

# THE PERCEPTIONS OF CRITICAL CARE NURSES IN RELATION TO THEIR EDUCATIONAL PREPAREDNESS IN CARING FOR PEOPLE LIVING WITH HIV/AIDS

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## ABSTRACT

Many HIV-infected patients diagnosed with the complex staging of the disease and severe opportunistic events require admission to critical care units, making care complicated. Further to this, antiretroviral therapy and unanswered questions concerning its use in these units add to the already intricate and complicated cases admitted to critical care. Complications are increased by issues including legal statutes concerning HIV/Aids testing and disclosure. As a result, this study was aimed at exploring the perceptions of critical care nurses towards their educational preparedness in managing HIV/AIDS patients admitted to CCUs in KwaZulu-Natal.

A quantitative descriptive research design was used and data collection included a structured questionnaire and open-ended questions. The sample size consisted of 100 CCNs (79 from the public setting and 21 from the private sector). Of the critical care nurses, 44.6% (n=25) who had undergone training in HIV/AIDS management, only 25% (n=14) perceived that they were not educationally prepared to provide effective services for patients with HIV/AIDS. Fifty (n=50) (89.3%) critical care nurses reported that HIV/AIDS management should be incorporated into the critical care curriculum. Their universal perception, n=42 (75%), was that this will improve the standards of care. Nurses are still challenged by factors such as the advanced level of the HIV disease, confidentiality, knowledge about treatment regimen and emotional challenges related to caring for these patients.

More research with a larger scale sample is required to provide appropriate generalisation of the findings of this study. Alternatively, a qualitative research study exploring the lived experiences of critical care nurses caring for people living with HIV/AIDS is suggested.

**KEYWORDS:** critical care training, HIV and AIDS information, HIV/AIDS intensive care unit, HIV and AIDS management, knowledge on HIV/AIDS

## BACKGROUND

UNAIDS (2009:27) indicated that South Africa (SA) has the largest antiretroviral programme in the world. This may be related to the fact that it also has the highest incidence of HIV-infected patients. Nicolay (2008:1) pointed out that SA is experiencing the largest HIV and AIDS epidemic in the world with an estimated 5.6 million (12%) South Africans being HIV positive in 2008, the largest number of any country in the world, with the province of KwaZulu-Natal in the lead by 16%. Unfortunately, access to treatment is still low as the consensus is that any HIV positive people with a CD4 count of less than 350cells/µl should initiate antiretroviral therapy (ART) (Lundgren, Babiker, Gordin et al., 2013:1). Hence it was estimated that at the end of 2009, only 37% of those infected with the virus in SA were receiving treatment for HIV, according to the latest WHO guidelines (UNAIDS, 2009:27).

The impact that HIV/AIDS has on the South African community has direct results on its health care system, including critical care units (CCUs). Nurses, being the largest single group of health care providers in this country, play an integral role in the management and delivery of health services, including management of HIV/AIDS (Rispel, 2008:5). Therefore HIV/AIDS directly affects practice, especially in CCUs where critical care nurses (CCNs) are faced with complications of the disease progression, drug interaction and side effects of antiretroviral drugs. Perrie (2006:1) states that nursing is faced with the challenge of providing high quality, cost-effective, evidence-based holistic care in a financially restricted climate, with effective protocols that basically introduce evidence-based practice into the CCUs, and have been shown to reduce morbidity and mortality and decrease the cost of critical illness.

The HIV/AIDS/STD Strategic Plan for South Africa (2007–2011:58-60) prioritises focusing on improving treatment, care and support for people living with HIV/AIDS. Capacity building of health professionals to provide comprehensive HIV/AIDS/STD/TB treatment, care and support are among the strategies to be utilized, and together the Department of Health and training institutions are to carry out this responsibility. With increased admission rates of people living with HIV/AIDS in the critical care setting, CCNs should be in a position to handle complications arising from the progression of the disease itself or side-effects of the antiretroviral treatment. However, there is no documented evidence indicating the inclusion of HIV/AIDS management in the current critical care nursing training programmes.

