzGerald & Clark 2011:304).

In a report to the International Labour Organisation (ILO), Matsuno (2006:14) reports that recruitment of foreign nurses is regarded as a "quick fix" to the growing demands for nurses in many countries such as the UK and Saudi Arabia. The Philippines, Australia, India and South Africa are the four major nurse-producing countries.

Ivković (2011:62) states that nurses from the Philippines have a reputation of being highly qualified, competent and respected female workers with a high work ethic. Filipino nurses are in high demand worldwide. In the last few years, India has emerged

as a new global market for the emigration of nurses. Lorenzo et al (2007:1406) state that the Philippines are the largest exporter of nurses, especially to Saudi Arabia.

According to Ling (2012: online), between 10% and 20% of Malaysia's 84,000 nurses are estimated to be working in other countries. The Deputy Foreign Minister of Malaysia, Mr. Datuk Richard Riot, stated that the majority of those nurses working abroad are in Saudi Arabia, while others are in countries such as Australia and New Zealand. Mr. Riot also states that Saudi Arabia "chooses Malaysian nurses because of the high quality of education and because of their religious orientation (Islamic). Other Arab countries look up to Malaysia as a role model" (Ling 2012: online).

Telford-Smith (2006:i) states that the Kingdom of Saudi Arabia is one of the more popular destinations for South African nurses, the main reason being the attractive financial rewards available. As many as 30 nurses per month are reported to migrate to various healthcare facilities within the Kingdom of Saudi Arabia.

Table 4.1 lists the respondents' nationalities.

Table 4.1 Respondents' nationality (N=117)

Nationality	n	%
Filipino	81	69.24
Malaysian	11	9.40
South African	10	8.56
Jordan	4	3.42
Indian	4	3.42
Saudi	3	2.56
Australian	1	0.85
British	1	0.85
Czech	1	0.85
Egyptian	1	0.85
Total	117	100

Table 4.1 indicates that of the respondents, 69.24% (n=81) were Filipino, 9.40% (n=11) were Malaysians; 8.56% (n=10) were South Africans and 3.42% (n=4) each were

Jordanian and Indian. Of the respondents, only 2.56% (n=3) were Saudi, and 3.4% (n=4) together were Australian, British, Czech and Egyptian.

According to the Hospital Information (2012), the nationalities of staff in the hospital under study consist predominantly of Filipino (377 of the 635 staff members = 59.37%). The various nationalities are reflected in Chapter 1, Table 1.1.

4.2.1.4 Respondents' first language (item 1.4) (N=117)

Among Asian countries, language diversity is a serious concern that one needs to take into consideration when discussing the international movement of nurses (Matsuno, 2006:14). Language ability is extremely important for nurses as well as their work for two reasons: (1) to communicate with medical professionals to deliver health care without failure or misunderstanding; and (2) to enable nurses not only to talk to patients and meet the patients' needs and expectations, but to really "care" for them. The latter is closely linked with cultural values, which greatly affects their interactions with patients. Thus, for example, even those Filipino nurses who can speak English fluently tend to be placed in the departments where direct verbal interactions with patients are relatively limited, such as operation units, intensive care units (ICUs) and emergency rooms (ERs). Foreign nurses who are not Arabic speaking are not placed in mental health facilities, as the importance of language proficiency at a different level is required there (Matsuno 2006:18). Nonetheless, sharing a common language is an advantage in facilitating the movement of nurses. In Singapore, India, and Malaysia, where English is an official and widely spoken language, the movement of nurses is relatively smooth. However, in the case of other countries, language requirements definitely deter foreign nurses from working abroad (Matsuno 2006:17). Bludau (2009: online) found that "training and knowledge of English opens the door to international careers in many attractive countries for Czech health professionals".

4.2.1.5 Respondents' specialty qualifications (item 1.6) (N=117)

Lorenzo et al (2007:1406) found that the majority of nurses leaving the Philippines had specialisation in Intensive Care Unit, Emergency Room, and Operating Room. According to Bludau (2009: online), Czech nurses "are primarily employed by Saudi Arabia and not so much in European Countries.

Table 4.2 illustrate the specialty qualifications held by the respondents.

Table 4.2 Respondents' specialty qualifications (N=117)

Respondents' specialty qualifications	n	%
Medical Surgical Nursing	55	47.0
Midwifery	11	9.4
Paediatrics	7	6.0
Neonatology	3	2.7
Oncology	2	1.5
ICU	14	12.0
Other	25	21.4
Total	117	100

The results revealed that the majority of the respondents had specialties in Medical Surgical nursing (47.0%; n=55) while 9.4% (n=11) specialised in Midwifery, 6.0% (n=7) in Paediatrics, 2.7% (n=3) in Neonatology, 1.5% (n=2) in Oncology, 12.0% (n=14) in Intensive Care, and 21.4% (n=25) indicated "other" specialty areas.

The Hospital Information (2012) provides an extensive breakdown of all the specialty qualifications that foreign nurses hold in the hospital under study.

4.2.1.6 Respondents' years of experience as registered nurses (item 1.7) (N=117)

Figure 4.3 depicts the respondents' years of experience as registered nurses.

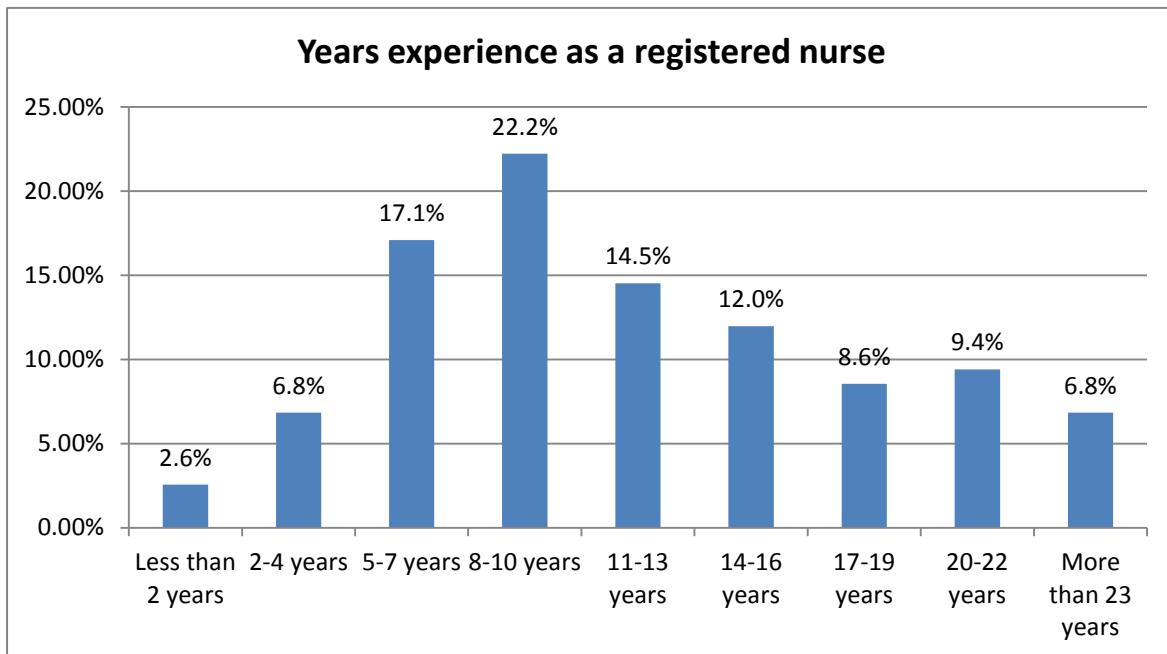


Figure 4.3 Respondents' years of experience as registered nurses (N=117)

Among the respondents, the years of experience as a professional nurse varied from less than two years to more than 23 years. It was found that the minority, namely 2.6% (n=3) of the respondents had less than two years' experience while 6.8% (n=8) had 2-4 years and 17.1% (n=20) 5-7 years experience. The majority of the respondents (n=26; 22.2%) had 8 to 10 years experience. In addition, 14.5% (n=17) indicated that they had 11-13 years' experience, 12.0% (n=14) had 14-16 years, 8.6% (n=10) had 17-19 years, 9.4% (n=1) 20-22 years, and 6.8% (n=8) had more than 23 years of experience.

According to the *Hospital Information* (2012), the average years of experience as a registered nurse in the selected hospital under study is 14 years. Lorenzo et al (2007:1406) study found that nurses from the Philippines had between 1 and 10 years of experience before leaving their country to work abroad.

According to the recruitment criteria in the selected hospital under study, all expats must have a minimum of 2 years' postgraduate experience and be at least 25 years of age.

4.2.1.7 Respondents' years of employment as registered nurses in the hospital under study (item 1.8) (N=117)

Figure 4.4 depicts the respondents' years of employment as registered nurses in the hospital.

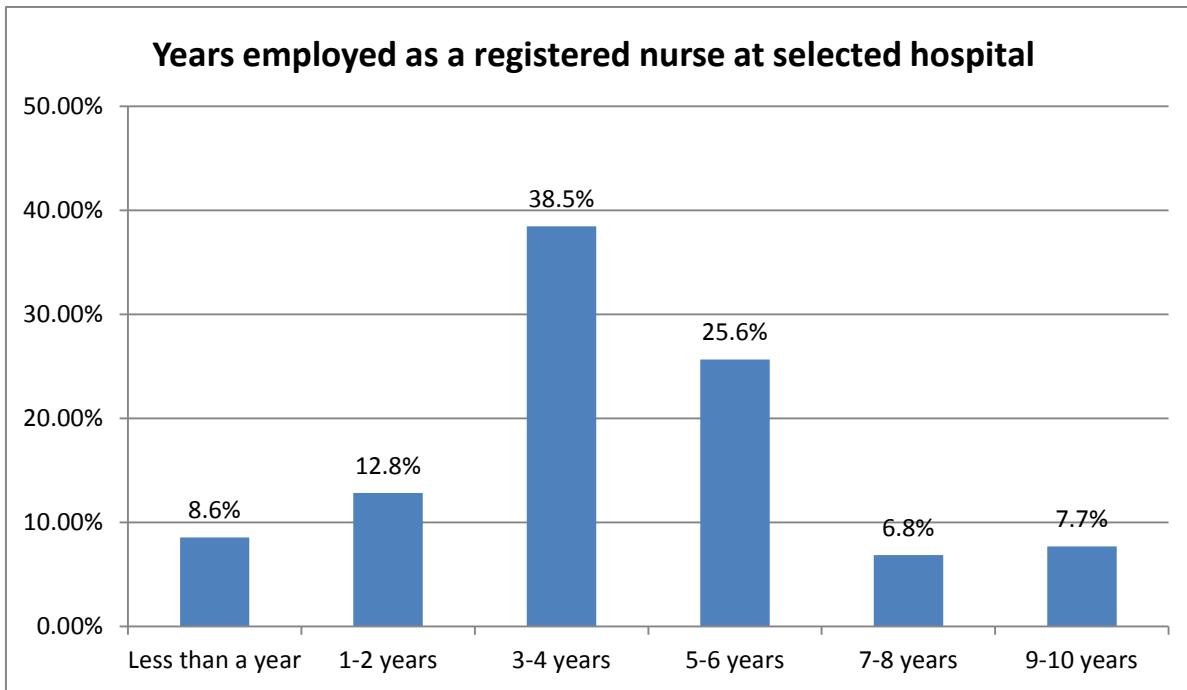


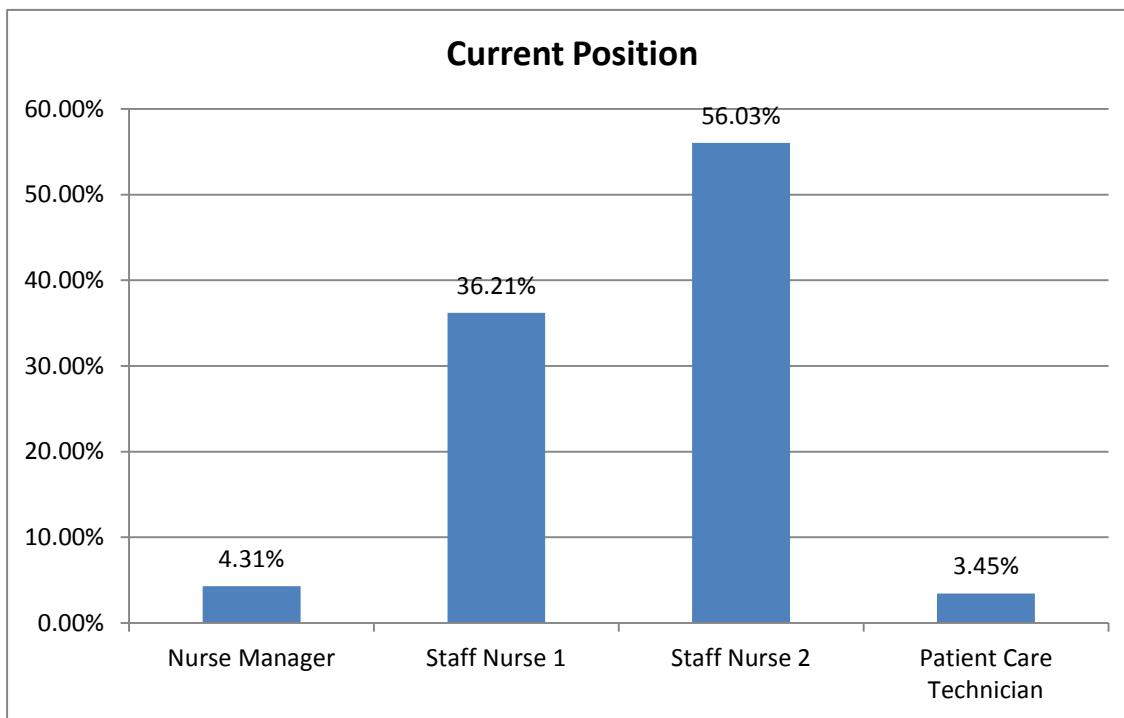
Figure 4.4 Respondents' years as registered nurses at the hospital under study (N=117)

Figure 4.4 reflects the years of employment of the respondents: 12.8% (n=15) for 1-2 years, 38.5% (n=45) for 3 to 4 years, 25.6% (n=30) for 5-6 years, 6.8% (n=8) for 7-8 years, 7.7% (n=9) for 9-10 years and 8.6% (n=10) for less than a year.

The average years of employment of all nurses at the selected hospital in Saudi Arabia were three to four years (Hospital Information, 2012). Hanour-Knipe and Davies (2012:2) found that 50% of nurses who worked abroad usually returned to their countries of origin after five years, taking with them a wealth of knowledge, experience and further education.

4.2.1.8 Respondents' current positions (item 1.9) (N=117)

Figure 4.5 represents the respondents' current employment positions. Of the respondents, 92.2% (n=108) indicated that they were professional nurses working in clinical practice areas as registered nurses (Staff Nurse I and Staff Nurse 2).

**Figure 4.5** Respondents current position (N=117)

Of the respondents, 56.03% (n=66) were in the position of Staff Nurse 2, and 36.21% (n=42) were in Staff Nurse 1 positions. Only 4.31% (n=5) were nurse managers and 3.45% (n=4) were patient care technicians (PCT).

The Philippines are the largest exporter of nurses worldwide including Saudi Arabia. Filipino registered nurses are mostly employed as bedside nurses (Lorenzo et al 2007:1406).

4.2.1.9 Respondents' assignment as QCPR super users (item 1.10) (N=117)

Item 1.10 asked whether the respondents were assigned as super users for the QCPR system. The results are presented in Table 4.3.

Table 4.3 Respondents' assignment as super users (item 1.10) (N=117)

	n yes	%	n no	%
Are you assigned as a super user for Quadramed	14	12.0	103	88.0

As indicated in Table 4.3, the minority of the respondents 12.0% (n=14) indicated that they were assigned as super users while 88.0% (n=103) indicated that they were not assigned as super users.

4.2.2 Section B: Awareness of change

Section B of the questionnaire contained questions about the respondents' awareness of change, and of the QCPR. Awareness of change included the need to change, information about change, reasons for change, individuals contributing to change, communication about change, timeframe for change, the benefit of the QCPR to the patient, paper based versus QCPR, and channels used to build awareness to change to QCPR.

According to Hiatt (2006:5, 9), awareness is achieved when a person is aware of the change and understands the nature of the change, how this change fits in with the vision of the organisation, why it is needed and the risk of not changing. Lewin (2012:1) maintains that the “unfreezing” represents the stage where people get ready to change. Kotter (1996:89) emphasises the importance of communicating during the awareness stage of change to convey a clear vision that is directly related to the simplicity of the message. Hiatt (2006:6) found that lack of awareness about the reasons to change is the main reason for resistance.

4.2.2.1 Respondents' need to change to QCPR (item 2.1)

According to Hiatt (2006:5), the first step to enable change is to create awareness of the need to change. Heath (2011:81) agrees and adds that if staff is not convinced of the need for change, then “they’re not going to move”.

Table 4.4 reflects the respondents' need to change.

Table 4.4 Respondents' need to change

Need to change	Yes	% Yes	No	% No
Were you informed about the need to change to the QCPR system?	97	89.8	11	10.2
Did you ask why the change was necessary?	75	74.3	26	25.7
Were you informed in advance about the change?	83	80.6	20	19.4
Were you comfortable with the status quo?	78	79.6	20	20.4

From Table 4.4 it is evident that 89.8% (n=97) of the respondents indicated that they were informed about the need to change to the QCPR system; 25.7% (n=26) indicated they did not ask why change was necessary; 74.3% (n=75) indicated they did ask why change was necessary; 80.6% (n=83) indicated they were informed in advance about the change, and 79.6% (n=78) indicated they were comfortable with the status quo.

Hiatt (2006:64) emphasises that building awareness is a process. One cannot assume that a single message or event will result in uniform awareness of the need for change. Strenitzerova (2004:56) states that projects that effectively integrate all the steps of change management are more successful and are received better by those impacted by the change. The Change Management Learning Centre (2010c: online) indicates that if people are aware of the need to change, understand the underlying facts for this need, and are given an opportunity to work through the ideas of changing, resistance to change is limited.

4.2.2.2 Respondents informed about changing to QCPR (item 2.2) (N=113)

Figure 4.6 presents the respondents' views on who first informed them about the change to the QCPR system.

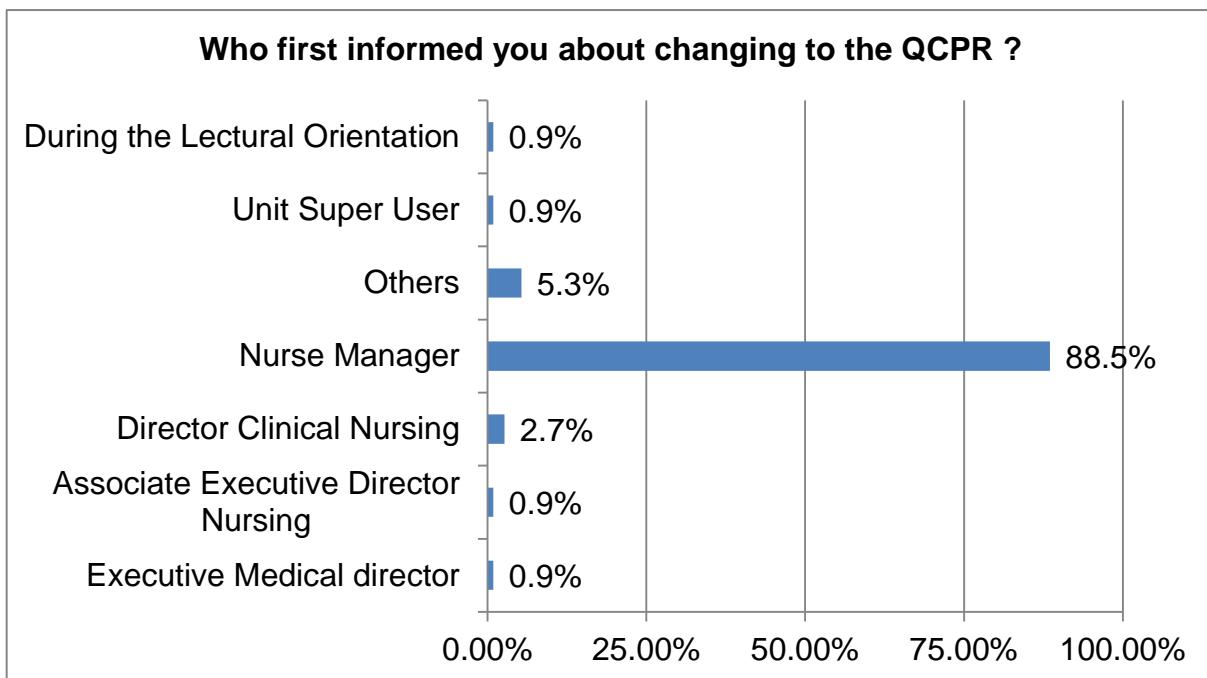


Figure 4.6 Persons who first informed respondents about changing to QCPR (N=113)

Of the respondents, 88.5% (n=100) indicated that they were informed by the Nurse Manager about changing to QCPR, and 5.3% (n=6) indicated that they were informed by others. Figure 4.6 also indicates that 2.7% (n=3) were informed by the Director Clinical Nursing about changing to QCPR and 0.9% (n=1) were informed about changing to QCPR by the Executive Medical Director, whilst 0.9% (n=1) were made aware of it during their lecture orientation session. From the above it can be deduced that the Nurse Manager plays the most prominent role in communicating the need for change to the QCPR computerised system.

