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Full Length Research Paper

HIV/AIDS care, coping strategies and work environmental stress among nurses in Botswana

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Since 2006 there has been universal acceptance in both developing and industrialized societies that HIV treatment and related services, including more effective programs, be available to all citizens. However, as a result of the worldwide recession and shifting health priorities, progress toward these goals has stalled. While the epidemic continues to grow (approximately 34 million globally, with 2.7 million new cases in 2010), fewer resources are dedicated to treatment and prevention than previously, and clinical staffs, especially nurses are challenged by more patient care responsibilities. This paper focuses on the relationships of HIV/AIDS care, coping strategies and work environmental stress for nurses working in an African country (Botswana) with a significant epidemic. Data for this study was obtained through questionnaires completed by a sample of 201 nurses working in different types of health facilities in rural and urban areas of Botswana. Results show that 65% of the nurses frequently provided care to clients with HIV/AIDS. Only 35% of the nurses provided care to clients with HIV/AIDS infrequently. Those caregivers who often worked with patients infected with HIV reported significantly ($p < .05$) more "role demand", "job control" and "shift work" stress and said that their coping strategies were more likely to include taking food supplements. Implications for professional "burn out" among HIV/AIDS caregivers in developing societies are discussed together with strategies for more effective allocations of health care personnel.

Key words: HIV/AIDS, nurses, healthcare, psychological outcome, Botswana.

INTRODUCTION

Historically, Botswana has had one of the most effective healthcare systems in Africa, if not the entire developing world. By the late 1980s, its mostly nurse-staffed and run nationally integrated healthcare network was supporting a growing life expectancy (approximately 62 years) and declining infant mortality (37.4 per 1,000) and under-5 death rate (53.4 per 1000) was the envy of the rest of Africa ((Botswana Ministry of Health, 1988)). Despite the many

strengths of its health services and economy, within a decade, Botswana was experiencing one of the world's worst HIV/AIDS epidemics. HIV prevalence for most age groups doubled over the 1990s resulting in an adult infection rate of 38.6% which was reported in the National HIV Survey for 2001 (Govt. of Botswana, 2001). Gains in life expectancy, infant, and under-5 mortality were reversed and there was a resurgence of tuberculosis.

HIV/AIDS tuberculosis. HIV/AIDS infection became the main cause of hospital admissions as health services in all units of the healthcare system became strained and shortages of clinical personnel, especially nurses, appeared nationwide (Govt. of Botswana, 2006).

Over the next decade, the Botswana Ministry of Health undertook many effective initiatives to address the AIDS crisis, including the Prevention of Mother to Child Transmission (PMCT), the provision of Anti-retroviral Therapy (ARV), Prevention Education (PE), and Community-based Home Care (CHBC) (Botswana Ministry of Health, 2009). These broad initiatives have resulted in many successes: healthcare is free for children and all citizens are encouraged to get tested in public clinics. Mothers receive free treatment in clinics so they are far less likely to pass the virus on to their newborns. There is ample counseling and HIV tests are ready in twenty minutes. If an HIV positive patient has a CD4 count of below 200 they are given free antiretroviral drugs (UNICEF, 2011). At present, there are an estimated 165,000 individuals on the government sponsored ARV program, although the cost may be becoming unsustainable (Forchheh, 2012).

As a result of these new or expanded programs, the HIV infection rate has declined significantly and continues to fall among citizens of Botswana. Recent data shows that 31.8% of women attending antenatal care clinics, and 17.6% of the general population are infected with HIV-1 (Botswana Ministry of Health, 2009; National AIDS Coordinating Agency, 2008). Studies using multiple cause of death information now indicate that TB is the leading cause of death in Botswana (Setlhare et al., 2009) and South Africa (Amey et al., 2012). Yet, as with other countries of Southern Africa, Botswana continues to have a generalized epidemic that for the foreseeable future will present a challenge to its healthcare system. Nurses and other clinical service providers must constantly treat HIV symptoms and AIDS related illnesses while also giving other required care (Government of Botswana, 2010).

The United Nations Programme on HIV/AIDS (UNAIDS, 2000) has long recognized the burden of AIDS patient care for nurses and other healthcare professionals. They developed a list of psychological, behavioral and physical symptoms of stress observed in these caregivers living in developing nations, which include depression and loss of self-esteem, withdrawal from clients, and excessive fatigue. In Botswana, the Ministry of Health (2003) reported similar outcomes of AIDS care involvement in many of its nursing personnel and other healthcare professionals. They concluded that the caregiver soon discovers that HIV/AIDS carries a stigma for both the infected and uninfected caregivers. The caregiver is viewed as having AIDS and is rejected and sometimes isolated. (Fako et al., 2004).

The aim of this analysis is to assess the impact of HIV/AIDS care involvement on dimensions of work environment stress among a sample of nurses working in Botswana. Since there has been no recent journal publication on the implications of the burden of HIV/AIDS care for psycho-stress in Botswana or other African countries based on large sample studies, this study will provide more generalizable information for nurse clinicians, educators, healthcare administrators and policy makers.