Quality of nursing care in CCUs is further challenged by the HIV/AIDS pandemic and the introduction of Highly Active Antiretroviral Treatment (HAART), especially if CCNs are not educationally prepared to face such challenges. Scribante and Bhagwanjee (2007:68) reported that the responsibility for setting standards of quality with regards to critical care nursing falls on CCNs themselves. CCNs are accountable for contributing to the body of critical care nursing practice by undertaking and

implementing research. The understanding of HIV/AIDS management within their practice is the sole responsibility of CCNs. It is also their responsibility to develop educational programmes that equip them with necessary skills to deal with HIV/AIDS in critical care settings. The application of this knowledge and skills developed from extensive learning is of fundamental value in the management of HIV/AIDS and thus the fulfilment of millennium development goal number six, which focuses on reduction of HIV infections and increasing the availability of antiretroviral drugs.

HIV infection is now regarded as a chronic disease that may be controlled by HAART when and if it is available. Several studies have reported improved CCU outcomes for HIV-infected patients in the HAART era (Dickson, Batson, Copas et al., 2007:964; Anderson, 2009:14; Corona & Raimondi, 2009:569). According to Akgün, Pisan & Crothers (2011:151–152), the introduction of highly active antiretroviral therapy has changed the landscape of HIV/AIDS to become a chronic disease. These authors further indicate that 3% to 12% of all hospitalized HIV-infected patients require critical care admission while 25% to 40% of them are unaware of their HIV status or may not have been diagnosed with the HIV infection. Moreover, up to 50% of HIV-infected patients are not on antiretroviral therapy (ART) at the time of critical care admission, although these patients have shown dramatic improvement since the introduction of ART (Akgün et al., 2011:152). However, ART, contributing to the development of chronic non-HIV related diseases such as pulmonary, cardiac, gastrointestinal and renal diseases, which may require admission in CCUs, has increased (Huang, Quartin, Jones et al., 2006:173).

Despite the high prevalence of HIV/AIDS in SA, upon reviewing the annual prospectus of ten universities which provide graduate and postgraduate critical care training in the country, there is only one university that incorporates HIV/AIDS in the curriculum for critical care nursing. Based on these circumstances, the study aim was to explore the perceptions of CCNs regarding their educational preparedness in managing HIV/AIDS patients in KwaZulu-Natal. Despite the extensive literature search, no evidence of previous relevant studies conducted specifically assessing the educational preparedness of dealing with HIV positive patients admitted in CCUs could be found.

## **STATEMENT OF THE RESEARCH PROBLEM**

Nursing within the critical care environment is different from other nursing environments and the sustained exposure to life-threatening crises, to high levels of stress and to increased workloads poses challenges for CCNs in providing care to patients (Halligan, 2006:1566). CCNs are expected to exercise considerable autonomous judgement and a more independent role in observing patients as compared with registered nurses (Tummers, Van Merode & Landeweerd, 2002: 204). According to Scribante and Bhagwanjee (2007:68) and De Beer et al. (2011:6), the critical care environment is complex, unpredictable, and CCNs require in-depth knowledge of the pathophysiology

of critically ill patients, skills and knowledge to use high technology equipment while care is provided in various acute life-threatening conditions.

Adding to the complex environment, the use of HAART in CCUs remains controversial since there are no set standards for how HAART should be applied in these settings (Anderson, 2009:16). Moreover, there are still numerous complications and challenges posed by these drugs, including medication interactions, absorption, administration and adverse reactions including immune reconstitution inflammatory syndrome, which all tend to lead providers to reject the use of HAART especially in the ICU (Anderson, 2009:14).

In SA where the pandemic of HIV/AIDS is more rampant, there is a severe shortage of nurses working in CCUs while more HIV/AIDS patients continue to fill CCUs (Gillespie, 2006:50; De Beer et al., 2011:6). However, there seems to be no incorporation of HIV/AIDS management in critical care nursing programmes at training institutions. This raises the question as to whether CCNs are educationally prepared to deal with the challenges of HIV/AIDS and, as a result, this study aimed at exploring the perceptions of CCNs in relation to their educational preparedness in caring for people living with HIV/AIDS.