When people accept and understand what is happening in the workplace, they are more likely to act upon it (Scheid 2010a: online). Scheid (2010a: online) refers to the concept of “buying into” a new product or change that needs to be implemented. This is also the most difficult stage of the change process. The Change Management Learning Centre (2010a:online) states that the entrenched way of a “top-down” approach to enforcing change is not effective and that change should rather be implemented from the perspective of the employees because they are the ones who ultimately apply the change. Moreover, a coach is required who understands the work situation. In this study, the nurse manager was the most effective person with hands-on experience and in contact with the nurses in the clinical practice to implement the change.

4.2.2.3 Respondents' indicate whether the reasons for change to QCPR were clearly communicated (item 2.3) (N=112)

The majority of the respondents, 78.6% (n=88) indicated that they were satisfied that the reasons for change were clearly communicated to them (see Table 4.5).

Table 4.5 Communication about reasons for change (N=112)

Were the reasons for change clearly communicated?	n	%
Yes	88	78.6
No	24	21.4
Total	112	100

According to Hiatt and Creasey (2003:14), no two changes are the same and understanding the *why* changes are made creates an opportunity to understand '*how*' the change can be implemented. If the reasons for change are clearly communicated, obstacles arising due to the implementation of the change are easier to overcome (Kotter 1998:27; Kahn 2011: online). In 1947 Lewin stated that it is not easy to convince people to change and that they are uncertain, and often fearful to implement change. During this time support is important and can be in the form of training, coaching, and expecting mistakes as part of the process.

4.2.2.4 Respondents' perceptions of impact of change to QCPR (item 2.4) (N=117)

Table 4.6 presents the respondents' perceptions of those who were most impacted by the change to the QCPR.

More than one response could be given and 188 responses were obtained for this question.

Table 4.6 Respondents' perceptions of who was most impacted by change to QCPR

Q2.4 Indicate who was most impacted by change to QCPR	Responses	%
Staff Nurse 2	51	43.6
Staff Nurse 1	43	38.8
Patients	34	29.1
Physicians	25	21.4
Nurse Manager	21	17.9
Patient Care Technician	8	6.8
Clinical Resource Nurse	4	3.4
Nurse Educators	2	1.7

From Table 4.6 it is clear that the staff nurse 2 category (43.6%; n=51) was most impacted by the change to the QCPR followed by staff nurse 1 category (36.8%; n= 43). This indicates that both the staff nurse 1 and 2 categories were most likely to be involved in direct patient care and therefore the use of QCPR. Physicians were also indicated as being impacted by change to QCPR (21.4%; n=25).

In addition, 29.1% (n=34) of the responses indicated that patients had been impacted by the change to the QCPR; 17.9% (n=21) indicated nurse managers; 6.8% (n=8) indicated Patient Care Technicians, and 3.4% (n=4) indicated Clinical Resource Nurses. Only 1.7% (n=2) indicated nurse educators were impacted by change to the QCPR. Patient Care Technicians (PCT), Clinical Resource Nurses and Nurse Educators were not highly ranked amongst those who were most affected by the change to the QCPR system.

Kritsonis (2004-2005:5) maintains that "individual performance of a given behaviour is primarily determined by a person's intention to perform that behaviour". In addition, two major factors impact most on whether the change will be implemented: (1) the person's positive or negative attitude towards the change, and (2) the influence of the person's social environment or subjective experience such as the influence of the beliefs of peers as well as the motivation to change. Therefore, the change will impact those who will implement the change most. Change may be experienced as positive when there is teamwork and support to those who will implement the change. Kotter and Schlesinger (2008:50) state further that the impact of positive change will depend on whether a

person has the relevant data for designing the change and the energy for implementing it.

4.2.2.5 Communication during the implementation phase of QCPR (item 2.5) (N=117)

Table 4.7 presents the respondents' indications of who communicated most with them during the implementation phase of the QCPR. The respondents could indicate more than one response and 140 responses were received, which indicated that the respondents communicated with more than one prominent individual during the implementation phase of the study.

Table 4.7 Respondents' indications of communication during the implementation phase of QCPR

Q2.5 Who communicated most with you during the implementation phase?	Responses	%
QCPR Super User	68	58.1
Peers (co-workers)	28	22.2
Informatics Coordinator	22	18.8
Nurse Manager	18	15.4
Educators	3	2.6
Director: Clinical Nursing	1	0.9

QCPR super users (58.1%; n=68), peers (22.2%; n=28), the Informatics Coordinator (18.8%; n=22) and the nurse managers (15.4%; n=18) provided most of the communication during the implementation phase of the QCPR, whereas educators (2.6%; n=3) and the Director Clinical Nursing (0.9%; n=1) communicated the least during the implementation phase of QCPR. It was the super-user who communicated most during the implementation phase of QCPR.

According to the Change Management Learning Centre (2010a: online), "frequent and open communication about the change" is the second greatest contributor to change management success. Kotter (1996:99) maintains that successful change efforts always become a two-way communication process. Heathfield (2012: online) states that communication is one of the toughest issues in organisations. Effective communication requires four components. Firstly, the individual sending the message must present the

message clearly and in detail, and radiate integrity and authenticity. Secondly, the person receiving the message must decide to listen, ask questions for clarity, and trust the sender of the message. Thirdly, the delivery method chosen must suit the circumstances and the needs of both the sender and the receiver. Lastly, the receiver and the content of the message have to resonate and connect, on some level, with the already-held beliefs of the receiver.

This view is supported by authors such as Heathfield (2012: online), Kitchen & Daly (2002:46) and Warrilow (2010:7) who agree that change is all about acknowledging the view of others which is a perspective based on empathy. This is communicated to the individual that recognises and affirms people's realities and work with them to bring them through the transition to changing.

4.2.2.6 Time frame for implementing change (item 2.6) (N=110)

Table 4.8 indicates the respondents' indications of the time frame for implementing the change. Of the 117 respondents, only 110 responded to this item.

Table 4.8 Respondents' time frame before implementing change (N=110)

Indicate time frame before change was implemented	n	%
Less than 2 weeks	16	14.5
3-5 weeks	32	29.1
6-8 weeks	29	26.4
9-11 weeks	5	4.6
12 weeks and more	16	14.5
Never Informed	12	10.9
Total	110	100

Of the respondents, 70.0% (n=77) indicated that the time frame for change to implementation of QCPR was less than or equal to eight weeks; 14.5% (n=16) indicated less than two weeks; 29.1% (n=32) indicated 3-5 weeks; 26.4% (n=29) indicated 6-8 weeks, and 14.5% (n=16) indicated 12 weeks and longer. It was of concern to note that 10.9% (n=12) of the respondents indicated that they were never informed about the time frame to implement change to QCPR.

Sirkin et al (2005: online) state that institutions often make the mistake of giving too much attention about the time it will take to implement change programmes. Sirkin et al (2005: online) maintain further that these institutions assume that the longer an initiative carries on, the more likely it is to fail. However, institutions assume that the early impetus of change will result in windows of opportunity closing, objectives being forgotten, key supporters leaving or losing their enthusiasm, and problems accumulating. Sirkin et al (2005: online) found, however, that a long project that was reviewed frequently was more likely to succeed than a short project that was not reviewed frequently. Thus, the time between reviews is more critical for success than a project's life span.

In Mauritius, Kassean and Jagoo (2005:1) found that change was more successful when a schedule with dates was communicated to all involved in the change. Moreover, setting a time frame goes hand in hand with a climate of open communication where all those involved in the change process are allowed to voice their opinions, share their common concerns, communicate their ideas and actively participate in decision-making (Kassean & Jagoo 2005:1).

4.2.2.7 Respondents' perceptions of benefits to patients of changing to QCPR (item 2.7) (N=117)

Table 4.9 presents the respondents' perceptions of the benefits to patients of the use of the QCPR. The respondents could mark more than one response and 202 responses were subsequently obtained. This is an indication that the change to the QCPR had multiple benefits to the patient.

Table 4.9 Respondents' perceptions of benefits of the QCPR for patients

Q2.7 In what way did changing to QCPR benefit the patient?	Responses	%
Less paperwork	51	43.5
Continuation of care	38	32.4
Improved safety of the patient	32	27.3
Improved nursing care	31	26.4
Time management	29	24.7
No benefit to the patient	9	7.6
Ethical and legal considerations	9	7.6
Other	3	2.5

Of the responses, 43.5% (n=51) rated less paperwork; 32.4% (n=38) rated improved continuation of care; 27.3% (n=32) (rated improved patient safety; 26.4% (n=31) rated improved nursing care, 24.7% (n=29) rated time management, as the most important benefits for patients from the change to the QCPR system. Only 7.6% (n=9) rated the QCPR as being of no benefit to the patient. 7.6% (n=9) rated it as ethical and legal considerations.

These findings support Torrey's (2012: online) study. According to Torrey (2012: online), the benefits of the use of electronic patient records include more efficient control of patient information; access to good care becomes easier and safer when records can easily be shared; important information, for example blood type, prescribed drugs, medical conditions and other aspects of the patient's medical history, can be accounted for much more quickly; existing electronic medical records can save time by providing quick access to records that can be lifesaving if an emergency occurs, and records can also be shared between different institutions that could secure more effective and efficient patient care. At the same time, however, Torrey (2012: online) points out that there are limitations to keeping patient records, such as maintaining confidentiality. The Department of Health of the United Kingdom and Royal College of General Practitioners (2005:8-10) developed good practice guidelines for general practice of managing electronic patient records.

4.2.2.8 Respondents' perceptions of implications for not changing from paper-based documentation to QCPR (item 2.8) (N=117)

In this sub-section the respondents were requested to provide their views of the implications that would occur if the change from the old paper-based documentation to the QCPR was NOT implemented. Table 4.10 reflects the responses. The respondents could indicate more than one item and 160 responses were obtained, which is an indication that the QCPR was experienced as a positive change which could limit medico-legal risks.

Table 4.10 Respondents' perceptions of what would have happened if there had been no change from paper-based documentation to QCPR

Q2.8 What would have happened if there was no change from paper based documentation to QCPR?	Responses	%
Illegible handwriting could contribute to preventable errors	61	52.1
Staff may not have had the opportunity to learn new skills	51	43.5
Workflow would have been less efficient	15	12.8
Language barriers could have contributed to increased errors	13	11.1
It would have made no difference	10	8.5
More nurses needed for the same care	7	5.9
Other	3	2.5

Of the responses, 52.1% (n=61) indicated that illegible handwriting could contribute to preventable errors; 43.5% (n=51) indicated staff may not have had the opportunity to learn new skills; 12.8% (n=15) indicated the workflow would have been less efficient and 11.1% (n=13) noted that the influence of language barriers could have contributed to an increase in errors as expected with a cosmopolitan workforce. Of the respondents, 8.5% (n=10) indicated that it would have made no difference whether there was a change from paper-based documentation to the QCPR, and 5.9% (n=7) indicated that more nurses would be needed for the same care.

Young (2000:106) points out that "technology has continued to move forward at a rapid pace, but many organisational and human issues have slowed the pace of implementation of automated systems for an electronic documentation record".

Sattinger (2006:1322) maintains that since handwriting is distinctive, and difficult to change, automated systems can help eliminate the problem of illegibility. In addition, although some systems may seem costly, the gains in efficiency far offset the costs. Chart chasing is eliminated, as is duplicate data entry of the same information on multiple forms. In a study on the cost effectiveness of electronic patient records, Wellen, Bouchard and Houston (1998:3) found that highly paid, skilled and very busy specialists and clinicians are no longer delayed by the search for elusive paper charts because they can access patient information without several days of data compilation.

In a study of 4,282 registered nurses using electronic patient records, Hassol, Walker, Kidder, Rokita, Young, Pierdon, Deltz, Kuch and Ortiz (2004:505) found that the majority indicated that the system was easy to use and that their medical record information was complete, accurate, and understandable. Only a minority of users were concerned about the confidentiality of their information or about seeing abnormal test results after receiving only an explanatory electronic message from their provider. Telephone or written communication was never their preferred communication channel. In contrast, physicians were more likely to prefer telephone communication and less likely to prefer e-mail communication.

4.2.2.9 Respondents' perceptions of channels used to build awareness to changing to the QCPR (item 2.9) (N=117)

Item 2.9 required the respondents to indicate the channels used to build awareness to changing to the QCPR. Table 4.11 reflects the responses. The respondents could mark more than one choice and 193 responses were obtained, which indicates that multiple channels were used.

Table 4.11 Respondents' indication of what channels were used to build awareness towards changing to QCPR

Q2.9 What channels were used to build awareness to changing to QCPR?	Responses	%
Training courses	75	64.1
Initial nursing orientation	29	24.7
Group meetings	28	23.9
Workshops	27	23.0
One-on-one communication	14	11.9
Team meetings	11	9.4
Focus groups	9	7.6

Of the responses, 64.1% (n=75) indicated training courses as the channel used to build awareness to change to the QCPR; 24.7% (n=29) indicated the initial nursing orientation; 23.9% (n=28) group meetings, and 23.0% (n=27) workshops as the channels used. The channels rated the lowest in building awareness to change were one-on-one communication (11.9%; n=14); team meetings (9.4%; n=11), and focus groups (7.6%; n=9).

In their study on Singaporean nurses' views on awareness of the changing nursing environment, Majid, Foo, Luyt, Zhang, Yin-Leng, Yun-Ke, and Mokhtar (2011:229) found that although the participants showed a positive attitude towards change to evidence-based practice, several institutional and personal barriers hindered their smooth adoption. Majid et al (2011) believe that hospital management can easily overcome some of these barriers through training and providing time off from work for nurses to learn and implement new techniques. Moreover, the participants preferred to consult their supervisors and colleagues to obtain needed information. Hospital management can create a positive environment and provide socializing opportunities for nurses to promote peer-to-peer information and knowledge sharing.

4.2.3 Section C: Desire to change

Section C explores the respondents' desire to change to the QCPR. Desire to change included an individual's personal approach in the workplace, personal choice to change, positive factors about change, the reasons for negative feelings towards change, factors

contributing to personal decision to support and participate in implementing QCPR, and individuals contributing to positive attitude and desire to change.

According to Hiatt (2006:17), desire is the second building block in the ADKAR model and represents a personal motivation and desire to participate in change. Creating desire poses a challenge due to the limited control people have over the choices that other people make, and therefore it remains elusive and, by definition, not under their direct control.

4.2.3.1 Respondents' personal approach to changes in the workplace (item 3.1) (N=116)

Item 3.1 examined the respondents' personal approach to changes in the workplace. Table 4.12 indicates the responses. Only one respondent did not respond to this item.

Table 4.12 Respondents' approach to changes in the workplace (N=116)

Q3.1 How do you approach changes in the workplace?	n	%
I am always willing to change	109	94.0
I am mostly uncertain to change	7	6.0
Total	116	100

The majority of the respondents (94.0%; n=109) indicated that they were always willing to change while the minority (6.0%; n=7) indicated that they were mostly uncertain about how to change.

This is consistent with Gamble's (2012: online) survey finding that 74% of physicians resist change, compared to 17% of nurses. Furthermore, the project that posed the biggest challenges in terms of change management was the electronic physician documentation, and the environment most receptive to change was the emergency department where it is a necessity to be highly flexible and adaptable. The toughest aspect of change management was changing individual behaviour. However, the participants also emphasised the role of leadership in creating a culture that supported change. Gamble (2012: online) adds that the majority (74%) of the participants believed that health systems are being pushed to the brink by having too much change forced on them at one time. Some were concerned that patients will be lost in the

shuffle while others felt that change could be conquered if leaders were willing to participate.

4.2.3.2 Respondents' personal desire to change (item 3.2) (N=112)

Table 4.13 reflects the responses to item 3.2. Out of the respondents, 112 answered this question. The majority of the respondents (61.6%; n=69) indicated that the desire to change is a personal choice while 38.4% (n=43) disagreed.

Table 4.13 Respondents' views on whether desire to change is a personal choice (N=112)

Q3.2 Is the desire to change a personal choice?	n	%
Yes	69	61.6
No	43	38.4
Total	112	100

Khan (2011: online) emphasises that creating a personal vision towards change is essential for individual choice to change. Individuals will support the change if the vision that is created is not only desirable and imaginable, but also focused and flexible. The Change Management Learning Centre (2007: online) stresses that organisations do not change – it is individuals who change. Furthermore, no matter how large a project is, the success of that project ultimately lies with each employees personal decision to change.

4.2.3.3 Respondents' views on changing to QCPR (item 3.3) (N=117)

In item 3.3 the respondents were required to indicate whether they initially felt positive about the change to the QCPR. Figure 4.7 depicts the responses.

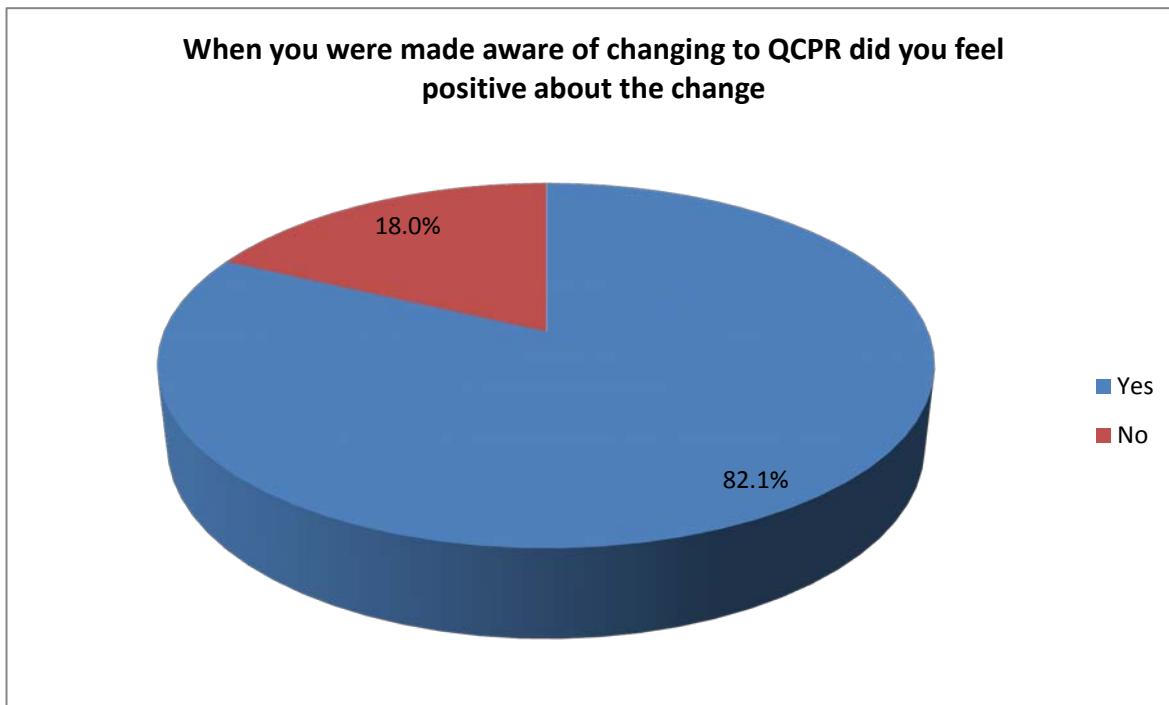


Figure 4.7 Respondents' personal feelings towards change to QCPR (N=117)

From Figure 4.7 it is evident that the majority of the respondents (82.1%; n=96) viewed changing to the QCPR as positive while only 18.0% (n=21) did not.