## **PURPOSE OF THE STUDY AND RESEARCH OBJECTIVES**

The purpose of the study was to explore the perceptions of CCNs in relation to their educational preparedness in caring for people living with HIV/AIDS.

Objectives:

- To explore the perceptions of critical care nurses regarding their educational preparedness in managing people living with HIV/AIDS.
- To determine the availability of any policies for the management of people living with HIV/AIDS in the critical care settings.
- To describe the current practices of critical care nurses in dealing with people living with HIV/AIDS.
- To explore the challenges of critical care nurses in caring for a people living with HIV/AIDS.

## **RESEARCH DESIGN AND METHOD**

A quantitative descriptive study was used to explore the perceptions of CCNs regarding their training and management of people living with HIV/AIDS whilst admitted to CCUs in KwaZulu-Natal.

## **Research setting and population**

The CCUs of two hospitals in KwaZulu-Natal were used in the study. A public tertiary hospital with nine CCUs and a private hospital with four CCUs were utilized. The research population consisted of CCNs who had formally been trained as CCNs either at a university or a college. The sample consisted of 100 CCNs (79 from the public sector and 21 from the private sector).

## **Sampling and sample size**

A convenient non-probability sampling method was utilized as this method allowed for the researcher to conveniently use CCNs that were available and willing to participate. In addition to this, the researcher was able to choose respondents who were considered to have the most typical or representative attributes and characteristics of the population. A sample size of 56 respondents was used. The researcher decided on the census approach by Israel (2009:2) who suggests that the entire population is sampled especially in smaller populations less than 200 respondents. Its main advantage is to eliminate the sampling error and provide data on all the individuals in the population, thus achieving an appropriate level of precision. Only 56 CCNs were sampled because four were sampled for the pre-test and the remaining could not be accessed since they were not available during the distribution of the questionnaires, as respondents were on sick and annual leave. Some of the CCNs refused to participate in the study.

## **Research instrument**

The researcher collected data through the use of a questionnaire modified from questionnaires extracted from USAID health policy initiative (2010:15–27), Quality Assurance Project Tanzania HIV Stigma Study Team (2007:22–27) and Shipanga (2011:60–74). The three questionnaires were studied and relevant questions were extracted, modified and rephrased to suit this study. Permission was not needed for the use of these tools as they were available in the public domain.

The questionnaire was divided into three sections: biographical data, HIV/AIDS training/education, practices and experiences of the participants. The questionnaire contained both structured and open-ended questions. The open-ended questions were asked as a follow-up from the structured questions with the aim of clarifying some concepts that needed more explanation by the respondents. The structured questions focused on determining the availability of any policies for the management of people living with HIV/AIDS in the critical care settings, while the open-ended questions concentrated on describing their experiences, exploring their challenges and perceptions towards the training completed and management of people living with HIV/AIDS.

### **Reliability and validity**

Validity was ensured by the use of construct validity, through the use of correlation of the data collection instrument, the objectives, main concepts and the theoretical framework of the study.

To maintain reliability of the instrument, the USAID health initiative (2010:15–27), Quality Assurance Project Tanzania HIV Stigma Study Team (2007:22–27) and Shipanga (2011:60–74) were utilised. The questionnaire from the USAID health initiative had been tested for validity and reliability in the study in which it was used. The Tanzania HIV stigma study team and Shipanga's questionnaires had never been tested for validity and reliability, but the researcher found their content more relevant to this study. Hence a pre-test was conducted to measure and maintain the reliability of the modified questionnaire. Through the results obtained from the pre-test, questions, which would possibly be misinterpreted during the actual study and those which were not clear, were clarified. The pre-test study further assisted to estimate the actual time each respondent would take filling in a questionnaire.

### **Data collection**

Data collection commenced after the appropriate permission from the various authorities was secured. The researcher made appointments with the unit managers of the CCUs to arrange a time and venue that would be suitable to hand out questionnaires. Once this was organized, the researcher then approached CCNs within these units for participation in the study. Data collection occurred between 6 May and 22 June 2012.

### **Data analysis**

The data was analyzed using SPSS version 19. Descriptive statistics was used to describe the research phenomena. Tables, frequency distributions, bar diagrams, and percentages were compiled from the data. Data from the open-ended questions was analysed by identifying common responses from the data and categorising and then quantifying them to produce more numerical data, which gives an understanding of the results.

### **Ethical consideration**

The ethics department at the University of KwaZulu-Natal approved the study. Permission was also obtained from the Department of Health in KwaZulu-Natal and the management of the hospitals. All ethical principles were adhered to when dealing with respondents.

## FINDINGS

Table 1 below represents the demographic information.

**Table 1: Demographic information (n=56)**

	<b>Frequency</b>	<b>Percentage</b>
Gender		
Female	49	87.5
Male	7	12.5
Age :		
25 – 34 years	12	21.4
35 – 44 years	21	37.5
> 45 Years	23	41.1
Level of education:		
Diploma	39	69.6
Bachelor's degree	14	25
Honours degree	1	1.8
Master's degree	2	3.6
Critical care specialisation:		
Diploma in critical care	51	91
Diploma in Trauma Nursing	2	3.6
Degree in critical care	1	1.8
Degree in Trauma Nursing	1	1.8
Master's in Critical Care	1	1.8
Years of experience in teaching and clinical supervision		
0-1year	2	3.6
2-5years	16	28.6
6 to 10 years	17	30.4
>11 years	21	37.5

### Training on HIV/AIDS management

Only 35.7% (n=20) of respondents had undergone training in HIV/AIDS management while 64.3% (n=36) of them did not have training. Of the n=20 who had undergone the training, 10% (n=2) had undergone in-service training, 25% (n=5) got their training in a nursing college as a module, another 25% (n=5) were trained at a university, while 40% (n=8) got their training in workshops. Respondents who trained at a university and those who were trained at a college were equal 50% (n=10). In addition training in workshops and from in-service training were cumulatively 50% (n=10).

**Table 2: Topics covered and the amount of information**

TOPIC	No training		Inadequate		Adequate		Extensive	
	n	%	n	%	n	%	n	%
Epidemiology of HIV/AIDS	0	0	2	10	17	85	1	5
HIV transmission	0	0	1	5	18	90	1	5
Pathogenesis of HIV infections	0	0	1	5	18	90	1	5
Clinical features of HIV/AIDS	0	0	0	0	19	95	1	5
Diagnosis of HIV/AIDS	0	0	2	10	17	85	1	5
Voluntary Counselling and Testing (VCT)	1	5	7	35	11	55	1	5
Prevention of HIV infections	0	0	1	5	18	90	1	5
Anti-retroviral management of HIV/AIDS	1	5	9	45	9	45	1	5
Recognition and management of opportunistic infections	0	0	8	40	11	55	1	5
Monitoring of HIV/AIDS: CD4, cell count, viral load	0	0	4	20	13	65	1	5



Recognition and management of stress prevention of burnout in HIV/AIDS care burnout in HIV/AIDS care	3	15	8	40	9	45	0	0
Caring of the care givers	2	10	4	20	14	70	0	0
Legal and ethical issues in HIV/AIDS	0	0	9	45	11	55	0	0
Emotional care of dying HIV/AIDS patient	2	10	2	10	16	80	0	0