There was a significant, positive, association between “Desire to change” as a personal choice and “Did you have positive feelings about the change” (χ^2 test; p0.0031). The respondents who did not feel positive about the change (item 3.3) were likely to be uncertain about change (item 3.1).

In a study on change management in six hospitals in Ontario, Ducharme, Buckley, Adler and Pelletier (2009:70) found that the desire to change was more successful when communication was enhanced, teamwork was encouraged, and personal, structural and cultural issues were addressed which could impact innovation to change. Ducharme et al emphasise teamwork as a major factor in positive change in the six hospitals and found that celebrating the success of the project maintained enthusiasm for the next step of the change plan. Green (2003:27) found that nurses who possess knowledge of practice models demonstrate positive attitudes towards change and this, in turn, encourages independent practice.

4.2.3.4 Respondents' reasons for negative feelings towards changing to QCPR (item 3.4) (N=21)

This section further explored the respondents' reasons for feeling negative towards changing to the QCPR. In question 3.3, 21 (18.0%) respondents indicated no as their answer. Table 4.14 reflects their responses. In this item, respondents could mark more than one response and 52 responses were indicated.

Table 4.14 Respondents' reasons for negative feelings towards changing to the QCPR (N=21)

Q3.4 If you answered no to the question above, what were the reasons for your negative feelings towards changing to QCPR?	Responses	%
It would add to the workload	20	95.2
Insufficient knowledge about informatics	11	52.3
I thought that the system would jeopardised patient safety	7	33.3
I was uncertain as to what the software entailed	6	28.5
I did not think I would benefit from this change	4	19.0
I rather support the paper based system	4	19.0

Of the respondents who had previously indicated that they felt negative about changing to the QCPR (n=21), an overwhelming 95.2% (n=20) indicated that changing to the QCPR would add to the workload; 52.3% (n=11) indicated that they had insufficient knowledge about informatics; 33.3% (n=7) reported that the system would jeopardise patient safety; 28.5% (n=6) were uncertain as to what the software entailed, and 38% (n=8) did not think they would benefit from this change and rather supported the paper-based system.

In a systematic review of the barriers to change by health care personnel, Boonstra and Broekhuis (2010:231) found eight barriers which physicians use for not buying into change. These were organisational factors, the change process, financial restraints, technical issues, time, psychological, social, and legal barriers. Poon, Blumenthal, Jaggi, Honour, Bates and Kaushal (2004:184) state that the 98,000 deaths per year and many more injuries resulting from medical errors have made patient safety a top priority in the USA. Many medication errors - the most common cause of preventable injuries in hospitals - can be prevented by computerised physician order entry systems. These

systems reduce the incidence of serious medication errors by 55%. However, despite the apparent efficacy of computerised patient records systems, only 10% to 15% of hospitals use them.

4.2.3.5 Factors contributing to personal decision to support and participate in implementing QCPR (item 3.5) (N=117)

Item 3.5 examined the contributing factors in the respondents' decision to support and participate in implementing the QCPR (see Table 4.15). The respondents could mark more than one response and 243 responses were obtained for this item. This is an indication that a variety of factors contribute to the respondents' personal decisions to support and participate in implementing the QCPR.

Table 4.15 Factors that contributed to the respondents' personal decision to support and participate in implementing QCPR (N=117)

Q3.5 Which of the following contributed to your personal decision to support and participate in implementing QCPR?	Responses	%
I was involved in the planning of the implementation of the QCPR system	82	70.0
I regarded it as new challenge	75	64.1
I was involved in the planning of the implementation	14	11.9
I wanted to be part of the team	13	11.1
I regarded this as a more stream lined process	12	10.2
Previous experience using a computerised patient documentation	12	10.2
Gain trust and respect from leadership	11	9.4
I viewed this change a means to improve my CV	10	8.5
Non-compliance would lead to negative consequences	8	6.8
If I was negative about the QCPR system, it would negatively influence my performance appraisal	4	3.4
Acquisition of power or position	1	0.8
Incentive and compensation	1	0.8

Of the responses, 70.0% (n=82) indicated that they regarded the QCPR system as a positive change from a paper-based system to a computer-based patient management system; 64.1% (n=75) regarded it as a new challenge; 11.9% (n=14) were involved in the planning of the implementation, and 11.1% (n=13) wanted to be part of the team. In addition, 10.2% (n=12) indicated that they viewed the QCPR as a more streamlined process; 10.2% (n=12) indicated they had previous experience using a computerised

patient documentation system; 9.4% (n=11) wanted to gain trust and respect from leadership, and 8.5% (n=10) viewed the change as a means to improve their CV. Of the respondents, 6.8% (n=8) indicated that non-compliance would lead to negative consequences, and 3.4% (n=4) indicated that a negative attitude about the QCPR system would negatively influence their performance appraisal. Likewise, only 1.6% (n=2) responses indicated that the change would lead to acquisition of power or position, and incentive and compensation. Overall, the respondents regarded the provision of a computer-based patient management system as a positive change from a paper-based system. It also provided staff with new challenges.

In a study in Puerto Rico, Rodriguez, Borges, Rodriguez, Angarita and Munoz (2011: 1) found that in most hospitals, nurses were responsible for using the computerised patient record system. Most of the documentation on a patient's record was a result of the physicians' orders. Nurses usually processed these orders and transcribed them onto documents such as drug prescription forms, laboratory request forms, and others as used by the particular institution. A number of other documents were generated by nurses to report on the condition of patients. Rodriguez et al (2011:1) indicated that the documentation activities took more than 25% of the nurses' time during which the nurses were precluded from providing direct health care to patients. It merely provides general information to the nurses such as care procedures to be followed, and pending laboratory results, consultations and medicines to be administered.

4.2.3.6 *Individuals who contributed most to respondents' positive attitudes of changing to QCPR (item 3.6) (N=117)*

Item 3.6 examined the individuals who contributed most to the respondents' positive attitudes towards changing to the QCPR. Of the 117 respondents, 160 responses were obtained as respondents could mark more than one response.

Table 4.16 Individuals who contributed most to the respondents' positive attitude towards changing to QCPR (N=117)

Q3.6 Who contributed most to your positive attitude towards changing to QCPR?	Responses	%
QCPR Super User	50	42.7
Peers (Co-workers)	46	39.3
Nurse Manager	28	23.9
Others	22	18.8
Informatics Coordinator	7	5.9
Educator	6	5.1
Director Clinical Nursing	1	0.8

Of the responses, 50 (42.7%) indicated that the QCPR Super User contributed most to their positive attitude towards changing to QCPR; 39.3% (n=46) indicated peers or co-workers; 23.9% (n=28) indicated nurse managers; 18.8% (n=22) indicated others (but did not specify); 5.9% (n=7) indicated informatics coordinators; 5.1% (n=6) indicated educators, and 0.8% (n=1) indicated the Director Clinical Nursing.

In Lakeview, USA, Flaten, Peterson, Pfeiffer, Steffens and Zaccagnini (2007: online) found that all healthcare personnel can use the QCPR computerised patient record system. The system supports order control, results reporting, patient classification and workload requirements, vital signs and intake/output, charting and assessments, department management, clinician access, prescription writing, physician documentation and computerised order entry. For the system to be operational, it needs a well-trained individual who is usually a nurse with a Master's degree and additionally a person holding an MBA degree. This person is referred to as the super user who trains, supports and addresses problems of the system.

4.2.3.7 Factors influencing respondents' personal desire to change (item 3.7) (N=117)

In item 3.7 the respondents had to indicate the factors that influenced their personal desire to change. This question allowed multiple responses and 124 responses were received.

Table 4.17 Respondents' indication of their desire to change

Q3.7 My desire to change was influenced by:	Responses	%
Uncertainty	39	33.3
Change was dramatic and happens too rapidly	33	28.2
Rumours	10	8.5
Self motivation	7	5.9
To enhance skills	5	4.2
Expecting that QCPR would help nurses save time from paperwork and have more time with patient care	5	4.2
No compensation or bonus	4	3.4
Administration itself	4	3.4
Mandatory as per hospital policy	3	2.5
Personal growth and development	1	0.8
Self-interest to learn new things	1	0.8
Others	12	10.2

Of the responses, 33.3% (n=39) indicated that uncertainty influenced their desire to change; 28.2% (n=33) indicated that change was dramatic and happened too rapidly; 10.2% (n=12) indicated other factors (but did not specify); 8.5% (n=10) indicated rumours and 5.9% (n=7) indicated self-motivation.

Of the respondents, 4.2% (n=5) indicated the expectation “that QCPR would help nurses save time from paperwork and have more time with patient care”; 4.2% (n=5) indicated to “enhance skills”; 3.4% (n=4) indicated that they would receive no compensation or bonus; 3.4% (n=4) indicated they were influenced by the administration itself, and 2.5% (n=3) indicated that being mandatory as per hospital policy influenced their desire to change. Only 0.8% (n=1) indicated personal growth and development, and 0.8% (n=1) indicated self-interest to learn new things as influencing their desire to change.

In a study with 175 senior nurses/midwives, the National Leadership and Innovation Centre for Nursing and Midwifery (2010: online) found that the participants wanted to be more influential, strategic, and able to change, and to take advantages of changes. However, confidence was still low in places and uncertainty was high. Furthermore, it was evident that nurses could play a role in transforming healthcare but they needed to be trained and supported to develop initiatives by designing and introducing ‘system

developments', such as for example information sharing processes, success planning, and setting of standard operating procedures.

4.2.4 Section D: Knowledge to change

Section D examined the respondents' knowledge to change to QCPR. Knowledge to change included computer literacy before and during the hiring process, testing for computer literacy, previous experience in computerised patient documentation systems, prior information and training on the QCPR, operating QCPR, and patient confidentiality.

Knowledge is the third building block of the ADKAR model and includes training and education on the skills, detailed information on how to use new processes, and understanding the new roles and responsibilities related to the change (Hiatt 2006:23).

4.2.4.1 *Respondents' level of computer literacy during hiring process (item 4.1) (N=117)*

To operate the QCPR computer literacy is needed. Tung-Chen-Lin (2011:305) defines computer literacy as "basic computer skills" and computer competency as "the computer skills necessary to accomplish job tasks". Item 4.1 dealt with the respondents' level of literacy to operate the QCPR. Figure 4.8 and Table 4.18 illustrate the responses.

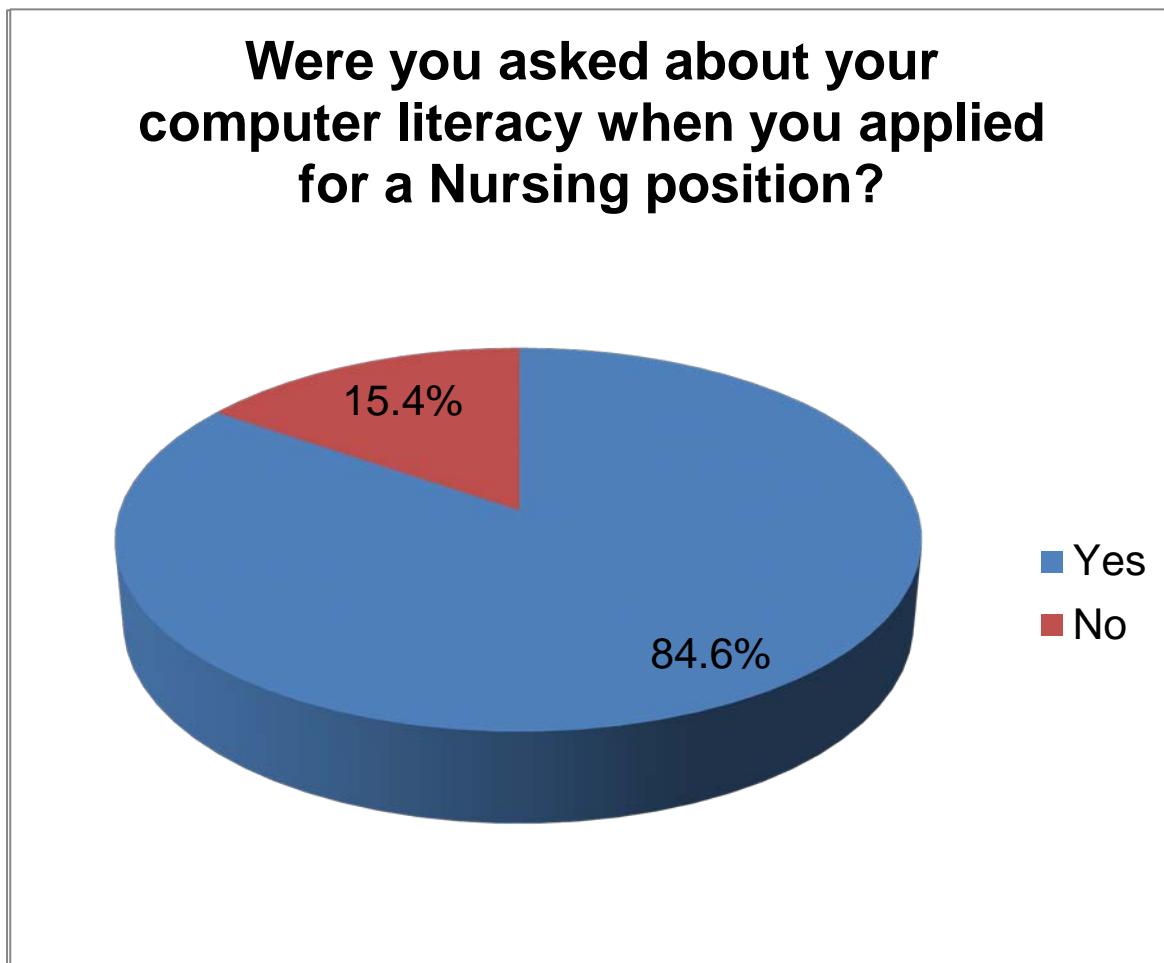


Figure 4.8 Respondents' level of computer literacy upon application for a nursing position

Table 4.18 Respondents' computer literacy prior to employment (N=117)

Q4.1 Were you asked about your computer literacy when you applied for a nursing position?	N	%
Yes	99	84.62
No	18	15.38
Total	117	100

The results show that 84.6% (n=99) of the respondents were required to indicate their level of computer literacy when they applied for their positions, while only 15.4% (n=18) indicated that was not a requirement.

In a quantitative study on nurses' views of computerisation in hospitals in Kenya, Kivuti-Bitok (2009:6) found that nurse managers displayed a positive attitude towards use of computers in provision of health care. The attitudes of the nurse managers towards use

of computers in nursing were not significantly influenced by accessibility to a computer or previous training in the use of computers. However, the respondents' length of practice as a nurse and age had a negative influence on attitudes. In addition, the study revealed that the majority of the nurse managers (85%) did not have computer education as part of their training in basic nursing, although many expressed the desire to be trained in computer applications.

In a study on the application of the computer to nursing, Bryson (1991:100) found that nursing educators required nursing graduates to understand how a computer worked and to develop skills in using application programs. The participants did not expect nurses to have programming skills, but did expect the nurses to be able to use the computer as a tool in nursing. These skills included using a word processor for writing nursing care plans; using computer-aided instruction as a learning tool; using a hospital computer information system (HIS); using a computerised library database, and using software for statistical computations.

Hanley (2006:505) reported that computers are becoming ubiquitous in health and education, and it is expected that nurses from undergraduate nursing programmes are computer literate when they enter the workforce. Similarly, nurse educators are expected to be computer literate to model the use of information technology in their workplace. Nurses are expected to use email for communication and a range of computer applications for presentation of course materials and reports.

4.2.4.2 *Phase during hiring process of determining level of computer literacy (item 4.2) (N=99)*

Item 4.2 explored the phase during the respondents' pre-employment process in which their computer literacy level was tested (see Table 4.19).

Table 4.19 Phase during hiring process to test respondents' computer literacy level (N=99)

This question allowed multiple choices and 110 responses were received from the 99 respondents who answered "yes" in item 4.1.

Q4.2 If your answer to the previous question was YES please state during which phase of the hiring process this occurred.	Responses	%
During recruitment	91	91.9
During the hospital orientation	6	6.1
During the general nursing orientation	4	4.1
During the ward orientation	8	8.1
Others	1	1.0

Of the respondents, the vast majority (91.9%; n=91) indicated that their level of computer literacy was determined during the pre-employment recruitment phase; 6.1% (n=6) indicated during the hospital orientation phase; 4.1% (n=4) indicated during general nursing orientation, and 8.1% (n=8) indicated during the ward orientation.

In a survey of 129 licensed nurses, Campbell and McDowell (2012:313) found that the participants' computer literacy level was lacking in many areas including hardware, basic computer software, databases and spread sheets. Age was also found to influence computer literacy.

4.2.4.3 Respondents tested for computer literacy (item 4.3) (N=106)

Item 4.3 determined whether the respondents' computer skills were tested. Eleven respondents did not answer this question. Table 4.20 presents the results.

Table 4.20 Respondents' tested for computer literacy (N=106)

Were you asked to take part in a computer test?	n	%
Yes	37	34.9
No	69	65.1
Total	106	100

Of the respondents, 65.1% (n=69) indicated that they were not asked to take part in a computer test while 34.9% (n=37) were asked to take a computer literacy test.

Tung-Chen-Lin (2011:305) developed a computer literacy scale based on Hinkin's process with good reliability and validity to investigate the current computer literacy of newly-enrolled students to develop computer courses appropriate to nursing students' skill levels and needs. The computer literacy scale included six constructs (software,

hardware, multimedia, networks, information ethics, and information security) and 22 measurement items.

4.2.4.4 Respondents' phase of being tested for computer literacy (item 4.4) (N=37)

In item 4.4 the 37 respondents who answered that they were required to take a test for computer literacy were asked to indicate during which phase of the employment process they had to take the test. Table 4.19 presents the responses. It should be noted that some respondents took part in more than one computer literacy test.

Table 4.21 Phase in the process of employment that computer test was taken (N=37)

Q4.3 If your answer is YES, please state during which phase in the process of employment were you required to take part in a computer test	Responses	%
During recruitment	18	48.6
During the general nursing orientation	14	37.8
During the hospital orientation	8	21.6
During ward orientation	4	10.8
Others	4	10.8
During QCPR Training	1	2.7

Of the respondents, 48.6% (n=18) indicated they were required to take part in a computer test during recruitment; 37.8% (n=14) indicated during general nursing orientation; 21.6% (n=8) indicated during the hospital orientation; 10.8% (n=4) indicated during ward orientation, and 2.7% (n=1) indicated during the QCPR training period.

4.2.4.5 Respondents' prior experience of computerised patient documentation system (item 4.5) (N=111)

In item 4.5 the respondents were required to indicate their previous experience of computerised patient documentation systems. Of the 117 respondents, 111 responded to this item.

Table 4.22 Respondents' previous experience of a computerised patient documentation system (N=111)

Q4.4 Have you had any previous experience of a computerised patient documentation system?	n	%
Yes	43	38.7
No	68	61.3
Total	111	100

Of the respondents, 61.3% (n=68) indicated that they had no previous experience of a computerised patient documentation system and 38.7% (n=43) indicated that they had previous experience.

Dillon, Blankenship and Crews (2005:139) found that age was a significant factor in the overall positive attitude in determining nurses' attitudes towards the use of electronic patient records. The findings of this study reinforce the notion that nurses are accepting of changing to electronic systems and are supportive of technology in general. However, the image profile drew attention to their concerns for quality healthcare delivery by using computerised record systems.

4.2.4.6 Respondents' years of experience of computerised patient documentation systems (item 4.6) (N=46)

In item 4.5, the respondents who had previous experience of computerised patient documentation systems were required to indicate the number of years they were exposed to it.

Table 4.23 Respondents' number of years of previous experience (N=46)

Q4.5 If your answer is YES, please state years of experience	n	%
Less than 1 year	9	19.6
2-3 years	24	52.2
4-5 years	8	17.4
6-7 years	3	6.5
More than 8 years	2	4.3
Total	46	100

Of the respondents, 19.6% (n=9) indicated that they had less than one year of previous experience in computerised patient documentation systems; 52.2% (n=24) had 2-3 years' experience; 17.4% (n=8) had 4-5 years' experience, and 6.5% (n=3) had 6-7 years. Only 4.3% (n=2) had more than 8 years' experience.

This study did not test whether the respondents had experience in the network or hardware domain of computer literacy.

Tung-Chen-Lin (2010:305) found that participants earned the highest scores for the network domain and the lowest score for the hardware domain. Tung-Cheng-Lin (2010:305) recommends that the use of information technology applications and courses related to hardware topics should be increased to improve nurses' problem-solving abilities. Furthermore, the emphasis on word processing and network-related topics may be reduced in favour of an increased emphasis on databases, statistical software, hospital information systems, and information ethics.

4.2.4.7 Respondents' prior information about QCPR (item 4.7) (N=117)

In item 4.7 the respondents were asked whether they had received information about the QCPR prior to its implementation (see Table 4.24).

Table 4.24 Respondents' information received about QCPR prior to its implementation (N=117)

Q4.6 Did you receive any information about QCPR prior to its implementation?	n	%
Yes	96	82.0
No	21	18.0
Total	117	100

Of the respondents, 82.0% (n=96) indicated that they did receive information about QCPR before its implementation and 18.0% (n=21) indicated that they did not.

Even the low percentage (18%) who did not receive any information about QCPR prior to the implementation is too high, because each individual who uses the QCPR could make a difference to the accuracy and inefficient or inadequate use of the system could

compromise patient safety. Rahimi, Moberg, Timpka and Vimarlund (2008:616) states that a large number of health information system implementations fail due to insufficient organisational harmonisation. In the USA, Baron, Fabens, Schiffman and Wolf (2005:226) state that the failure rate for new health information system implementation in healthcare organisations has been estimated at 50%. The reasons for these failures include the degree of collaboration between representatives from the system providers and the healthcare site implementing the system. The reasons for failure of computerised health systems include failure to give all groups of users adequate training in using the computerised patient record system and this may negatively impact the outcome of the implementation process. For instance, because the nurses had not learned to use the system functions properly, the new practice routine was time consuming (Baron et.al 2005:226).

4.2.4.8 Respondents' sources of prior information about QCPR (item 4.8) (N=96)

Item 4.8 examined the sources of information of the 96 respondents who answered YES to item 4.7 above, and stated that they did receive information about the QCPR prior to its implementation (see Table 4.25). This question allowed multiple choices, hence 105 responses were received from the 96 respondents.

Table 4.25 Respondents' indication of who provided them with information about QCPR (N=96)

Q4.7 If your answer was YES to Q4.6, please indicate who provided you with such information.	Responses	%
Associate Executive Director of Nursing	1	1.0
Director of Education	1	1.0
Informatics Coordinator	26	27.1
Educator	5	5.2
Nurse Manager	65	67.7
Others	5	5.2
Clinical Information Management system	1	1.0
QCPR coordinator	1	1.0

Of the 96 respondents, 67.7% (n=65) indicated that they received information about QCPR from the nurse managers; 27.1% (n=26) indicated the informatics coordinator.

Higher management, which included the Associate Executive Director of Nursing and the Director of Education, contributed little to providing information prior to the implementation to the QCPR (combined 2.0%; n=2). Educators, QCPR coordinators and others were indicated as having contributed little to the provision of information prior to implementation of the QCPR.

Employees do not have a relationship with the director of a company, but with their direct supervisor. They look up to these role players for information, direction and therefore these immediate supervisors have a huge amount of influence on the individual's acceptance of change (Change Management Learning Centre 2011a: online)

4.2.4.9 Respondents' prior training in QCPR (item 4.9) (N=116)

Item 4.9 examined the respondents' prior training in QCPR before its implementation. One respondent did not answer this question. Table 4.26 indicates the responses.

Table 4.26 Respondents' training in QCPR prior to its implementation (N=116)

Q4.8 Did you receive any training about QCPR prior to the implementation thereof?	n	%
Yes	106	91.4
No	10	8.6
Total	116	100

Of the respondents, 91.4% (n=106) indicated that they received training about QCPR prior to its implementation and 8.6% (n=10) did not receive training.

Training programmes are a primary channel for creating knowledge, but training programmes should include "hands on" activities. During the transition period many old and new processes will run concurrently with the new processes. Hiatt (2006:107) maintains that the time of presenting a training programme should be as near as possible to the implementation date, as retention will drop off sharply as more time passes between learning new skills and applying those skills in a real situation.

4.2.4.10 Stage in which prior training in QCPR was provided (item 4.10) (N=106)

Item 4.10 examined the stage at which prior training in QCPR was provided (see Table 4.27), for those 106 respondents who had indicated in item 4.9 that they had received training. 108 responses were received, which indicates that some respondents received training at more than one stage.

Table 4.27 Respondents' indication of when training in QCPR was provided (N=106)

Q4.9 If your answer is YES, please state during what stage	Responses	%
Before implementation of QCPR	91	85.8
During the general nursing orientation	7	6.6
During the hospital orientation	4	3.7
During ward orientation	3	2.8
Others	2	1.9
When I was a student in nursing college	1	0.9

Of the responses, the majority (85.8%; n=91) indicated that they received training on the QCPR prior to its implementation; 6.6% (n=7) received training during the general nursing orientation; 3.7% (n=4) received training during the hospital orientation; 2.8% (n=3) indicated during ward orientation, and 0.9% (n=1) indicated that prior training was provided as a student in the nursing college.

Rose (2011: online) states that 41% of registered nurses in the USA are currently 51 years of age or older. However, experienced nurses who are not computer literate are not regarded as a hiring disadvantage. Hospitals value experience, expertise, patient assessment, and people skills. As long as older nurses are willing to learn, hospitals will train them to use computers. Although the majority of nurses know how to perform computerised charting tasks, some nurses require basic information and, in a few instances, an educator may have to begin teaching the very basic steps of accessing and working with a computer. Many older nurses have doubts about working in a nursing environment filled with technology, but providing them with quick reference guides is helpful and supports them to overcome their fears.

According to Rose (2011: online), pre-training of nurses in computer skills is of benefit to nurses without computer skills. They can use the hospital-based computer program

and its applications under the supervision of a preceptor, who builds on skills taught during orientation. Most computer inexperienced nurses have a fear of clicking in the wrong place as they work with computerised charts and tend to become frustrated when they attempt to enter information in a format the computer will not accept. Nurses can practise computer skills at the computer laboratory during the day, after work, or on their days off. Rose (2011: online) emphasises that this is encouraged “because they’re self-directed learners. Healthcare technology is developing at such a fast pace it’s important to become a self-reliant computer user.”

4.2.4.11 *Individuals providing training about QCPR (item 4.11) (N=117)*

In item 4.11 the respondents had to indicate who they received training from about the use of the QCPR (see Table 4.28). In this item, more than one response could be given. The high response rate indicates that more than one source contributed to training of respondents. This question allowed multiple responses and 136 responses were received.

Table 4.28 Respondents’ indication from whom they received training about QCPR

Q4.10 From whom did you receive training about QCPR?	Responses	%
Super user	63	53.8
Informatics coordinator	48	41.0
Educator	9	7.6
Preceptor	8	6.8
Nurse manager	5	4.2
Others	2	1.7
Clinical information management system	1	0.8

Of the responses, 53.8% (n=63) indicated that they received training about QCPR from the super user; 48 (41.0%) said the informatics coordinator provided them with such training. The remaining respondents indicated the following sources for their QCPR training: educators 7.6% (n=9), preceptors 6.8% (n=8), nurse managers 4.2% (n=5), others 1.7% (n=2), and the clinical information management system 0.8% (n=1).

Simonson (2005:7) states that if the vision of a company “is to have the best workforce in the industry and the leaders disregard employee opinions, hire inappropriate

candidates and spend little in the way of employee training and education, it sends a message that the vision is not really worth the paper on which it is written". From the results given regarding item 4.11 it is clear that suitably trained individuals were appointed in the hospital to train and support the users of the QCPR as the respondents mostly learnt about the QCPR from the most educated computer specialists in the operation thereof, namely the super users and the Informatics Coordinators.

4.2.4.12 Respondents' information on operating and maintaining laptops used for QCPR (item 4.12) (N=116)

In item 4.12 respondents were required to indicate whether they received information on operating and maintaining the laptop computer used for the QCPR. Only one respondent did not answer the question. Table 4.29 shows the results.

Table 4.29 Respondents' indication whether information received on operating and maintaining the laptop used for QCPR? (N=116)

Q4.11 Did you receive any information on operating and maintaining the laptop used for the QCPR System?	n	%
Yes	100	86.2
No	16	13.8
Total	116	100

Of the respondents, 86.2% (n=100) indicated they did receive information on operating and maintaining of the laptop used for QCPR while 13.8% (n=16) indicated that they did not receive any information.

The above finding is consistent with the information in item 4.10 where the super user and informatics coordinator provided information on the operating of the laptop computer used for the recording for patient data. Ariza, Binns and Christoffel (2004:418) found participants in their survey to assess computer capabilities to explore hardware types, software programs, Internet connectivity and data transmission. Ariza et al (2004:418) also investigated the participants' views on privacy and security, as well as receptivity to future electronic data collection approaches. The participants used the computers that were available to them, namely 45% used stand-alone desktop computers, 40% had networked desktop computers, and approximately 15% used

laptops and minicomputers. A variety of software packages were used. Ariza et al (2004:418) found that merely expanding the use of computers in patient care constituted insufficient staff training.

4.2.4.13 Respondents' information on maintaining patient confidentiality in QCPR (item 4.13) (N=116)

In item 4.13 respondents had to indicate whether they received information on how to maintain patient confidentiality. One respondent refrained from answering this question. Table 4.30 shows the results.

Table 4.30 Respondents' indications of information provided on maintaining confidentiality in QCPR (N=116)

Q4.12 Did you receive any information on how to maintain patient confidentiality in QCPR?	n	%
Yes	111	95.7
No	5	4.3
Total	116	100

Of the respondents, 95.7% (n=111) indicated that they did receive information on how to maintain patient confidentiality in QCPR, while only 4.3% (n=5) indicated they did not receive any information in that regard.

In a study in Italy, Mole, Fox and Napolitano (2006:550) found that protecting the confidentiality of personal, anonymous data as part of electronic patient files was breached by nearly 50% of the participants. Mole et al (2006:550) maintain that it is of paramount importance to keep all patient information strictly confidential and a breach in the confidentiality of any patient database would have widespread repercussions on public trust. In addition, Jackson and Lim (2011:58) indicated that of their participants, 34.7% did not secure their computers after use, and 53.4% did not follow confidentiality guidelines. Jackson and Lim (2011:58) recommend improvement in education so that knowledge is shared about the importance and practice of confidential data handling. This may be delivered through workshops during induction programmes or as part of European Computer Driving License modules.

4.2.5 Section E: Ability to change

Section E examined the respondents' ability to change to the QCPR. Ability to change was indicated by personal ability to use QCPR, views on the use of QCPR system, support received during the use of QCPR, practice, simulation, laboratory use, feeling competent, and follow up.

Ability is the fourth element of the ADKAR model and "represents the demonstrated capability to implement the change and achieve the desired performance level" (Hiatt 2006:31).

4.2.5.1 Respondents' ability to use QCPR after training session (item 5.1) (N=117)

Item 5.1 examined whether the respondents were able to use the QCPR after their training (see Table 4.31).

Table 4.31 Respondents' indication of their ability to use QCPR after attending the training session (N=117)

Q5.1 After attending the training session did you think you had the ability to use the QCPR system?	n	%
Yes	103	88.0
No	14	12.0
Total	117	100

Of the respondents, 88.0% (n=103) indicated that they had the ability to use the QCPR after attending the training session, while 12.0% (n=14) indicated that they did not have the ability.

Campbell (2008:23) states that letting go of a person's old identity and habits is not easy because it means letting go of the world as he or she knows it and the security, self-identity, and self-efficacy that come with it. Therefore, mental blocks or psychological blocks may arise which may impact on the use of a computerised patient record system. If this is not managed well, all efforts to change will fail (Campbell 2008:23).

4.2.5.2 Respondents' reasons for inability to use QCPR after training session (item 5.2) (N=14)

Item 5.2 determined the respondents' reasons for not being able to use the QCPR system after training. The 14 respondents who answered "NO" to item 5.1 gave more than one option in answering the question, thus leading to a total of 22 responses to item 5.2. The results are shown in Table 4.32.

Table 4.32 Respondents' reasons for their inability to use QCPR after training (N=14)

Q5.2 If your answer is NO, please state the reasons as indicated below :	Responses	%
Did not receive adequate training	6	42.8
No computer skills	4	28.5
Fear of failure	4	28.5
Time constraints	4	28.5
Stress	4	28.5

Of the responses, 42.8% (n=6) indicated inadequate training as the reason for their inability to use the QCPR after the training session; 28.5% (n=4) indicated that they had no computer skills; 28.5% (n=4) indicated fear of failure; 28.5% (n=4) indicated time constraints, and 28.5% (n=4) indicated stress as reasons for their inability to use the QCPR system after being trained.

Estabrooks, O'Leary, Ricker, and Humphrey (2003:2) found that nurses lagged behind physicians in their use of the Internet and technology to access health care resources. Possible explanations for this discrepancy included financial, educational, and/or power differences between the two professions. According to Estabrooks et al (2003:2), the structure of work could be a factor in the differences between the two, as physicians tend to be more autonomous, have private office space with computer access, and can schedule their time to conduct research on the Internet. Contrary to this, nurses have less autonomy, have to share computers at a central nursing station, and cannot schedule research time in advance as they must attend to patient care needs when required.

4.2.5.3 Respondents' views on changing to the QCPR (item 5.3)

In item 5.3 the respondents' views regarding the change to the QCPR were required. Table 4.33 reflects these views. In this item, respondents could mark more than one possible response and 169 responses were obtained. This high response rate shows that change to the QCPR is regarded as having a wide range of positive attributes.

Table 4.33 Respondents' views on changing to the QCPR

Q5.3 Do you see the change to QCPR as:	Responses	%
Technology or system change	77	65.8
A process of change	55	47.0
Management change	16	13.6
A change in problem-solving skills	15	12.8
A change in job roles	6	5.1

Of the responses, 77 (65.8%) indicated that the change to QCPR was a technology or system change; 55 (47.0%) regarded it as a process of change; 13.6% (n=16) indicated that it was a management change; 12.8% (n=15) regarded it as a change in problem-solving skills, and 5.1% (n=6) regarded it as a change in job roles.

Maddock (2002:34) found that nurses view changing to the computerised patient record systems in a positive manner, as it provides better information and the improvement of communication among the multidisciplinary team. This should reduce patients' concerns and increase their confidence in the care that they are being given, and consequently increase their trust and confidence in the healthcare system. This, in turn, should improve their satisfaction with the service received.

4.2.5.4 Respondents' views on adequate time frame to train staff in the use of QCPR (item 5.4) (N=116)

Table 4.34 reflects the views of respondents of the time frame adequate for training staff to master the QCPR. One respondent did not answer this question.

Table 4.34 Respondents' views on the time frame adequate for training in QCPR (N=116)

Q5.4 What time frame would you say is adequate time to train staff how to use QCPR?	n	%
0-11 hours	14	12.1
1-2 days	44	37.9
3-4 days	26	22.4
5-6 days	10	8.6
7 days and more	22	19.0
Total	116	100

Of the respondents, 37.9% (n=44) indicated that 1-2 days would be adequate to train staff on how to use the QCPR; 22.4% (n=26) indicated 3-4 days; 8.6% (n=10) indicated 5-6 days, and 19.0% (n=22) stated that 7 days and more would be required to do so. At the same time, however, 12.1% (n=14) indicated 0-11 hours as adequate time to train staff on how to use QCPR.

Hiatt (2006:35) points out that not all people acquire the needed skills in the same time frame. Although people may have the knowledge and the potential to develop, the change could fail if they are not given adequate time to develop the required skills.

4.2.5.5 Respondents' views on persons providing the most support during the ability phase to change (item 5.5) (N=117)

Item 5.5 examined the respondents' perceptions of who was the most supportive during the change to the QCPR (see Table 4.35). The respondents could mark more than one item and 177 responses were received.

Table 4.35 Respondents' indication of persons who provided them with the most support during the ability phase of change to QCPR

Q5.5 Which of the following persons provided the most support?	Responses	%
Super user	66	56.4
Peers	36	30.7
Informatics coordinator	29	24.7
Preceptor	16	13.6
Nurse manager	16	13.6
Team leader	8	6.8
Director: Clinical Nursing	4	3.4
Clinical resource nurse	2	1.7

Of the responses, 56.4% (n=66) indicated that they received the most support from the super user; 30.7% (n=36) indicated their peers; 24.7% (n=29) indicated the informatics coordinator; 13.6% (n=16) each indicated the preceptor and nurse managers; 6.8% (n=8) indicated the team leader; 3.4% (n=4) the director of clinical nursing, and 1.7% (n=2) indicated the clinical resource nurse as the least supportive.

The responses indicated that most of the respondents were given support by several sources, but the super users were the most supportive. McNeive (2009:136) found that nurses respond more favourably to their nursing peer group support and teaching.

4.2.5.6 Respondents' views on the role model identified in changing to QCPR (item 5.6) (N=117)

Item 5.6 examined the respondents' views on the role model that they identified in the process of changing to the QCPR system (see Table 4.36). A total of 136 responses were obtained from 117 respondents.

Table 4.36 Respondents' indication of the role model in the change to QCPR

Q5.6 Who would you identify as a role model in this change to QCPR?	Responses	%
Team leader	2	1.7
Peers	12	10.2
Clinical resource nurse	6	5.1
Super user	52	44.4
Preceptor	5	4.2
Informatics coordinator	39	33.3
Nurse manager	15	12.8
Director: Clinical Nursing	3	2.5
Others	1	0.8
QCPR coordinator	1	0.8

Of the responses, 44.4% (n=52) indicated the super user as their role model in the process of change to QCPR; 33.3% (n=39) indicated the informatics coordinator; 12.8% (n=15) indicated their nurse manager; 10.2% (n=12) indicated their peers; 5.1% (n=6) indicated the clinical resource nurse; 4.2% (n=5) listed the preceptor; 2.5% (n=3) indicated the director of clinical nursing; 1.7% (n=2) indicated the team leader, and 0.8% (n=1) each listed others (but did not specify) and the QCPR coordinator.

According to McNeive (2009:136), super users play a vital role in the everyday problem solving, issue reporting and day-to-day optimising of clinical applications. Nurses have been found to respond more favourably to nurse support and teaching. The super user has a better understanding of the enormous change process associated with the use of the new technology and that creates a bond with the clinical staff.

4.2.5.7 Respondents' availability of computer laboratory for learning about QCPR (item 5.7) (N=116)

Item 5.7 examined the availability of a computer simulation laboratory in which the respondents could practise the use of the QCPR (see Table 4.37). One respondent did not answer this question.