**Table 3: Responses from open ended questions**

<b>Reasons for not being prepared</b>	<b>Frequency</b>	<b>Percentage</b>
Lack of updates on HIV/AIDS management	9	45
Inadequate training	5	25
No response	6	30
<b>Influence of the knowledge of HIV/AIDS status on practice</b>	<b>Frequency</b>	<b>Percentage</b>
No effects	23	41
Compassionate	1	1.8
Maintain precautionary measures	14	25
No discrimination	1	1.8
Equal distribution of patient care	17	30.4
<b>Challenging factors in nursing of HIV/AIDS patients</b>	<b>Frequency</b>	<b>Percentage</b>
No challenges	5	8.9
Unknown HIV/AIDS status	26	46.4
Lack of knowledge of ARV treatment regime	21	37.5
Negative emotional challenge	2	3.6
No response	2	3.6
<b>Suggested topics to include in critical care curriculum</b>	<b>Frequency</b>	<b>Percentage</b>

Drug interactions	9	16.1
HIV/AIDS regimen	14	25
Adherence and complications	11	19.6
Entire HIV/AIDS management course	22	39.3
<b>Contribution of HIV/AIDS training to nursing care</b>	<b>Frequency</b>	<b>Percentage</b>
Improved standards of care	42	75
Reduced stigma	11	19.6
No specific contribution	3	5.4

### **Recommendation to include HIV/AIDS into the critical care curriculum**

Respondents, 89.3% (n=50), recommended that HIV/AIDS be included in the critical care curriculum while 10.7% (n=6) indicated that it should not be included.

## **DISCUSSION OF RESEARCH RESULTS**

In this study it was discovered that 35.7 % (n=20) of the CCNs had been trained in management of HIV/AIDS through workshops and in-service trainings. Moreover, 45% (n=9) of those who had undergone the training felt that they were not prepared enough to provide care for people living with HIV/AIDS admitted to CCUs in KwaZulu-Natal. About 25% (n=5) of them indicated that the training they had undergone was inadequate. This is an indicator that CCNs perceived themselves as not adequately prepared regarding management of people living with HIV/AIDS. 94.6%( n=53) of respondents also reported that HIV/AIDS management should be incorporated in critical care nursing programme together with 75% (n=42) of respondents believing that this will improve the quality of nursing care provided by the CCNs. The lack of knowledge of CCNs in the management of HIV/AIDS correlated well with the results of the study conducted by Hall and Sutton (2002:33) who indicated that non-HIV trained nurses lack the knowledge of HIV therapy and therefore need a sound basic knowledge of HIV therapy to deliver safe, effective care to patients. Hall and Sutton (2002:33) further indicated that “nurses need access to HIV awareness updates at trust level and HIV awareness courses at university level”. Lack of knowledge of HIV/AIDS management by CCNs places patients under their care at a tremendous risk of developing complications without their care givers being aware. This could be attributed to the fact that critical care environment is very technical, complex and demanding. As a result, this context requires nurses who are well trained with the necessary skills to utilise the specialized

technical equipment and to determine any pathophysiological changes in a critically ill patient (Scribante & Bhagwanjee, 2007:68).

The planning unit of the University of the Orange Free State (2005:2) describes policies as written statements or sets of statements that describe principles, requirements and limitations, and are characterised by indicating what needs to be done rather than how to do it. Such statements have the force of establishing rights, requirements and responsibilities. From the understanding of these definitions it can be deduced that HIV/AIDS policies are such statements or sets of statements as they relate to HIV/AIDS. These statements form the base for action to HIV/AIDS prevention and treatment strategies, including guidelines and standards of care.

The results of this study indicate that guiding policies are available within the CCUs of the hospitals. 75 % (n=42) of the respondents indicated that policies that govern HIV/AIDS are readily available, 17.6% (n=10) reported they did not know whether these policies were available or not. It was only 8.9% (n=5) of the respondents who claimed that such policies were not available. According the South African HIV/AIDS and STI strategic plan (2007–2011:58–60), priorities are policies on prevention of HIV infection, treatment, care and support through strengthening the health and other systems so as to create the conditions for universal access to a comprehensive package of treatment for HIV, including antiretroviral therapy, and the integration of HIV and TB care.