Table 4.37 Respondents' availability of a computer laboratory in which QCPR skills can be developed (N=116)

Q5.7 Does the hospital have a computer laboratory in which QCPR skills can be learned?	n	%
Yes	93	80.2
No	23	19.8
Total	116	100

Of the respondents, 80.2% (n=93) indicated that there was a computer laboratory in the hospital where they could learn and practise QCPR skills whereas 19.8% (n=23) were unaware that there was a computer laboratory at the hospital.

Hiatt (2006:76) emphasises that you “can’t over-communicate”. Hiatt adds further that managers should find more effective ways to reach their audiences; for example, through the application of screen saver messages. In a pre-test – post-test study Kim, Graesser, Jackson, Olney and Chipman (2005: online) found that all the respondents gained by attending interactive simulations in the presence of a tutor.

4.2.5.8 Respondents' knowledge of the location of the computer laboratory for learning QCPR (item 5.8) (N=100)

Table 4.38 presents the respondents' answers as to where the computer simulation laboratory is situated. Only 100 respondents answered this question which could indicate that not all the respondents were aware that there is, indeed, a well-equipped computer simulation laboratory available to practise the use of the QCPR safely.

Table 4.38 Respondents' indication of where the laboratory is situated (N=100)

Q5.8 If YES, where is this computer laboratory situated?	n	%
At the hospital	97	97.0
Elsewhere	3	3.0
Total	100	100

Of the respondents, 97.0% (n=97) indicated that the laboratory for learning QCPR is at the hospital and 3.0% (n=3) indicated that it was situated elsewhere.

Watanabe, Okada and Yamamoto (2011:35) describe the Electronic Patient Record (EPR) Laboratory as “a computer-based self-learning system” developed for people to acquire practical skills and knowledge required to deal with electronic patient records. The system is designed to supplement conventional lectures on health information systems given as a supplement to training nurses in a safe environment. Using the laboratory, nurses may learn not only about operations of electronic patient records systems, but also about the subjects connected with patient information handling, including privacy, security and health information ethics, due to the highly engaging nature of these subjects.

4.2.5.9 Respondents' access to a computer laboratory (item 5.9) (N=114)

Item 5.9 examined the respondents' accessibility to the computer skills laboratory where QCPR can be learned and practised safely. Three of the respondents refrained from answering this question. Table 4.39 reflects the responses.

Table 4.39 Respondents' indication of access to a computer laboratory (n=114)

Q5.9 Do you have access to the computer laboratory?	n	%
Yes, under supervision	35	30.8
Yes, and I don't need supervision	17	14.9
No, I don't have access	45	39.4
Don't know	17	14.9
Total	114	100

Of the respondents, 39.4% (n=45) indicated that they did not have access to the laboratory; 30.8% (n=35) indicated that they had access to the laboratory under supervision; 14.9% (n=17) indicated that they did not need supervision while in the laboratory, and 14.9% (n=17) indicated that they did not know whether they had access to the computer skills laboratory.

Hiatt (2006:121) states that supervisors have a variety of tools at their disposal to oversee the educational task during change.

**4.2.5.10 Respondents' accompaniment to computer laboratory (item 5.10)
(N=109)**

Table 4.40 indicates the respondents' responses to who accompanied them to the computer laboratory to safely practise the use of the QCPR. Only 109 respondents answered this question.

Table 4.40 Respondents' accompaniment to the computer laboratory (N=109)

Q10 Who accompanied you to the computer laboratory?	n	%
Informatics coordinator	44	40.4
Super user	38	34.8
Others	17	15.6
Nurse educator	6	5.5
Clinical preceptor	3	2.8
QCPR coordinator	1	0.9
Total	109	100

Of the respondents, 40.4% (n=44) indicated that the informatics coordinator accompanied them to the computer skills laboratory; 34.8% (n=38) indicated the super user; 15.6% (n=17) indicated others (no specification); 5.5% (n=6) indicated nurse educators; 2.8% (n=3) indicated the clinical preceptor, and 0.9% (n=1) indicated the QCPR coordinator.

One-to-one coaching is needed even with the most effective training programs. Individuals learn at a different pace and one-to-one coaching allows the trainer to support the staff member in a better way (Hiatt 2006:108). Learning from peers can be very powerful because employees identify with and can relate to the experience of their fellow workers. Super users have their own forum for sharing and organising forums for employees who are new to the implementation (Hiatt 2006:110).

4.2.5.11 Respondents' frequency of attending computer laboratory sessions to learn about QCPR (item 5.11) (N=75)

Item 5.11 examined how often the respondents attended the computer skills laboratory (see Table 4.41). Only 75 responses were obtained to this item.

Table 4.41 Respondents' frequency of attending computer laboratory sessions to learn about QCPR (N=75)

Q5.11 How often do you attend computer laboratory sessions to learn about QCPR?	n	%
Less than 1 hour per week	28	37.3
1-2 hours per week	20	26.7
3-4 hours per week	2	2.6
5-6 hours per week	2	2.6
7-8 hours per week	2	2.6
More than 8 hours per week	4	5.4
I can use the simulation laboratory as much as I want to	16	21.4
Learnt during general nursing orientation (GNO)	1	1.4
Total	75	100

Of the responses, 37.3% (n=28) indicated that they spent less than one hour per week in the computer laboratory to learn about QCPR; 26.7% (n=20) indicated they spent 1-2 hours per week in the laboratory; 21.4% (n=16) indicated that they could use the simulation laboratory as often as they wanted, and 5.4% (n=4) attended the computer laboratory more than 8 hours per week. From the remaining responses, 2.6% (n=2) each indicated attending the simulation laboratory in each of the periods 3-4, 5-6 and 7-8 hours per week. Only 1.4% (n=1) indicated learning about the QCPR during general nursing orientation.

Ackland (2005:15) refers to e-learning as “any training performed by electronic media”. The use of the technology can allow individuals to work together regardless of their geographic location. The researcher observed in the hospital under study that staff has access to the QCPR system in the clinical area they are assigned to after registration as a member. They also have access to the QCPR demonstration model and could, with the support of the super user, be trained in the clinical area to which they are assigned.

4.2.5.12 Respondents' opportunity during simulation sessions to practise skills necessary to operate QCPR (item 5.12) (N=112)

Item 5.12 examined whether the respondents were given the opportunity to practise the skills necessary to operate the QCPR. Only 112 respondents answered this question (see Table 4.42).

Table 4.42 Respondents' opportunities to practise the skills needed to operate QCPR (N=112)

Q5.12 During the simulation sessions, were you given the opportunity to practice the skills necessary to operate QCPR?	n	%
Yes	107	95.5
No	5	4.5
Total	112	100

Of the respondents who answered this question, 95.5% (n=107) indicated that they were given the opportunity during the simulation sessions to practise the necessary skills to operate the QCPR while 4.5% (n=5) indicated that they were not given the opportunity to practice.

In a study on the effect of the virtual laboratory on students' achievement and attitude in chemistry, Cengiz (2010:37) found that simulation overcame the possible dangers that could be seen in the real situations; for example, a dangerous experiment for human health is prepared in a computer laboratory, so that students can see the experiments, design and perform the experiment on a computer, and observe the result without any harm being done. Other than performing dangerous, difficult or impossible experiments, simulations have advantages from a time, security, cost and motivational point of view Cengiz (2010:37-53).

4.2.5.13 Availability of manual or written procedures during practising QCPR (item 5.13) (N=110)

Item 5.13 examined the availability of manual or written procedures during practising the QCPR. Seven of the respondents did not answer this question. Table 4.43 reflects the respondents' answers.

Table 4.43 Respondents' indication of whether they had a manual or written procedures to follow when they practised QCPR during the simulation sessions (N=110)

Q5.13 During the simulation sessions, did you have a manual or written procedure to follow to practice the QCPR System?	n	%
Yes	87	79.1
No	23	20.9
Total	110	100

Of the respondents, 79.1% (n=87) indicated they had a manual or written procedures to follow when they practised QCPR during the simulation sessions while 20.9% (n=23) indicated that they did not.

Computer-based training could be expensive to develop, but there are books available for purchase. Ackland (2005:18) points out that the best training is useless if the training material is poor. Sometimes there is too much focus on the technology used for e-learning and the content of the training itself is neglected (Ackland 2005:18).

4.2.5.14 Demonstration of the QCPR use by the supervisor (item 5.14) (N=114)

Item 5.14 examined whether the supervisor demonstrated QCPR use to the respondents (see Table 4.44). Three respondents did not answer this question.

Table 4.44 Supervisor demonstrated the skills before giving opportunity to practise QCPR (N=114)

Q5.14 Did the supervisor (e.g. Informatics Coordinator) demonstrate skills before giving you the opportunity to practise QCPR?	n	%
Yes	106	93.0
No	8	7.0
Total	114	100

Of the respondents, 93.0% (n=106) indicated that the supervisor demonstrated the skills before giving them an opportunity to practise QCPR while 7.0% (n=8) indicated that the supervisor did not demonstrate the skills.

Employees need to know why they are learning these skills otherwise they lack motivation and concentration. The objectives of the training and how to do it should be clearly communicated and feedback should be given in regard to whether this is seen as useful (Ackland 2005:10).

4.2.5.15 Feedback provided after simulation sessions (item 5.15) (N=113)

In item 5.15 the respondents had to indicate whether they were given feedback on their performance after the simulation sessions in the computer laboratory (see Table 4.45). Four respondents did not respond to this item.

Table 4.45 Feedback received on the respondents' performance after simulation sessions (n=113)

Q5.15 After simulation sessions, did you receive feedback on your performance?	n	%
Yes	64	56.6
No	49	43.4
Total	113	100

Of the 113 respondents who answered this question, 56.6% (n=64) indicated that they received feedback on their performance after the simulation sessions while 43.4% (n=49) indicated that they did not receive feedback.

Tests that are built into the program allow the user of the laboratory to view where their strengths and weaknesses lie before they apply them in real situations (Hall, Strangman & Meyer 2011: online).

4.2.5.16 Respondents' indication of who provided feedback after simulation sessions (item 5.16) (N=64)

Table 4.46 indicates who provided the feedback to the 64 respondents who did receive feedback after the simulation sessions.

Table 4.46 Respondents' indication who provided feedback after simulation sessions (N=64)

Q5.16 By whom was the feedback given?	Responses	%
Informatics coordinator	35	54.6
Super user	34	53.1
Others	11	17.1
Peers	5	7.8
Nurse educator	4	6.3
Preceptor	2	3.1
Nurse manager	1	1.5

Of the responses, 54.6% (n=35) indicated that the informatics coordinator provided feedback after simulation sessions; 53.1% (n=34) indicated the super user; 7.8% (n=5) indicate their peers; 6.25% (n=4) indicated the nurse educators; 3.1% (n=2) indicated preceptors; 1.5% (n=1) indicated the nurse manager, and 17.1% (n=11) indicated "others" did so.

Campbell (2008:29) emphasises the importance of engaging in continuous dialogue with those who must implement the change, because pockets of resistance might emerge if trust and commitment is not addressed. Hiatt (2006:121) states that the best way to obtain results for implementing change is developing tactics such as celebrations and recognition, rewards, feedback from and to employees, audits, and performance measurement and accountability systems.

4.2.5.17 Respondents' frequency of practising QCPR skills before being found proficient (item 5.17) (N=115)

Table 4.47 indicates how frequently the respondents had to practise before they were found competent to use the QCPR in the clinical situation (see Table 4.47). Two respondents did not answer this item.

Table 4.47 Respondents' indication of the number of times they had to practise QCPR before being found to be proficient (N=115)

Q5.17 How many times did you have to practise QCPR before you were found proficient?	n	%
Once	24	20.9
Twice	14	12.1
More than twice	77	67.0
Total	115	100

Of the respondents, 67.0% (n=77) indicated that they had to practise QCPR more than twice before being found proficient, 20.9% (n=24) once and 12.1% (n=14) twice.

Age can have a significant impact on how people learn. Over the age of 20 it becomes more difficult to learn new things. People born after 1980 are likely to be more optimistic, willing to learn and technology literate. Those born between 1961 and 1980 dislike close supervision and need feedback and flexibility. However, experience can often compensate and the concrete experience starts to play a part (Ackland 2005:10).

4.2.5.18 Contribution of simulation to the application of learned skills and clinical practice (item 5.18) (N=113)

Item 5.18 examined whether the respondents viewed that the simulation contributed to their skills of the application of the QCPR in clinical practice. The responses are reflected in Table 4.48. Four respondents did not respond to this item.

Table 4.48 Respondents' indication of whether simulation contributed to the application of skills in the clinical practice (N=113)

Q5.18 In your opinion, did simulation contribute to the application of skills in clinical practice?	n	%
Yes	107	94.7
No	6	5.3
Total	113	100

Of the respondents, 94.7% (n=107) indicated that simulation contributed to the application of skills in clinical practice, and 5.3% (n=6) indicated that simulation did not contribute to the application of skills in clinical practice.

Yollin (2012: online) states that best-trained nurses and allied healthcare staff deliver safe, effective patient-centred care. Yollin adds further that continuous training seminars contribute to standardised care based on hands-on experience. Hiatt (2006:118) agrees that “hands on” exercise during training assists individuals in the process of developing abilities.

**4.2.5.19 Respondents' perceptions of benefit of simulation sessions (item 5.19)
(N=117)**

Table 4.49 reflects the respondents' personal views on whether they benefited from attending the simulation sessions conducted in the computer laboratory. The respondents could select more than one item and 151 responses were received.

**Table 4.49 Respondents' opinion on what simulation sessions meant to them
(N=117)**

Q5.19 In your own opinion, what did simulation mean to you?	Responses	%
It gave me confidence to use the QCPR	67	57.3
It helped me to apply skills to the expectations in the clinical setting	46	39.3
I could experiment in a safe environment	19	16.2
I had no opportunity to practice	8	6.8
There was no feedback given	5	4.3
Simulated procedures in the laboratory are not the same as in practice	4	3.4
Simulation was not helpful at all	1	0.8
Nurse educators showed no clinical practice knowledge	1	0.8

Of the responses, 57.3% (n=67) that attending simulation sessions gave them confidence to use QCPR; 39.3% (n=46) indicated simulation helpful in applying skills; 16.2% (n=19) indicated they could experiment in a safe environment; 6.8% (n=8) indicated that they had no opportunity to practise, and 4.4% (n=5) indicated that no feedback was given. There were further negative responses of 3.5% (n=4) for “simulated procedures in the laboratory are not the same as in practice”, and 0.8%

(n=1) each for “simulation was not helpful” and “nurse educators showed no clinical practice knowledge”.

Nursing is a profession where training is more important than in most other professions, because if a nurse makes a mistake, lives can be in jeopardy. More mature nurses have not learned how to use information technology whilst the younger generation have grown up with technology (Ackland 2005:6).

**4.2.5.20 Respondents' feeling competent after laboratory sessions (item 5.20)
(N=107)**

Item 5.20 examined whether the respondents felt competent after participating in the laboratory sessions (see Table 4.50). Only 107 respondents answered this question.

Table 4.50 Respondents' indication of feeling competent after laboratory session (N=107)

Q5.20 Did you feel competent after your laboratory session?	n	%
Yes	80	74.8
No	27	25.2
Total	107	100

Of the respondents, 74.8% (n=80) indicated that they felt competent after the laboratory sessions while 25.2% (n=27) did not feel competent after the laboratory session.

The physical way in which people learn is important and using visualisation and role plays can help people commit things to memory (Ackland 2005:11). According to Hiatt (2006:118), hands-on exercises during training assist employees in developing the abilities needed.

**4.2.5.21 Preceptors' techniques of assisting during QCPR use in clinical settings
(item 5.21) (N=117)**

Item 5.21 determined what techniques the preceptors used to assist the respondents during the implementation of the QCPR in the clinical setting. This question allowed multiple responses and 141 responses were received (see Table 4.51).

Table 4.51 Respondents' views on preceptors' techniques to assist them in using QCPR in clinical settings (N=117)

Q5.21 Which of the following techniques did your preceptor use to assist you in using QCPR in the clinical setting	Responses	%
On-the-spot teaching	61	52.1
On-the-job experiences	30	25.6
Practical sessions	41	35.0
Learning opportunities of rare/scarce cases	5	4.3
Others	4	3.4

Of the responses, 52.1% (n=61) indicated that on-the-spot teaching was mostly used, 35.0% (n=41) indicated practical sessions; 25.6% (n=30) indicated on-the-job experiences; 4.3% (n=5) indicated learning opportunities of rare / scarce cases, and 3.4% (n=4) indicated 'others'.

Ongoing strategic training is very important therefore different models of training have been developed to assist staff with their training needs. The virtual model is more likely to be used. Firstly, it addresses an employees' responsibility to learn for him/herself. Secondly, the most effective learning takes place on the job and not in the classroom. Finally, the relationship between the manager and the employee is crucial for better job performance. Ackland (2005:17) supports the sharing of ideas and encourages peer support in an informal environment.

4.2.6 Section F: Reinforcement of change

Section F examined the respondents' process to reinforcement to sustain change to QCPR. Reinforcement of change includes most knowledgeable and supportive factors contributing to change, valuing suggestions and input to change, continuous information, factors contributing to influencing change, and environmental factors leading to change.

Reinforcement is the final element of the ADKAR model. It includes any action or event that strengthens or reinforces the change implemented by an organisation (Hiatt 2006:37).

4.2.6.1 Respondents' most knowledgeable individuals identified as reinforcers towards change to QCPR (item 6.1) (N=117)

This item examined the respondents' views on which knowledgeable person supported or reinforced the change to the QCPR (see Table 4.52). More than one response could be given to this question and 165 responses were obtained from all the respondents. This high level of responses indicated that the respondents were suitably supported by various individuals and that continuous reinforcement was provided by different members of the change management team.

Table 4.52 Respondents' views on the most knowledgeable person in the process of changing to QCPR (N=117)

Q6.1 Who was most knowledgeable person in the change to QCPR?	Responses	%
Informatics Coordinator	59	50.4
Super user	47	40.1
Nurse manager	27	23.0
Nurse educator	10	8.5
Director: Clinical Nursing	9	7.7
Peers	8	6.8
Clinical resource nurse	3	2.5
Team leader	2	1.7

Of the responses, 50.4% (n=59) indicated the Informatics Coordinator as the most knowledgeable in the process of changing to QCPR; 40.1% (n=47) indicated the super user; 23.0% (n=27) the nurse manager; 8.5% (n=10) indicated the nurse educator; 7.7% (n=9) indicated the Director Clinical Nursing; 6.8% (n=8) indicated peers; 2.5% (n=3) indicated the clinical resource nurse, and 1.7% (n=2) stated that the team leader was the most knowledgeable in the process of changing to QCPR.

According to Kelly (2008:140), career opportunities in computer science and information technologies are available in nursing. The informatics coordinator is the most knowledgeable support to the nursing staff. McNeive (2009:136) states that clinicians who link the information technology with the patient care world are the super users and are the support for the staff in clinical areas. According to Lorenzi and Riley in

Mekanontchai (2009:72), it is not the lack of technical expertise of nurses or physicians, but rather the lack of leadership and management and therefore a strong leadership and management component is essential to transform the health system. There is no longer a situation of “nice to know”, but a “need to know”. Not every nurse needs to be an informatics specialist, but every nurse does need to be computer literate. Computer literacy means the knowledge and understanding of computers, combined with the ability to use them effectively.

As indicated in Table 4.52, the team leader and clinical resource nurse contributed little and were not regarded as knowledgeable reinforcers.

4.2.6.2 Respondents' most supportive individuals identified towards change to QCPR (item 6.2) (N=117)

Item 6.2 examined the respondents' most supportive person during the process of changing to the QCPR system (see Table 4.53). In this item, more than one response could be selected and 172 responses were received from 117 respondents.

Table 4.53 Respondents' views on who was most supportive in the process of changing to the QCPR system (N=117)

Q6.2 Who was most supportive in the change to QCPR?	Responses	%
Team leader	5	4.2
Peers	24	20.5
Clinical resource nurse	6	5.1
Super user	56	47.8
Informatics coordinator	39	33.3
Nurse manager	34	29.0
Director: Clinical Nursing	8	6.8

Of the responses, 47.8% (n=56) indicated that the super user was the most supportive during the change to the QCPR system; 33.3% (n=39) indicated the informatics coordinator; 29.0% (n=34) indicated the nurse managers; 20.5% (n=24) indicated their peers; 6.8% (n=8) indicated the director of clinical nursing, and 4.2% (n=5) stated that the team leader was most supportive.

McCarthy and Eastman (2010:36) found that the entire community of leaders worked together to bring about change. The success of teamwork leads to positive reinforcement. McCarthy and Eastman (2010:36) maintain that the “environmental context is the trump card in any implementer’s hand. It takes a lot of work to create a suitable environment, but it is an essential ingredient in being able to drive and sustain change.” McNeive (2009:137) states that the super user over the years serves as the first-line support in the department as the “go-to” person.

4.2.6.3 Phase in which the respondents felt most supported (item 6.3) (N=117)

Table 4.54 reflects the respondents’ views of the phase in which they felt most supported in the process of changing to the QCPR system. More than one response could be selected and 132 responses were received. All respondents answered this question.

Table 4.54 Respondents’ indication of the phase in which they felt most supported (N=117)

Q6.3 During which phase of the change process did you feel most supported?	Responses	%
Pre-change	4	3.4
Initial phase of change	37	31.6
During the first month	22	18.8
Continuous support	44	37.6
After each system update	25	21.3

Of the respondents, 37.6% (n=44) indicated that they felt continuous support during the process of change; 31.6% (n=37) felt more supported during the initial phase of change; 21.3% (n=25) indicated after each update; 18.8% (n=22) indicated that they felt more supported during the first month, and 3.4% (n=4) indicated prior to the change process.

According to Hiatt (2006:117), performance monitoring is essential to demonstrate progress against the desired outcome of the change. The day-to-day involvement of the supervisors creates a positive learning environment.

4.2.6.4 Respondents' experience of input and suggestions being valued by superiors (item 6.4) (N=113)

Item 6.4 examined the respondent's views on whether their superiors valued their input and suggestions (see Table 4.55). Four respondents did not answer this question.

Table 4.55 Respondents' views of whether they felt their superiors valued their input and suggestions to improve QCPR (N=113)

Q6.4 Do you feel that your superiors value your input and suggestions to improve QCPR?	n	%
Yes	100	88.5
No	13	11.5
Total	113	100

Of the respondents, 88.5% (n=100) indicated they felt their superiors valued their input and suggestions to improve QCPR and 11.5% (n=13) indicated that felt their input and suggestions were not valued.

Kotter and Cohen (2002:180) emphasise that a guiding team should be developed for guiding processes and skills related to change. This team must be regarded as credible and supportive during change, because trust leads to believability. When employees feel that their contribution is recognised, they are likely to be more motivated to take action.

4.2.6.5 Respondents' indications of individuals who most valued input and suggestions (item 6.5) (N=100)

In item 6.5 the 100 respondents from item 6.4 who felt that their input was valued, had to indicate who they viewed as the person or persons who most valued their input and suggestions (see Table 4.56). More than one response could be selected and 132 responses were received.

Table 4.56 Respondents' indications of who valued their input and suggestions (N=100)

Q6.5 If your answer is YES, please indicate by whom	Responses	%
Super user	41	41.0
Clinical resource nurse	1	1.0
Educator	4	4.0
Assistant nurse manager	14	14.0
Informatics coordinator	23	23.0
Nurse manager	47	47.0
Other, please state	1	1.0
Associate Executive Director	1	1.0

Of the responses, 47.0% (n=47) indicated that the nurse manager valued their input and suggestions most; 41.0% (n=41) indicated the super user; 23.0% (n=23) indicated the informatics coordinator; 14.0% (n=14) indicated the Assistant Nurse Manager, and 4.0% (n=4) indicated the educator. Of the respondents, 1.0% (n=1) each indicated the Associate Executive Director, the clinical resource nurse, and others.

Campbell (2008:24) states that during any period of change it is the direct manager that needs to deal with the emotions related to the uncertainties of change. These emotions include feelings of complacency, anger, frustration, false pride, pessimism, arrogance, cynicism and anxiety. Therefore the manager should replace the negative feelings positive, proactive feelings, including faith, trust, optimism, urgency, reality based pride, passion, excitement, hope and enthusiasm (Kotter & Cohen 2002:180).

4.2.6.6 Respondents' views on continuous information received about QCPR (item 6.6) (N=112)

In item 6.6 the respondents were asked about receiving continuous information about the QCPR (see Table 4.57).

Table 4.57 Respondents' views on receiving continuous information about QCPR (N=112)

Q6.6 Did you received any continuous information about QCPR?	n	%
Yes	107	95.5
No	5	4.5
Total	112	100

Of the respondents, 95.5% (n=107) indicated that they received continuous information about QCPR and 4.5% (n=5) indicated that they did not.

Scott (2007: online) found that recording of information after training significantly increased during the first month and significantly decreased during the next three months. Knowledge gained also significantly increased during the first month, and remained at that new level. A similar pattern was observed in the respondents' perceptions of standards for proper performance. Directly after the change process, the respondents were motivated to change their record-keeping practices, however this declined in time. The findings imply that in-service education programmes help employees to reach new levels of performance, but additional activities are necessary to help them maintain the newly acquired level. Several recommendations for ensuring maintenance of standards are discussed, including the need for collaboration between supervisors and educators, the advantages of a situational assessment and the need to establish how much knowledge has been retained before a decision is made to remedy performance deficits through more in-service education programmes.

4.2.6.7 Individuals who contributed most to supplying continuous information about QCPR (item 6.7) (N=107)

Item 6.7 determined who contributed most in supplying continuous information about the QCPR (see Table 4.58). More than one option could be selected in this question and 140 responses were received. This question was answered by the 107 respondents who indicated in item 6.6 that they received continuous information about QCPR.

Table 4.58 Respondents' views of continuous information on QCPR (N=107)

Q6.7 If your answer to the previous question was YES, please indicate by whom?	Responses	%
Super user	49	45.7
Informatics coordinator	47	43.9
Nurse manager	29	27.1
Information Systems and Informatics Division	5	4.6
Other	4	3.7
Clinical information management system	3	2.8
Educator	2	1.8
QCPR coordinator	1	0.9

Of the responses, 45.7% (n=49) indicated that the super user supplied the most information on a continuous basis; 43.9% (n=47) indicated the informatics coordinator ; 27.1% (n=29) indicated the nurse managers; 4.6% (n=5) indicated the information systems and informatics division; 3.7% (n=4) indicated others; 2.8% (n=3) indicated the clinical information management system; 1.8% (n=2) indicated the nurse educators, and 0.9% (n=1) indicated that the QCPR coordinator supplied them with information on a continuous basis.

McNeive (2009:137) states that super users are bedside nurses and realise the challenges of the day-to-day operation of the QCPR. Super users play a vital role in communicating problems to the informatics coordinator in solving issues that increase optimisation of clinical systems. According to McNeive (2009:37), a super user's work is never done. Super users can prepare staff and support them for upcoming changes in the system.

4.2.6.8 Factors contributing to the reinforcement of the use of the QCPR (item 6.8) (N=117)

In item 6.8, the respondents were asked to indicate the factors that reinforced the use of the QCPR (see Table 4.59). More than one option could be selected in this item and 311 responses were received, which is an indication that various factors were utilised to reinforce the use of the QCPR.

**Table 4.59 Respondents' indication of factors reinforcing the use of QCPR
(N=117)**

Q6.8 The reinforcement of the use of QCPR is established by :	Responses	%
E-mails	74	63.2
In-service training	64	54.7
Ward/Unit meeting	52	44.4
Demonstrations	35	29.9
Intranet	32	27.3
Internal memos	19	16.2
Frequently asked questions	11	9.4
Word of mouth	7	5.9
Demo models	6	5.1
Bulletin boards	4	3.4
Flyers	4	3.4
Newsletters	2	1.7
Posters	1	0.8

Of the responses, 63.2% (n=74) indicated that reinforcement was established by email; 54.7% (n=64) indicated through in-service training; 44.4% (n=52) indicated through ward/unit meetings; 29.9% (n=35) indicated demonstrations; 27.3% (n=32) indicated intranet; 16.2% (n=19) indicated internal memos; 9.4% (n=11) indicated frequently asked questions; 5.9% (n=7) indicated word of mouth; 5.1% (n=6) indicated demo models; 3.4 (n=4), respectively, indicated bulletin boards and flyers; 1.7% (n=2) newsletters and 0.8% (n=1) indicated posters.

From Table 4.59 it is evident that emails and in-service training were the most influential reinforces in the use of QCPR. This concurs with Coyne and Leeson's (2008:18) findings that the easiest way for people to overcome problems associated with change is to communicate with each other, but simply communicating is not enough. Since widespread adoption of change requires reciprocation, each person must be confident, and others will respond in kind. Common knowledge entails each person knowing the relevant information, but also knowing that others might also know that information. When common knowledge exists, people are confident that everyone involved shares some core information and expectations. Given its unique ability to reach many people at once, mass media like the intranet as a communication tool is an important means of creating common knowledge.

4.2.6.9 Respondents' perceptions of the adequacy of the environment in which the QCPR is operated (item 6.9) (N=116)

Item 6.9 examined the respondents' perceptions of the adequacy of the environment in which the QCPR was conducted. Of the 117 respondents, only one did not answer this question.

Table 4.60 Respondents' perceptions of adequacy of environment in which QCPR operated (N=116)

Q6.9 Do you perceive the environment in which QCPR is operated as adequate?	n	%
Yes	80	69.0
No	36	31.0
Total	116	100

Of the respondents, 69.0% (n=80) experienced the environment as adequate while 31.0% (n=36) regarded the environment as inadequate.

Garrets and Davis (2005: online) state that the environment in which the electronic patient records are operated is complex and sophisticated. Its foundation is a real-time transaction-processing database of clinical patient information. Garrets and Davis (2005:online) emphasise further that the electronic patient record is fed from ancillary systems (for example, laboratory, radiology, pharmacy departments) and displays clinical and administrative data, current results of tests and procedures to doctors, nurses and other authorised medical personnel, among other things. Pivotal to this environment is the maintenance of patient confidentiality and patient safety.

4.2.6.10 Factors negatively influencing the full use of the QCPR (item 6.10) (N=36)

Item 6.10 examined the perceptions of the factors that negatively influenced the full use of the QCPR by the 36 respondents who answered 'no' to the previous question. 62 responses were received.

Table 4.61 Respondents' perceptions of factors that negatively influence the full use of QCPR. (N=36)

Q6.10 If your answer is NO, please indicate which factors negatively influence the full use of the QCPR System?	Responses	%
System requirements, e.g. slow connection	36	100.0
Time constraints	11	30.5
Staff accountability-risk of loss of computer	6	16.6
Inadequate space in the clinical setting	4	11.1
Electronic equipment not available	3	8.3
Frequent system shutdown	1	2.7
Lack of collaboration between the healthcare workers	1	2.7

Of the 36 respondents, 100.0% (n=36) indicated system connections as being too slow; 30.5% (n=11) indicated time constraints; 16.6% (n=6) indicated staff accountability-risk of loss of computer; 11.1% (n=4) indicated inadequate space in the clinical setting; 8.3% (n=3) indicated electronic equipment not available, and 2.7% (n=1) each indicated frequent system shutdown and lack of collaboration between healthcare workers as factors that negatively influence the full use of the QCPR system.

Green (2012:1365) found that financial constraints could lead to people not using the full potential of computerised patient records (CPR). In a study in Saudi Arabia's Eastern Province, Bah, Alharti, El Mahalli, Jabali, Al-Qahtani and Al-Kahtani (2010:3) found that only 3 of the 19 Ministry of Health hospitals used the CPR despite the eight billion Saudi Riyal allocated for electronic patient information recording. It was also found that some functions in the CPR were underutilised and that restrictions of the internet contributed to the underutilisation.

4.3 CONCLUSION

This chapter discussed the data analysis and interpretation, and the results of the study. The findings were discussed according to the six sections of the questionnaire used for data collection, namely respondents' biographical data, awareness of change, desire to change, knowledge of change, ability to change, and reinforcement of change. Except for the biographical data, each section was discussed with reference to the literature related to the ADKAR model.

Chapter 5 concludes the study by discussing the conclusions and limitations of the study, and making recommendations for practice and further research.

CHAPTER 5

Conclusions, limitations and recommendations

5.1 INTRODUCTION

Chapter 4 discussed the data analysis and interpretation and presented the findings of the study. This chapter briefly discusses the conclusions and limitations of the study, and makes recommendations for practice and further research.

The objectives of this study were to:

- Identify the factors that have an effect on the acceptance of the current change from paper based patient records to the hospital information system (HIS) QCPR;
- Identify the importance of the direct supervisor as the voice and face of change.

This study should significantly contribute towards:

- Management awareness of factors influencing change in the selected health care facility;
- Creating awareness and knowledge of how the ADKAR Model of Change Management could be utilised to prevent resistance to any new change initiatives;
- Developing educational activities, and testing the ability of staff to implement the required changes in practice prior to formally implementing the change in the workplace.

In this chapter the main conclusions and the limitations of the study are discussed, and recommendations for practice and further research are presented.

5.2 CONCLUSIONS

Based on the findings of this study, the conclusions, as discussed below were reached in terms of the respondents' biographical data and the ADKAR Model of Change Management.

5.2.1 Respondents' biographical data

Most of the respondents (31.62%) were female and aged between 37 and 42 years. This finding is in line with the gender and age group data relevant to the hospital under study. The majority of the respondents also indicated that they were from the Philippines, which is congruent with the nationality of the majority of registered nurses, namely 69.24% working at the hospital under study, followed by Malaysians (9.40%) and South Africans (8.56%).

The specialty qualifications of respondents were mostly in the Medical Surgical Nursing area (47%), followed by 12.0% in ICU and 9.4% in Midwifery, while those with specialty qualifications in Paediatrics were 6%, in Neonatology 2.7%, and in Oncology 1.5%.

The majority of the respondents (22.2%) indicated that they had an average of nine years experience as registered nurses, and had been employed in the hospital under study for a period of between three to four years, with specialisation in medical/surgical nursing. Only 2.6% of the respondents indicated that they had less than 2 years of experience in their respective areas of specialisation.

Most of the respondents were in a Staff Nurse 2 position (56.3%), followed by Staff Nurse 1 positions (36.21%). Only 4.31% of the respondents were nurse managers.

Twelve percent of the respondents indicated that they were assigned as super users of the QCPR system.

5.2.2 Awareness of change

The majority of the respondents (88.5%) indicated that they were informed by their nurse manager about the change to the QCPR patient system, were supported by the

QCPR super users (32.6%) and that training sessions were the channels available to them to build awareness. This is in line with the literature, which indicates that training is normally the first to happen when change is required. The majority of the respondents (43.5%) indicated that they believed patients would benefit from changing from the paper-based system to the QCPR system because it would involve less paperwork, and therefore the assumption could be made that they would appear to have more time to spend with the patients. It was also encouraging to find that 78.6% of the respondents indicated that the reasons for change were clearly communicated to them. It was also found that the respondents regarded the Staff Nurse 2 category as having been most impacted by the change. These respondents are mostly bedside nurses who utilise the QCPR the most. In addition, 43.5% of respondents indicated that patients were impacted by the change because there was less paperwork, and 27.3% indicated it would improve continuity of care.

Based on the findings , it can also be deduced that 58.1% of the respondents believe that the QCPR super user played the most significant role during implementation of the QCPR system. 52.1% of the respondents also indicated that change to QCPR was particularly beneficial, as errors such as illegible handwriting would be prevented, whilst 43.5% of respondents were of the opinion that staff members learnt more skills as a result thereof.

5.2.3 Desire to change

The majority of the respondents (61.6%) indicated that a desire to change is a personal choice, and that is in line with the model of change used in this study. As in the case of awareness, the majority of the respondents (42.7%) indicated that the super user contributed to their personal decision to support and participate in implementing the QCPR system. Although the majority of the respondents (82.1%) indicated that they experienced change as positive, they also indicated that their desire to change was influenced by uncertainty. This finding is contradictory to the majority response (43.5%), which indicated an awareness that the patient would benefit because the QCPR system would help nurses to save time from paperwork, and that this would allow them to have more time to spend with their patients.

The majority of respondents (94.0%) indicated that they are always willing to change, compared to only 6.0% who stated that they were uncertain about committing themselves to change. In addition, 82.1% of the respondents were positive about their willingness to changing to the QCPR approach.

It is alarming to note that 95.2% of the respondents indicated that they felt negative about the change to the QCPR system because it would add to their workload, and 52.3% of the respondents indicated they had insufficient knowledge about informatics.

Nearly 70% of respondents indicated that that they regarded the QCPR system as a positive change from a paper-based system to a computer-based patient management system. In addition, 64.1% of the respondents reacted positively to the prospect of change because they regarded it as a new challenge.

The findings also indicated that the QCPR supervisor and peers contributed most towards the positive change to the QCPR system. However, a number of respondents also indicated their concern about how the uncertainty regarding the change process, and dealing with rumours about the process would influence their desire to change.

5.2.4 Knowledge to change

The majority of the respondents (84.6%) indicated that they were asked about their computer literacy. The findings indicated that the respondents applied their computer skills although they did not have any previous experience with a computerised patient documentation system, but indicated they were not asked to take part in a computer test.

A total of (91.9%) of the respondents indicated that they were asked about computer literacy during recruitment. In addition, 61.3% of the respondents indicated no prior experience of a computerised patient documentation system, and most 52.2% indicated 2-3 years of experience in using the QCPR system.

The majority of respondents indicated that they received prior information to implement the QCPR system. Nurse Managers seemed to have played a major role in providing

the most information, as 67.7% of respondents indicated that they received the most support from them.

Most of the respondents (91.4%) indicated that they received training in using the QCPR before implementing it, and 6.6% of the respondents stated that they received such training during the general nursing orientation process.

The majority of respondents (53.8%) indicated that the super user played a major role in providing the training they required and (41.0%) indicated the informatics coordinator. Most of the respondents (86.2%) also indicated that they received information about operating and maintaining the laptops used for the recording of patient information

The majority (95.7%) of respondents also indicated that they received information on how to maintain confidentiality in regard to the research process.

5.2.5 Ability to change

A large percentage of the respondents (88%) indicated that they had the ability to use the QCPR system following the training that they received, but a significant number of respondents also indicated that they were left with concerns, including inadequate training, not obtaining the required computer skills, fear of failure, time constraints and stress in operating the QCPR system. Changing to QCPR was viewed as a technology or system change by 65.8% of the respondents and as a process of change by 47% of the respondents.

Exposure to appropriate education relevant to the process of adjusting to the QCPR system was indicated by most of the respondents as 1-4 days. In this regard the super user (56.4%) and peers (30.7%) played the most significant role of the respondents' ability to change.

The most significant individuals to serve as role models in the process of changing to the QCPR system were indicated as the super users (44.4%) and informatics coordinators (33.3%). Significantly, it should be noted that only 80.2% of the respondents indicated that the hospital had a computer laboratory where QCPR skills could be developed, and only 30.8% of the respondents indicated that they were able to

use the computer laboratory. However, a large number of respondents (39.4%) indicated that no access to the laboratory was possible for them. Based on the responses received, it would also appear that the computer laboratory was underutilised, as 26.7% of the respondents indicated that they used the laboratory for 1-2 hours per week, mostly under supervision of the informatics coordinator and super user. A major number of respondents (95.5%) indicated that they had an opportunity to practice before applying the QCPR, and in 93% skills were demonstrated and simulated. In only 56.6% feedback was given after simulation by either the informatics coordinator (54.6%) or the super user (53.1%).

Sixty seven percent of the respondents indicated they had to practice the QCPR more than twice before they were found to be proficient. Simulation was found to be beneficial in 57.3% of the respondents before practising it by giving them confidence; (39.3%) indicated simulation helpful in applying skills; (16.2%) indicated they could experiment in a safe environment. Findings of the study indicated that, during the implementation of the QCPR system in the clinical setting preceptors use various techniques to assist the respondents. This included mainly on the spot teaching, as indicated by 52.1% of the respondents; on the job experiences by 25.6% and practical sessions, as indicated by 35.0% of the respondents.