Some of the challenges experienced by CCNs included not knowing the HIV/AIDS status of the patients, the issue of family members, including the spouse, not being able to help the patient because they did not know his/her HIV status Their main concern was that this leads to the condition whereby the patient's treatment may be interrupted or delayed, thus causing the patient to be a defaulter. Respondents said that if the HIV status of the patient is not known by any of the relatives (the next of kin), it places the patient in danger of defaulting on his/her ARV treatment, and therefore resulting in poor recovery. Respondents were of the strong belief that the spouse or next of kin should know of the HIV/AIDS status so that the necessary medical support is accessed should the patient not be able to access such treatment independently. However, this belief is in contradiction to the South African Nursing Council (SANC, 2000: 1) and Health Professional Council of South Africa, which strongly affirm that "the test results of HIV positive patients should be treated with the highest possible level of confidentiality" (HPCSA, 2008: 3). Confidentiality regarding a patient's HIV status extends to other health care practitioners who may not be informed of a patient's HIV status without that patient's consent unless the disclosure is clinically indicated. For treatment and care to be in the best interests of the patient, the need for disclosure of clinical data, (including HIV and related test results), to health care practitioners directly involved in the care of the patient, should be discussed with the patient (HPCSA, 2008: 3). However, this is not always possible within the critical care context as most HIV infected patients

are admitted to the CCU for a variety of indications that frequently require intubation, ventilation and sedation (Pathak, Rendon, Atrash et al., 2012: 57).

Although the disclosure of HIV status to partners or significant others is the choice and right of the patient, people who are diagnosed with an HIV infection are usually encouraged to disclose their status to people who will be able to provide necessary help and support. Deribe, Woldemichael, Wondafrash et al. (2008:2) admit that self-disclosure of sensitive information is usually considered to have favourable effects on an individual's health, including lowering stress, leading to better psychological health, better adherence to ART treatments and allowing partners to engage in preventive behaviours as well as the access of necessary support for coping with serostatus or illness.

Some of the respondents, n=21 (37.5%), reported they lacked knowledge of ARV treatment, which may adversely hinder the proper care of patients diagnosed with HIV who are admitted into CCUs. Hall and Sutton (2002:36), reported that nurses, including critical care nurses, did not have basic knowledge of HIV therapy. Basic knowledge of ARV treatment by critical care nurses is essential, providing skilled treatment and care, and support of patients' adherence to minimise the risk of drug resistance.

## RECOMMENDATIONS

- It is important that health care institutions invest in training for CCNs so as to improve the knowledge of HIV/AIDS management in their units.
- A larger scale study is recommended, which will provide appropriate generalization of the findings of the study to other areas of KwaZulu-Natal and even South Africa at large.
- A qualitative research study exploring the experiences of CCNs in managing people living with HIV/AIDS is advised where a triangulation of data could be included.
- The curriculum for critical care nursing should be reviewed and more nursing education institutions should start incorporating the South African nursing Council's directives in the training of critical care.

## LIMITATIONS

The data collection was confined to only two hospitals in the relatively large KwaZulu-Natal, therefore the findings may not be generalized to other districts within the province nor do they apply to other provinces in South Africa. In South Africa, there are 308 hospitals with critical care units comprising a total of 4 168 beds (De Beer, Brysiewicz & Bhengu, 2011:8), which are staffed by a total of 2 282 critical care nurses (SANC Statistics 1996–2010). Additionally, the sample for this study comprised only 56 critical care nurses. This sample is also a relatively very small proportion to represent the entire

population of the critical care nurses in the South Africa. This further minimizes the likelihoods of generalisation as compared with a larger sample size. The perceptions of individual critical care nurses in these two hospitals were explored through open-ended questions. There was not triangulation of data to explore the perceptions of CCNs; hence the perceptions of these CCNs may not be applied to other CCNs in other hospital settings.