5.2.6 Reinforcement of change

The majority of the respondents (50.4%) identified the Informatics Coordinator as being the most knowledgeable in the process of changing to QCPR, but the super user was identified by 47.8% of respondents as the most supportive staff member to continuously communicate and reinforce the change to the QCPR system.

Significantly, only 3.4% of respondents indicated that they felt that they were supported prior to changing to the QCPR system, while 37.6% of respondents indicated that they received continuous support in this regard. A large percentage of respondents (88.5%) indicated that they felt the superiors valued their input and suggestion to improve. The most supportive persons, as viewed by the respondents were the super users (47.8%) and the Informatics Coordinator (33.3%). The majority of respondents (95.54%) indicated that they received continuous information about the QCPR system predominantly from the super user (45.7%), the informatics coordinator (43.9%) and the

nurse manager (27.1%). This was done predominantly by means of e-mail responses or during in service training sessions and ward meetings.

Most of the respondents 80 (69.0%) indicated that they view the environment in which the QCPR is operated as adequate. Of the 36 respondents who view the environment as inadequate, 100.0% (n=36) indicated system connections as being too slow; 30.5% (n=11) indicated time constraints and 16.6% (n=6) indicated staff accountability-risk of loss of computer.

5.3 LIMITATIONS OF THE STUDY

The researcher identified the following limitations applicable to this study:

- The study was conducted in only one hospital in the Kingdom of Saudi Arabia;
- Of the 140 questionnaires handed out, only 117 were returned, and consequently only 117 respondents out of a potential of 635 were used as a sample;
- The consideration of the impact of change was linked to only one technology-related change in the selected hospital and not all the respondents were present during its initial implementation;
- The questionnaire was lengthy and time consuming, which might have influenced the response rate;
- It was not clearly indicated in the questionnaire whether only one or more than one response could be given to some of the questions, which could have been confusing for the respondents;
- The use of abbreviations such as PCT without explanation
- Inconsistency of the formatting of the questionnaire and language errors
- It must also be kept in mind that although the researcher was aware that none of the respondents had English as their first language and the questions were therefore presented in simple language, some of the questions might, nevertheless, have been misunderstood.

Consequently, although there is definite value in the findings of this study, it cannot be generalised without some required considerations.

5.4 RECOMMENDATIONS

Based on the findings of this study, the recommendations listed below, as guided by the ADKAR Model of Change Management are presented for consideration for implementation and for further research as applicable.

5.4.1 ADKAR Model of Change Management

A number of recommendations based on the ADKAR Model of Change Management are presented.

5.4.1.1 Awareness of change

Although 78.6% of the respondents indicated that the reasons for change were clearly communicated to them, it is disconcerting to note that 21.4% of respondents do not know the reasons for change. Consequently, the researcher recommends that in-service training sessions should be available to all employees, old and new to assess their understanding of the reasons for changing to a QCPR system.

The researcher recommends that the need for change should be communicated in an adequate timeframe to the direct supervisors to allow them to buy into the intended change process to support their staff in the change management process.

Rumours and uncertainty should be avoided by providing factual information during the awareness stage of change management. This again could be achieved through appropriate awareness campaigns. Eighteen percent of the respondents indicated that they received no prior information of the implementation of the QCPR system. It is recommended that all new employees should be provided with information about the QCPR system before commencing working in any ward or area in the hospital.

Significant attention should be given to informing staff members on where the computer laboratory is situated, what services it can provide and what the policies are regarding

its use. This can be done through the nursing shareware system, during orientation and by awareness campaigns.

5.4.1.2 *Desire to change*

Although desire to change is a personal choice, awareness and understanding of the need to change can create a desire to participate in the process of change. In this study 18% of the respondents were not feeling positive about the change. The potential negative effect of this on effective teamwork should be considered, and appropriate measures to address it should be implemented.

The researcher therefore recommends that the management team of the hospital should adopt a change management model and educate their management staff in regard to the basic principles of change management during their orientation period and on a regular basis. Suggestion boxes in which staff could submit comments regarding their fears, uncertainties and suggestions for change should be made available. Negative feelings expressed by staff members should also be addressed during the change management process.

The researcher is concerned that 52.3% of the respondents indicated that they had insufficient knowledge about informatics. The researcher therefore recommends that basic computer skills training should be provided to all nurses upon hiring.

5.4.1.3 *Knowledge of change*

The researcher recommends that the direct supervisors of personnel at the hospital under study should be the first to receive training in preparation for the challenge of change. That will enable them to identify any discrepancies, weaknesses and to deal with the change process effectively in real time. In addition, it should lead to a more selective approach to choosing super users with the right skills.

The researcher also recommends that computer literacy should be included in the recruitment process of employees, and that a basic computer literacy test should be done upon hiring to determine the new staff members' level of competence in the use of

computers, and to design computer literacy programs which could be presented on a regular basis.

Although only 4.3% of respondents did not receive any information on patient confidentiality, this figure is too high and management should investigate issues relevant to this deficiency.

5.4.1.4 Ability to change

The researcher recommends that there should be a clear time frame in which the required change could take place to evaluate staff members' ability of the change process in order to determine whether they have the ability to implement the required change in the required time frame.

Although 79.1% of respondents indicated that they had written procedures in regard to the QCPR system, 20.9% of respondents indicated that they do not have such documents. This should be investigated and again reinforced by making staff aware of the information and where to obtain relevant information.

5.4.1.5 Reinforcement of change

The researcher recommends that the direct supervisor should be able and committed to reinforce change in a positive way, and should be able to identify the limitations of staff members in order to initiate an action plan to support the staff to reach the desired outcomes. System requirements should be a priority, as this contributes towards eliminating constraints that could delay patient information dissemination.

5.4.2 Further research

The researcher recommends that further research be conducted based on a **qualitative** approach in which individual interviews and focus group discussions may reflect the perceptions of the “*people's side of change*” and in which richer data could be explored in regard to the topic of this study.

A change management model could be developed for the group of hospitals under which the hospital used in this study resorts. This could improve perceptions of change, thereby being an advantage for a unified model in which change could be implemented faster. This may have implications for improved patient care and cost-effective health care provision.

The role of the direct supervisor should be researched further with the emphasis on different leadership styles and emotional intelligence.

5.5 FINAL CONCLUSION

This chapter concludes the study. The findings of this study showed that the respondents experienced change to the QCPR system in a positive manner. Although some limitations were found, the benefits of the process of change overshadow the limitations.

The final conclusion of this study is that the ADKAR model of change management is an ideal change management model due to its simplicity, which could be used in many settings, whether personal, in hospitals or any other institution, where change is required.

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Appendix A: Ethics Approval: Health Research Committee of the University of Stellenbosch



20 October 2011

MAILED

Mrs C.G.M Brand
Department of Nursing
2nd Floor
Teaching Block

Dear Mrs Brand

Factors influencing change management in a selected hospital in Saudi Arabia.

ETHICS REFERENCE NO: N11/07/218

RE : APPROVED

It is a pleasure to inform you that a review panel of the Health Research Ethics Committee has approved the above-mentioned project on 19 October 2011, including the ethical aspects involved, for a period of one year from this date.

This project is therefore now registered and you can proceed with the work. Please quote the above-mentioned project number in ALL future correspondence. You may start with the project. Notwithstanding this approval, the Committee can request that work on this project be halted temporarily in anticipation of more information that they might deem necessary.

Please note a template of the progress report is obtainable on www.sun.ac.za/rds and should be submitted to the Committee before the year has expired. The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly and subjected to an external audit.

Translations of the consent document in the languages applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372
Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

Please note that for research at primary or secondary healthcare facility permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Department of Health (healthres@pgwc.gov.za Tel: +27 21 483 9907) and Dr Hélène Visser at City Health (Helene.Visser@capetown.gov.za Tel: +27 21 400 3981). Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

Approval Date: 19 October 2011

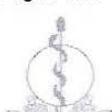
Expiry Date: 19 October 2012

20 October 2011 13:16

Page 1 of 2



Fakulteit Gesondheidswetenskappe · Faculty of Health Sciences



Appendix B: Ethical Approval various Stakeholders:

Institutional Review Board National Guard Health Affairs

Research Scientific Committee- Eastern Region, King ..
Abdulaziz Hospital, NGHA, Al Ahsa



Date: (G) 30 OCTOBER 2011
(H) 03 Dhu al-Hijjah 1432

To: MRS. CATHARINA M. BRAND
Principal Investigator
Director, Clinical Nursing
King Abdulaziz Hospital, Al Ahsa

Subject: PROTOCOL RE11/09 - "Factors Influencing Change Management in a Selected Hospital in Saudi Arabia"

This is in reference to your subject proposal, which has been expedited reviewed by the IRB on 22nd of October 2011. Upon recommendation of the Research Committee, and following the review of the IRB on the ethical aspects of the proposal, you are granted permission to conduct your study.

Your research proposal is approved for one year commencing from the above date with the following conditions:

TERMS OF APPROVAL:

1. **Annual Reports:** Continued approval of this project is dependent on the submission of an Annual Report. Please provide KAIMRC with an Annual Report determined by the date of your letter of approval.
2. **Amendments to the approved project:** Changes to any aspect of the project require the submission of a Request for Amendment to KAIMRC and must not begin without an approval from KAIMRC. Substantial variations may require a new application.
3. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
4. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by KAIMRC at any time.
5. **Retention and storage of data:** The PI is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

R. Kashmeery

Prof. Amin Kashmeery
Chairman, Institutional Review Board (IRB)
National Guard Health Affairs

Dr. Mohammed Al Jumah
Executive Director, KAIMRC
National Guard Health Affairs

Dr. Bandar Al Knawy
Chief Executive Officer
National Guard Health Affairs

AK/jue

Kingdom of Saudi Arabia
National Guard Health Affairs
King Abdulaziz Hospital
Al Ahsa



المملكة العربية السعودية
الحرس الوطني - الشؤون الصحية
مستشفى الملك عبدالعزيز بـ
الاحساء



King Abdullah
International Medical
Research Center -
Eastern Region



5910000
Exts. 36283
36282



413



5910000
Ext. 36288



RSC-ER@ngha.med.sa

MEMORANDUM

Ref #: RSC-ER/56/11

RESEARCH SCIENTIFIC
COMMITTEE

DATE : 17 SEPTEMBER 2011
19 D. Qadah 1432

TO : MS. CATHARINA BRAND
Principal Investigator
Director, Clinical Nursing, KAH-Al Hasa

FROM : DR. RIFAT REHMANI
Chairman, Research Scientific Committee – Eastern Region
King Abdulaziz Hospital, NGHA, Al Ahsa

SUBJECT : PROTOCOL # RE11/09 – “Factors Influencing Change
Management in a Selected Hospital in Saudi Arabia”

Thank you for submitting your Proposal as stated in the above-mentioned subject. This proposal will be forwarded to Scientific Committee for review. Hence then, we will get back to you once we received the evaluation to notify you for whatever scenario we have obtained.

Once again your collaboration to the Committee are highly valued and appreciated.

Thank you and best regards.

CC: KAIMRC-ER
FILE

RSC-ER

Page 1

9/17/2011 RPA

Kingdom of Saudi Arabia
National Guard Health Affairs
King Abdulaziz Hospital
Al Ahsa



المملكة العربية السعودية
الحرس الوطني - الشؤون الصحية
مستشفى الملك عبدالعزيز بالاحساء



King Abdullah
International Medical
Research Center -
Eastern Region



5910000
Exts. 36283
36282



413



5910000
Ext. 36288



RSC-ER@ngha.med.sa

MEMORANDUM

Ref #: RSC-ER/65/11

RESEARCH SCIENTIFIC
COMMITTEE

DATE : 03 OCTOBER 2011
05 D. Qedah 1432

TO : MS CATHARINA M. BRAND
Principal Investigator
Director Clinical Nursing, King Abdulaziz Hospital, Al Hasa

FROM : DR. RIFAT REHMANI *Rifat*
Chairman, Research Scientific Committee – Eastern Region
King Abdulaziz Hospital, NGHA, Al-Ahsa

SUBJECT : PROTOCOL # RE11/09 – “Factors Influencing change Management in a Selected Hospital in Saudi Arabia”

After careful scientific re-evaluation of the revised proposal, as per comments and suggestions of the respective reviewers and in behalf of the committee, I am grateful to inform you that your Research Proposal as above-mentioned has been finally approved.

In this regards, your proposal will be forwarded to Institutional Review Board (IRB) for ethical consideration.

Indeed, I would like to acknowledge your participation chained with efforts and hard works to the research center.

Your dedication and continued collaboration to our organization will lead to the fulfillment of our goal.

Thank you and best regards.

CC: ELIZABETH CLARKE, ASSOCIATE EXECUTIVE DIRECTOR, NURSING ADMINISTRATION, KAH, AL HASA
KAIMRC-ER
FILE

Appendix C: Letter from the Prosci Research Foundation

Hi Catharina,

Thank you for your interest and it is great to hear of your liking to the ADKAR® Model.

Prosci is research company that focuses in the field of change management. Through 15 years of research we have developed our methodology, models, assessments, and training courses. ADKAR® is a registered trademark of Prosci. Prosci allows third parties to build awareness for ADKAR® and other Prosci models, but if you intend to deploy the ADKAR® Model across your organization and have your organization implementing ADKAR®, there are licensing options for you based on your needs.

If you are looking to use the ADKAR® Model just for you University Assignment, then you will not need a license. Prosci offers free tutorials that can help make sure you have the full understanding of Prosci <http://www.change-management.com/tutorial-adkar-overview.htm>. Here is the main page for tutorials <http://www.change-management.com/tutorials.htm> so that you can explore other tutorials as well.

Let me know if I can answer any additional questions and thanks for asking!

Mike

Prosci

Mike Davis

ATP Program Director
Change Management Learning Center
www.change-management.com
Phone 970-203-9332



The Inaugural ACMP Global Conference is May 1-4, 2011!
www.acmp.info/conference

Featuring keynote speakers: John Kotter, Daryl Conner and Admiral Thad Allen

Appendix D: Questionnaire review and pre-testing: King Saud Bin Abdulaziz University for Health Science

King Saud bin Abdulaziz University
for Health Sciences



جامعة الملك سعود بن عبد العزيز للعلوم الصحية
للعلوم الصحية

ACADEMIC AFFAIRS
College of Nursing-Al Ahsa, KSAU-HS

MEMORANDUM

TO : Ms. Catharina Brand
Nursing Director, King Abdulaziz Hospital

FROM : Dr. Susanna Hattingh *SHattingh W*
Associate Dean, Academic Affairs
College of Nursing – Al Ahsa, KSAU-HS

SUBJECT : RE: QUESTIONNAIRE REVIEW FOR PRE-TEST

Your questionnaire has been evaluated by a panel of experts in the King Saud bin Abdulaziz University for Health Sciences: College of Nursing. No adjustment to the questionnaire was suggested. The average time to complete the questionnaire was 20-25 minutes which is more than sufficient.

The panel wants to compliment you with the quality of the questionnaire as well as the orderly and systematic manner in which it was presented. We wish you all the very best for the research you are conducting. The names of the panel are included below.

Name	Badge number	Position
Professor Khairia El Sawi	28171	A/Associate Dean: Clinical Affairs
Dr. Amel Abouelfetton	27882	Assistant Professor
Dr. Amel Rateb	27865	Assistant Professor and Head: Basic Science Department
Ms. Chinwe Osjui	28399	Head: English Department
Dr. Abdul Salam	28071	Statistician: National Guard Health Affairs
Dr. Salwa Hassanein	27424	Assistant Professor, Nursing Department
Dr. Amany Abdobo	27949	Assistant Professor, Nursing Department
Mr. Mohannad Abbas	26794	Lecturer, Nursing Department
Mrs. Hanna Paulraj	28339	Lecturer, Nursing Department

Best wishes.

Appendix E: Participant information leaflet and consent

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT:

Factors influencing change management in a selected hospital in Saudi Arabia

REFERENCE NUMBER:

PRINCIPAL INVESTIGATOR: Catharina Gertruida Maria Brand

ADDRESS: Building 304, Apartment 203, Housing Compound, National Guard Health Affairs, Saudi Arabia

CONTACT NUMBER: 0096635910000x 33641

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the researcher any questions about any part of this project that you do not fully understand. It is important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you decline this invitation to participate it will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

- It will take you about 45 minutes to complete the questionnaire. Please respond to all questions. Do not write your name or any form of identification on the questionnaire. Please place the completed questionnaire in the envelope provided to you for this purpose.

This study has been approved by the **Health Research Ethics Committee, Stellenbosch University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, the South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

What is this research study all about?

- This quantitative study will take place in King Abdulaziz Hospital, National Guard Health affairs, Al Hassa. One hundred and forty participants are selected to participate.
- The aim is to gather data from all registered nurses who on a daily basis use the Quadramed Computerised Patient Recording (QCPR) system to record patient information. The data gathered from this study could be helpful to identify areas of improvement in the current changing environment of the hospital and could contribute to a new way of change management by applying the ADKAR (A=

Awareness, D= Desire, K= Knowledge, A= Ability, R= Reinforcement) model as described by Prosci.

➤ Procedures to follow

- The researcher will explain how to complete the questionnaire without any personal identification
- Written consent will be obtained
- Each randomly selected participant will receive a questionnaire and an envelope at the beginning of his or her shift and at the end of the shift the completed questionnaire, sealed in the provided envelope will be collected by the researcher and placed in a sealed container..
- All data will be treated as confidential and complete anonymity will be ensured as the researcher will not be able to link any information to a particular person
- When the desired number of sealed questionnaires are collected the researcher will hand it to the statistician for analysis without disclosure of any names
- Only the researcher and the statistician will have access to the questionnaires.

➤ The Simple Random sampling technique will be utilized. The names of all registered nurses using the Quadramed system will be entered into a computer and then randomly selected by the computer until the desired sample size is achieved

Why have you been invited to participate?

- Participants who fit the criteria as per the questionnaire were randomly selected by a computer program until the desired numbers of participants were achieved. You were identified by means of the computer programme as being a full time professional registered nurse, who, on a daily basis uses the QCPR system.

What will your responsibilities be?

- To complete every question in the questionnaire honestly and to the best of your knowledge

If you do not agree to take part, what alternatives do you have?

- Participation is voluntarily and you can withdraw from the study at any given time without any repercussions

Who will have access to your questionnaire?

- The researcher will collect all sealed questionnaires and will place it in a sealed container, where after it will be submitted to the statistician for analysis.

- Only the researcher, the statistician and the study leader will have access to the completed questionnaires

Will you be paid to take part in this study and are there any costs involved?

There is no monetary compensation for participating in this study and there will be no costs involved for the respondents who take part in the study..

Is there anything else that you should know or do?

- You can contact Catharina Brand at tel 33641 or pager 3641 if you have any further queries or should you encounter any problems in regard to completing the questionnaire.
- You can contact the Health Research Ethics Committee at +2721-938 9207 if you have any concerns or complaints that have not been adequately addressed by the researcher.
- You will receive a copy of this information and consent form for your own records.

Declaration by participant

By signing below, I agree to take part in a research study entitled FACTORS INFLUENCING CHANGE MANAGEMENT IN A SELECTED HOSPITAL IN SAUDI ARABIA

I declare that:

- I have personally read or had read to me, the above information and consent form, and that it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions about the intended study and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised in any manner to take part in the study.
- I understand that I may choose to leave the study at any time and will not be penalised or prejudiced in any way should I decide to do so.

Signed at (place) on (date) 2011.

.....
Signature of participant

.....
Signature of witness

Declaration by investigator

I (*name*) declare that:

- I explained the information in this document to
- I encouraged him/her to ask questions and took adequate time to answer such questions.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- There was no need for me to use an interpreter. .

Signed at (*place*) on (*date*) 2011.

.....
Signature of investigator

.....
Signature of witness

Appendix F: Research Tool: Questionnaire

**INSTRUCTIONS FOR COMPLETING THE QUESTIONNAIRE ON
“FACTORS INFLUENCING CHANGE MANAGEMENT IN A SELECTED
HOSPITAL IN SAUDI ARABIA”**

1. Answer each question by indicating the chosen option with a tick (✓) in the appropriate block OR fill in the information asked in the provided space.
2. Tick (✓) **only** in the space provided for **answer**. The right blocks are for office use only.
3. The questionnaire consists of the six (6) sections and you are requested to complete **ALL** the sections.

SECTION A: Biographical data

SECTION B: Awareness of Change

SECTION C: Desire to Change

SECTION D: Knowledge of Change

SECTION E: Ability to Change

SECTION F: Reinforcement of Change

4. Note that this questionnaire will focus mostly on the changes implemented by management of the Quadramed system, computerised patient documentation system (QCPR)
5. It will take you approximately 45 minutes to complete the questionnaire.

QUESTIONNAIRE

QUESTIONNAIRE NUMBER:

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1 SECTION A: BIOGRAPHIC INFORMATION

In this section your biographic information is required.

1.1 Age

		Answer
1.1.1	20-25 years	1
1.1.2	26-30 years	2
1.1.3	31-36 years	3
1.1.4	37-42 years	4
1.1.5	43-48 years	5
1.1.6	49-54 years	6
1.1.7	55 years and older	7

	4
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1.2 Gender

	Male	Female
1.2.1 Gender	1	2

	5
--	---

1.3 Nationality

		Answer
1.3.1	Saudi	1
1.3.2	Australian	2
1.3.3	South African	3
1.3.4	Malaysian	4
1.3.5	British	5
1.3.6	Irish	6
1.3.7	Czech	7
1.3.8	Jordan	8
1.3.9	Egyptian	9
1.3.10	Indian	10
1.3.11	Filipino	11
1.3.12	Other, please state.....	12

	6
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1.4 First language

		Answer
1.4.1	Arabic	1
1.4.3	English	2
1.4.4	Malay	3
1.4.5	Urdu	4
1.4.6	Tagalog	5
1.4.7	Other, please state.....	6

	7
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1.5 Indicate your basic qualifications

		Answer
1.4.1	Diploma in General Nursing	1
1.4.3	Bachelors Degree	2
1.4.4	Masters Degree	3
1.4.5	Post Basic Qualification	4
1.4.6	Other, please state.....	5

	8
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1.6 Indicate your speciality qualifications (Mark if more than one speciality)

		Answer
1.4.1	Medical/Surgical	1
1.4.3	Midwifery	2
1.4.4	Paediatrics	3
1.4.5	Neonatology	4
1.4.6	Oncology	5
1.4.7	ICU	6
1.4.8	Other, please state.....	7

	9
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1.7 Years of experience as a registered nurse in a hospital environment

		Answer
1.7.1	Less than 2 years	1
1.7.2	2-4 years	2
1.7.3	5-7 years	3
1.7.4	8-10 years	4
1.7.5	11-13 years	5
1.7.6	14-16 years	6
1.7.7	17-19 years	7
1.7.8	20-22 years	8
1.7.9	More than 23 years, please state the number of years	9

	10
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1.8 Years of employment as a registered nurse in KAH-A

		Answer
1.8.1	Less than 1 year	1
1.8.2	1-2 years	2
1.8.3	3-4 years	3
1.8.4	5-6 years	4
1.8.5	7-8 years	5
1.8.6	9-10 years	6

	11
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1.9 Current position

	Answer
1.9.1 Nurse Manager	1
1.9.2 Staff Nurse 1	2
1.9.3 Staff Nurse 2	3
1.9.4 Patient Care Technician	4
1.9.5 Clinical Resource Person	5
1.9.6 Educators	6

12

1.10 *Super user

	Yes	No
1.10.1 Are you assigned as a super user for Quadramed?	1	2

13

* Super user is an expert in the use of Quadramed

2 SECTION B: Awareness of change

Section B addresses your Awareness regarding the Quadramed CPR

2.1 Need to change

	Yes	No
2.1.1 Were you informed about the need to change to the Quadramed system	1	2
2.1.2 Did you ask why the change was necessary?	1	2
2.1.3 Were you informed in advance about the change?	1	2
2.1.4 Were you comfortable with the status quo?	1	2

	14
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2.2 Indicate who first informed you about changing to the Quadramed Computerised System

	Answer
2.2.1 Executive Medical Director	1
2.2.2 Associate Executive Director Nursing	2
2.2.3 Director Clinical Nursing	3
2.2.4 Nurse Manager	4
2.2.5 Other, please state.....	5

	15
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2.3 Reasons for change

	Yes	No
2.3.1 Was the reasons for change clearly communicated?	1	2

	16
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2.4 Indicate who was most impacted by change to the Quadramed system

	Answer
2.4.1 Nurse Manager	1
2.4.2 Staff nurse 1	2
2.4.3 Staff nurse 2	3
2.4.4 PCT	4
2.4.5 Clinical Resource Nurse	5
2.4.6 Nurse Educators	6
2.4.7 Physicians	7
2.4.8 Patients	8

	17
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2.5 Who communicated most with you during the implementation phase?

	Answer
2.5.1 Peers (Co-workers)	1
2.5.2 Quadramed Super user	2
2.5.3 Educators	3
2.5.4 Nurse Manager	4
2.5.5 Informatics Coordinator	5

	18
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2.5.6 Director Clinical Nursing

6

2.6 Indicate time frame before change was implemented

		Answer
2.6.1	Less than 2 weeks	1
2.6.2	3-5 weeks	2
2.6.3	6-8 weeks	3
2.6.4	9-11 weeks	4
2.6.5	12 weeks and more	5
2.6.6	Never informed	6

19

2.7 In what way did changing to the Quadramed system benefited the patient

		Answer
2.7.1	No benefit to the patient	1
2.7.2	Improved nursing care	2
2.7.3	Improved safety of the patient	3
2.7.4	Continuation of care	4
2.7.5	Less paperwork	5
2.7.6	Time management	6
2.7.7	Ethical and legal considerations	7
2.7.8	Other, please state.....	8

20

2.8 What would have happened if there was no change from paper based documentation to the Quadramed system?

		Answer
2.8.1	It would have made no difference	1
2.8.2	More nurses needed for the same care	2
2.8.3	Staff may not have had the opportunity to learn new skills	3
2.8.4	Language barriers could have contributed to increased errors	4
2.8.5	Workflow would have been less efficient	5
2.8.6	Illegible handwriting contribute to preventable errors	6
2.8.7	Other, please specify	7

21

2.9 Which channels were used to build awareness toward changing to the Quadramed system?

		Answer
2.9.1	Group meetings	1
2.9.2	Focus groups	2
2.9.3	one-on-one communication	3
2.9.4	Road show	4
2.9.5	Team meetings	5
2.9.6	Bag lunches	6
2.9.7	Training courses	7
2.9.8	Workshops	8
2.9.9	Initial nursing orientation	9

22

3. SECTION C: Desire to change

Section C addresses your Desire to change to the Quadramed Computerised System

3.1 How do you approach changes in the workplace (mark only one item)

		Answer
3.1.1	I am always willing to change	1
3.1.2	I am mostly uncertain to change.	2
3.1.3	I am usually hesitant to change	3
3.1.4	I usually resist change	4

	23
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		Yes	No
3.2	Is the desire to change a personal choice?	1	2

	24
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		Yes	No
3.3	When you were made aware of changing to the Quadramed system, did you feel positive about the change?	1	2

	25
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3.4 If you answer no to the question above, what were the reasons for your negative feelings towards changing to the Quadramed system?

		Answer
3.4.1	I did not think I would benefit from this change	1
3.4.2	Insufficient knowledge about informatics.	2
3.4.3	It would add on to the workload	3
3.4.4	I was uncertain as to what the software entailed	4
3.4.5	I thought that the system would jeopardised patient safety	5
3.4.6	I rather support the paper based system	6

	25
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3.5 Which of the following contributed to your personal decision to support and participate in implementing the Quadramed System?

(Please indicate if more than one correct answer)

		Answer
3.5.1	I was involved in the planning of the implementation of the Quadramed system	1
3.5.2	I regarded it as a new challenge	2
3.5.3	I regarded this as a more streamline process	3
3.5.4	If I was negative about the Quadramed system it would negatively influence my performance appraisal	4
3.5.5	I regarded the Quadramed system as a positive change from a paper based system to a computer base patient management system	5
3.5.6	I viewed this change as a means to improve my CV	6
3.5.7	Previous experience using a computerised patient documentation	7
3.5.8	I wanted to be part of the team	8
3.5.9	I feared job loss	9
3.5.10	Non compliance would lead to negative consequences	10
3.5.11	Acquisition of power or position.	11
3.5.12	Incentive and compensation.	12

	27
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3.5.13 Gain trust and respect from leadership	13
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3.6 Who contributed most to your positive attitude towards changing to the Quadramed system?

	Answer
3.6.1 Peers (co-workers)	1
3.6.2 Quadramed Super user	2
3.6.3 Nurse Manager	3
3.6.4 Educator	4
3.6.5 Director Clinical Nursing	5
3.6.6 Informatics Coordinator	7
3.6.6 Other, please state.....	8

	28
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3.7 My desire to change was influence by:

	Answer
3.7.1 Uncertainty	1
3.7.2 Change was dramatic and happens to rapidly.	2
3.7.3 Rumours	3
3.7.4 No compensation or bonus	4
3.7.5 Other, please state.....	5

	29
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4. SECTION D: Knowledge to Change

Section D addresses your Knowledge to change to the Quadramed system.

	Yes	No
4.1 Were you asked about your computer literacy when you apply for a Nursing position at NGHA-A?	1	2

	30
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4.2 If your answer is yes, please state during which phase of the hiring process

	Answer
4.2.1 During recruitment	1
4.2.2 During the Hospital orientation	2
4.2.3 During the General Nursing orientation	3
4.2.4 During ward orientation	4
4.2.5 Other, please state.....	5

	31
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	Yes	No
4.2 Were you asked to take part in a computer test	1	2

	32
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4.3 If your answer is yes, please state during which phase in the process of employment were you required to take part in a computer test

	Answer
4.3.1 During recruitment	1
4.3.2 During the Hospital orientation	2
4.3.3 During the General Nursing orientation	3
4.3.4 During ward orientation	4
4.3.5 Other, please state.....	5

	33
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	Yes	No
4.4 Did you have any previous experience of a computerised patient documentation system?	1	2

	34
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4.5 If your answer is yes, please state years of experience

	Answer
4.5.1 None	1
4.5.2 Less than 1 year	2
4.5.3 2-3 years	3
4.5.4 4-5 years	4
4.5.5 6-7 years	5

	34
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4.5.6 More than 8 years, please state.....	6
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	Yes	No
4.6 Did you receive any information about the Quadramed system prior to its implementation?	1	2

	35
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4.7 If your answer is yes, please indicate by whom?

	Answer
4.7.1 Associate Executive Director of Nursing	1
4.7.2 Director of Education	2
4.7.3 Informatics Coordinator	3
4.7.4 Educator	4
4.7.5 Nurse Manager	5
4.7.6 Other, please state.....	6

	36
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	Yes	No
4.8 Did you receive any training about the Quadramed system prior to its implementation?	1	2

	37
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4.9 If your answer is yes, please stated during what stage

	Answer
4.9.1 During the Hospital orientation	1
4.9.2 During the General Nursing orientation	2
4.9.3 During ward orientation	3
4.9.4 Before implementation of the Quadramed system	4
4.9.5 Other, please state.....	5

	38
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4.10 From whom did you receive the training about Quadramed system?

	Answer
4.10.1 Informatics Coordinator	1
4.10.2 Educator	2
4.10.3 Preceptor	3
4.10.4 Nurse Manager	4
4.10.5 Super User	5
4.10.6 Other, please state.....	6

	39
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	Yes	No
4.11 Did you receive any information on operating and maintaining of the laptop used for the Quadramed system?	1	2

	40
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Yes	No
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4.12 Did you receive any information how to maintain patient confidentiality in QCPR?	1	2
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5 SECTION E: Ability to Change

Section D addresses your Ability to change to the Quadramed system

	Yes	No	
5.1 After attending the training session did you think you have the ability to use the Quadramed system?	1	2	42

5.2 If your answer is no, please state the reasons as indicated below

	Answer	
5.2.1 No computer skills	1	
5.2.2 Did not receive adequate training	2	
5.2.3 Fear of failure	3	
5.2.4 Time constrains	4	
5.2.5 Job role change	5	
5.2.6 Stress	6	43

5.3 Do you see the change to Quadramed as:

	Answer	
5.3.1 A process change	1	
5.3.2 A change in job roles	2	
5.3.3 Technology or system change	3	
5.3.4 A change in problem-solving skills	4	
5.3.5 Management change	5	44

5.4 What time frame would you say is adequate time to train staff how to use Quadramed?

	Answer	
5.4.1 0-11 hours	1	
5.4.2 1-2 days	2	
5.4.3 3-4 days	3	
5.4.4 5-6 days	4	
5.4.5 7 days and more	5	45

5.5 Which of the following persons provided the most support?

	Answer
5.5.1 Team leader	1
5.5.2 Peers	2
5.5.3 Preceptor	3
5.5.4 Clinical Resource nurse	4

5.5.5 Super user	5
5.5.6 Informatics Coordinator	6
5.5.7 Nurse Manager	7
5.5.8 Director Clinical Nursing	8

5.6 Who would you identify as a role model in this change to Quadramed?

	Answer
5.6.1 Team leader	
5.6.2 Peers	1
5.6.3 Clinical resource nurse	2
5.6.4 Super user	3
5.6.5 Preceptor	
5.6.6 Informatics coordinator	4
5.6.7 Nurse manager	5
5.6.8 Director clinical nursing	6
5.6.8 Other, please state.....	7

47

	Yes	No
5.7 Does the Hospital have a computer lab in which the Quadramed skills can be learned?	1	2

48

5.8 If yes, where is this computer laboratory situated?

	Answer
5.8.1 At the nursing college	1
5.8.2 At the hospital	2
5.8.3 Other, please state.....	3

49

5.9 Do you have access to the computer laboratory?

	Answer
5.9.1 Yes, under supervision	1
5.9.2 Yes, I don't need supervision	2
5.9.3 No, I don't have access	3
5.9.4 Don't know	4

50

5.10 Who accompanied you to the computer laboratory?

	Answer
5.10.1 Nurse educator	1
5.10.2 Informatics Coordinator	2
5.10.3 Clinical preceptor	3
5.10.4 Super user	4
5.10.5 Other, please state.....	5

51

5.11 How often do you attend computer laboratory sessions to learn about the Quadramed system?

		Answer
5.11.1	Less than 1 hour per week	1
5.11.2	1-2 hours per week	2
5.11.3	3-4 hours per week	3
5.11.4	5-6 hours per week	4
5.11.5	7-8 hours per week	5
5.11.6	More than 8 hours per week	6
5.11.7	I can use the simulation laboratory as much as I want to	7

52

		Yes	No
5.12	During simulation sessions, were you given the opportunity to practice the skills necessary to operate the Quadramed system?	1	2

53

		Yes	No
5.13	During simulation sessions, did you have a manual or written procedure to follow to practice the Quadramed system?	1	2

54

		Yes	No
5.14	Did the supervisor (eg. Informatics Coordinator) demonstrate skills before giving you the opportunity to practice the Quadramed system?	1	2

55

		Yes	No
5.15	After simulation sessions, did you receive feedback on your performance?	1	2

56

5.16 By whom was the feedback given?

		Answer
5.16.1	Informatics coordinator	1
5.16.2	Nurse educator	2
5.16.3	Preceptor	3
5.16.4	Super user	4
5.16.5	Peers	5
5.16.6	Other, please state.....	6

57

5.17 How many times did you have to practice the Quadramed system before you were found proficient?

		Answer
5.17.1	Once	1
5.17.2	Twice	2
5.17.3	More than twice	3

	58
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		Yes	No
5.18	In your opinion, did the simulation contributed to the application of skills in the clinical practice?	1	2

	60
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5.19 In your opinion, what did simulation mean to you?

		Answer
5.19.1	It gave me confidence to use the Quadramed system	1
5.19.2	I could experiment in a safe environment	2
5.19.3	It helped me to apply skills to the expectations in the clinical setting	3
5.19.4	Simulation was not helpful at all	4
5.19.5	Simulated procedures in the laboratory are not the same as in practice	5
5.19.6	I had no opportunity to practice	6
5.19.7	There was no feedback given	7
5.19.8	Nurse educators showed no clinical practice knowledge	8
5.19.9	Other, please state.....	9

	61
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		Yes	No
5.20	Did you feel competent after your laboratory session?	1	2

	62
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5.21 Which of the following techniques did your preceptor used to assist you in using the Quadramed system in the clinical setting?

		Answer
5.21.1	On the spot teaching	1
5.21.2	On the job experiences	2
5.21.3	Practical sessions	3
5.21.4	Learning opportunities of rare/scarce cases	4
5.21.5	Other, please state.....	5

	63
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6 SECTION F: Reinforcement of Change

Section E addresses the Reinforcement to change to the Quadramed system

6.1 Who were most knowledgeable in this change to Quadramed?

	Answer
6.1.1 Team leader	
6.1.2 Peers	1
6.1.3 Clinical Resource nurse	2
6.1.4 Nurse educator	3
6.1.5 Super user	4
6.1.6 Informatics Manager	5
6.1.7 Nurse Manager	6
6.1.8 Director Clinical Nursing	7

	64
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6.2 Who were most supportive in this change to Quadramed?

	Answer
6.2.1 Team leader	
6.2.2 Peers	1
6.2.3 Clinical Resource nurse	2
6.2.4 Super user	3
6.2.5 Informatics Manager	4
6.2.6 Nurse Manager	5
6.2.7 Director Clinical Nursing	6

	65
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6.3 During which phase of this change you felt more supported?

	Answer
6.3.1 Pre change	
6.3.2 Initial phase of change	1
6.3.3 During the first month	2
6.3.4 Continuous support	3
6.3.5 After each update of the system	4

	66
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	Yes	No
6.4 Did you feel that your superiors value your input and suggestions to improve the Quadramed System?	1	2

	67
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6.5 If your answer is yes, please indicate by whom?

		Answer
6.5.1	Super user	1
6.5.2	Clinical Resource Nurse	2
6.5.3	Educator	3
6.5.4	Assistant Nurse Manager	4
6.5.5	Informatics Manager	5
6.5.6	Nurse Manager	6
6.5.7	Other, please state.....	7

	68
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		Yes	No
6.6	Did you receive any continuous information about the Quadramed	1	2

	69
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6.7 If your answer is yes, please indicate by whom?

		Answer
6.7.1	Informatics Coordinator	1
6.7.2	Educator	2
6.7.3	ISID	3
6.7.4	Nurse Manager	4
6.7.5	Super User	5
6.7.6	Other, please state.....	6

	70
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**6.8 The reinforcement of the use of the Quadramed system is established by:
(Please indicate if more than one correct answer)**

		Answer
6.8.1	E-mails	1
6.8.2	Bulletin boards	2
6.8.3	Flyers	3
6.8.4	News letters	4
6.8.5	Demonstrations	5
6.8.6	Frequently asked questions	6
6.8.7	Demo models	7
6.8.8	Intranet	8
6.8.9	Ward/Unit meeting	9
6.8.10	Videos	10
6.8.11	Posters	11
6.8.12	Word of mouth	12
6.8.13	Internal memo's	13
6.8.14	In-service training	14

	71
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		Yes	No
6.9	Do you perceive the environment in which the Quadramed system is operated in as adequate?	1	2

	72
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6.10 If your answer is no, please indicate which factors negatively influence the full use of the Quadramed system?

	Answer
6.10.1 Electronic equipment not available	1
6.10.2 System requirements eg. slow connection	2
6.10.3 Inadequate space in the clinical setting.	3
6.10.4 Time constraints	4
6.10.5 Staff accountability - risk of lost of computer	5
6.10.6 Other, please state.....	6

	73
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