## CONCLUSION

The results of this study indicated that CCNs perceived that they are inadequately prepared to care for HIV/AIDS patients admitted to CCUs in KwaZulu-Natal. This may be related to the fact that only a minority of CCNs had undergone training on HIV/AIDS management from different institutions. Moreover, for those who had undergone training, some felt they were inadequately prepared because of the lack of updated information regarding caring for people living with HIV/AIDS. Apart from the lack of training and updated information reported by the respondents, CCNs still felt challenged by factors such as the advanced level of the HIV disease, confidentiality about the disease and knowledge about HIV/AIDS treatment regimen. However, CCNs universally believe that incorporation of HIV/AIDS management into the critical care nursing programme may improve quality of care within the critical care arena, which is in consensus with the current strategic plan for nursing education, training and practice in South Africa.

## REFERENCES

- Akgün, K.M., Pisani, M. & Crothers, K. 2011. Critical illness in HIV-infected patients in the era of combination antiretroviral therapy. *Proceedings of the American Thoracic Society*, 8:301–307.
- Anderson, D. 2009. For adult HIV patients on highly active antiretroviral therapy, will continuation or initiation of therapy in intensive care units improve patient outcome during hospitalization when compared to patients not receiving therapy. *School of Physician Assistant Studies*. Paper 178. Available at: <http://commons.pacificu.edu/pa/178> (accessed 15 August 2012).
- Corona, A. & Raimondi, F. 2009. Caring for HIV-infected patients in the ICU in the highly active antiretroviral therapy era. *Current HIV Research*, 7:569–579.
- De Beer, J., Brysiewicz, P. & Bhengu, B.R. 2011. Intensive care nursing in South Africa. *Southern African Journal of Critical Care*, 27(1):6–10.
- Deribe, K., Woldemichael, K., Wondafrash, M., Haile, A. & Amberbir, A. 2008. Disclosure experience and associated factors among HIV positive men and women clinical service users in southwest Ethiopia. Available at: <http://www.biomedcentral.com/1471-2458/8/81> (accessed 18 September 2012).
- Dickson, S.J., Batson, S., Copas, A.J., Edwards, S.G., Singer, M. & Miller, R.F. 2007. Intensive care: survival of HIV-infected patients in the intensive care unit in the era of highly active antiretroviral therapy. *An International Journal of Respiratory Medicine*, 62:964–968.

- Gillespie, R. 2006. The critical care nursing workforce in Western Cape hospitals, a descriptive survey. *Southern African Journal of Critical Care*, 22(2):50–56.
- Halligan, P. 2006. Caring for patients of Islamic denomination: critical care nurses' experiences in Saudi Arabia. *Journal of Clinical Nursing*, 15(2):1565–1573.
- Hall, J. & Sutton, A. 2002. Non-HIV nurses' knowledge of HIV therapy. *Nursing Standard*, 16(43):33–36.
- Health Professionals Council of South Africa. 2008. Guidelines for good practice in the health care professions. Ethical guidelines for good practice with regard to HIV. Booklet 11. Available at: <http://www.hpcs.co.za> (accessed 9 February 2014).
- HIV/AIDS and STI Strategic Plan for South Africa 2007–2011. Available at: [http://www.unaids.org/en/media/unaids/contentassets/dataimport/pub/externaldocument/2007/20070604\\_sa\\_nsp\\_final\\_en.pdf](http://www.unaids.org/en/media/unaids/contentassets/dataimport/pub/externaldocument/2007/20070604_sa_nsp_final_en.pdf) (accessed 20 May 2012).
- Huang, L., Quartin, A., Jones, D. & Havlir, V.D. 2006. Intensive care of patients with HIV infection. *The New England Journal of Medicine*, 355:173–181.
- Israel, G.D. 2009. Determining sample size: program evaluation and organizational development, IFAS. PEOD-6: Florida FL: University of Florida. Available at: <https://edis.ifas.ufl.edu/pd006> (accessed 10 May 2012).
- Lundgren, J.D., Babiker, A.G., Gordin, F.M., Borges, A.H. & Neaton, J.D. 2013. When to start antiretroviral therapy: the need for an evidence base during early HIV infection. *BioMed Central Medicine*, 11:148.
- New South Wales Government. 2009. Statement of Ethics: Code of Conduct: Fairness, respect, integrity and responsibility. NSW Department of Education and Communities. Available at: <http://www.dec.nsw.gov.au/about-us/careers-centre/why-choose-us/code-of-conduct> (accessed 3 August 2012).
- Nicolay, N. 2008. Summary of provincial HIV and AIDS statistics for South Africa. Available at: [http://www.callawayleadership.com/downloads/CLI\\_LE\\_episode18\\_summary\\_HIV\\_stats\\_SA.pdf](http://www.callawayleadership.com/downloads/CLI_LE_episode18_summary_HIV_stats_SA.pdf) (accessed 15 June 2012).
- Pathak, V., Rendon, I.S.H., Atrash, S., Gagadam, V.P.R., Bhunia, K., Mallampalli, S.P., Vegesna, V., Dangal, M.M. & Ciubotaru, R.L. 2012. Comparing HIV versus non HIV patients requiring mechanical ventilation. *Clinical Medicine and Research*, 10(2):57–64.
- Perrie, H.C. 2006. Knowledge of intensive care nurses in selected care areas commonly guided by protocols. Unpublished dissertation, University of the Witwatersrand, Johannesburg.
- Quality Assurance Project Tanzania HIV Stigma Study Team. 2007. Evaluation of knowledge, attitudes, and practices of health care providers toward HIV-positive patients in Tanzania. Operations research results. Available at: <http://www.hciproject.org/sites/default/files/Tanzaniastigma.pdf> (accessed 15 September 2012).
- Rispel, L. 2008. Exploring nursing policies, practice and management in South Africa. December Research on the State of Nursing (RESON): Workshop Report University of Witwatersrand. Available at: <http://www.healthlink.org.za/uploads/files/resonDec08.pdf> (accessed 19 September 2012).
- South African Nursing Statistics. 1996–2010. Available at: <http://www.sanc.co.za/stats.htm> (accessed 7 February 2014).
- South African Nursing Council. 2000. The SANC HIV/AIDS policy. Available at: <http://www.sanc.co.za/policyhiv.htm> (accessed 9 February 2014).
- Scribante, J. & Bhagwanjee, S. 2007. National audit of critical care resources in South Africa open versus closed intensive and high care units. *South African Medical Journal*, 97(12):1319–1322.

- Shipanga, V.M. 2011. The perception of the care and support services for nurses caring for patients with HIV/AIDS in the Intermediate Hospital Oshikati. Unpublished dissertation. University of Stellenbosch, Stellenbosch.
- The USAID Health Policy Initiative. 2010. Measuring the degree of HIV-related stigma and discrimination in health facilities and providers: Working Report. Washington, DC: Futures Group, Health Policy Initiative, Task Order 1. Available at: [http://www.healthpolicyinitiative.com/Publications/Documents/1312\\_1\\_Health\\_Facility\\_and\\_Provider\\_Stigma\\_Measurement\\_Tool\\_.pdf](http://www.healthpolicyinitiative.com/Publications/Documents/1312_1_Health_Facility_and_Provider_Stigma_Measurement_Tool_.pdf) (accessed 15 September 2012).
- Tummers, G.E.R., Landeweerd, J.A., Janssen, P.P.M. & Van Merode, G. 2006. Organizational characteristics, work characteristics, and relationships with psychological work reactions in nursing: A longitudinal study. *International Journal of Stress Management*, 13(2):201–227.
- UNAIDS. 2009. AIDS epidemic update. Available at: [http://data.unaids.org/pub/report/2009/jc1700\\_epi\\_update\\_2009\\_en.pdf](http://data.unaids.org/pub/report/2009/jc1700_epi_update_2009_en.pdf) (accessed 22 May 2012).
- University of the Orange Free State. 2005. Guidelines for policy formulation, development and review. Available at: [www.ufs.ac.za/dl/userfiles/Documents/00000/157\\_eng.pdf](http://www.ufs.ac.za/dl/userfiles/Documents/00000/157_eng.pdf) (accessed 1 November 2012).