MATERIALS AND METHODS

Sample and data collection

The data for this study were collected in 2009 as part of a national survey of nurses in Botswana. The questionnaire for the survey was developed in consultation with nurses, nurse educators and administrators, officials of the Ministry of Health, and representatives of international health organizations in Botswana. Factors that have been found in the literature (that is HIV/AIDS care involvement) to impact work related issues such as stress, performance, job satisfaction, coping behaviors and professional competence were included in the questionnaire. The target population included all nurses working in health posts and clinics with and without maternity wards, run by the Ministry of Local Government in Botswana. All public clinics within each health region were targeted and a sample of questionnaires administered. While there are some private clinics in Botswana, the vast majority of HIV/AIDS care is given by nurses in the public clinics.

This study was reviewed by the Human Subjects Protection Committee of the hospital administration and it was approved prior to the initiation of the research. Also, consents were requested and obtained from the nurse participants before completing the questionnaire. To maintain confidentiality and in view of the full schedules maintained by nurses, the questionnaires were delivered to nurses for self-completion and later collection. Questionnaires were administered to 201 nurses. Of these, all (201) returned their questionnaires and responded to the questionnaire item relating to frequency of HIV/AIDS care involvement.

Overall, considering the socio-demographic factors that are relevant for the variables under study (work environment stress and HIV/AIDS care involvement), this group of nursing professionals was relatively young and well educated. Seventy-two percent were under 40 years of age, 43% had degrees and 36% were midwives or specialists. Also of relevance is that 61% had dependent children. However, 52% were neither married nor cohabitating. Finally, the large majority, 85%, were citizens of Botswana; while the remaining 15% were citizens of another country.

Measurement

Frequency of HIV/AIDS care involvement is measured by a single item which asks how often they work with patients with HIV-related illness in their daily work. Coping strategies are assessed by a battery of nine items that indicate ways that individuals cope with life in general. They include going on holiday, exercising, staying away from work, maintaining a healthy diet, working extra time, writing daily plans, taking food supplements, responding to e-mails, and testing for HIV. Work-environment stress is ascertained by a group of 13 questions which includes the following stress dimensions: role demand, supervisor conflicts, loss of job control,

excessive workload, patient overload, patient family conflicts, patient death, unclear job description, clinical change, occupational dissatisfaction, shift work difficulties, work-home conflict, and family problems. HIV/AIDS care competence is a self-assessment.

Data analysis

All variables included in the analyses were categorical or converted into a categorical format. Respondents who reported that they worked with HIV/AIDS patients half of the time or less received a score of 1 and were placed in the "infrequent care" group, while those who said that they cared for these patients almost everyday or everyday received a score of 2 and were placed in the "frequent care" group. This approach enabled contingency table analysis and chi-square tests of association and independence to investigate the nature and strength of associations between HIV/AIDS patient care involvement and antecedent and out-come variables (Bohrstedt and Knoke, 1994). Bivariate analyses were completed to determine whether and how nurses reported work environment stress was influenced by; (1) background variables, (2) HIV/AIDS care and maternal and child healthcare duties, and (3) coping behaviors. Multiple logistic regression models were fitted to determine the most important factors that predict nursing work environment stress.

RESULTS

Factors associated with stress

Bivariate analyses showed that frequent involvement in HIV/AIDS care was significantly ($p < .05$) related to greater role demand, job control, and shift work stress. However, greater participation in caring for patients with HIV/AIDS does not produce significant reported increases in stress from supervisors, workload, patients, patient families, death of a patient, clarity of duties, change, work-home conflicts, nurse's families, or various strategies for coping with everyday life with the exception of taking food supplements. The results of the chi-square tests including role demand, job control and shift work stress with frequent participation in HIV/AIDS care and other explanatory variables are shown in Table 1.

Six factors are associated with one or more of the three types of self-reported stress. These include two background factors (citizenship and educational attainment), two care variables (provision of HIV/AIDS care and feel competent to provide care), and two coping behavior factors (taking holidays and absenteeism). The only factor significantly related to role demand stress is provision of HIV/AIDS care ($p = .042$). Four variables are significantly related to control stress; citizenship ($p = .006$), provision of HIV/AIDS care ($p = .035$), feel competent to provide care ($p = .002$), and absenteeism ($p = .013$). Three measures are associated with shift work stress including education ($p = 0.013$), providing HIV/AIDS care ($p = 0.046$) and taking holidays ($p = 0.040$). The nature of these associations is shown in Table 2.

Overall, 34, 60 and 51% of all nurse respondents experienced high levels of role demand, job control and

shift work stress, respectively.

Role demand stress

Nurses who infrequently provided HIV/AIDS care (24%) were much less likely to experience high levels of role demand stress than all other nurses. While non-citizens (39%) and those who were frequently absent (40%) more often reported role demand stress, the variables citizenship and absenteeism were not statistically associated with this type of work environment stress as shown in Table 2

Job control stress

While the majority (60%) of nurses experience high levels of job control stress, non-citizens were far more likely to experience this type of work environment stress than citizens. The percentage of non-citizen clinicians who experience high levels of job control stress was reported to be 85% as compared with 56% of the nurses who are citizens of Botswana.

A significantly greater percentage (65%) of nurses who frequently provide HIV/AIDS care than nurses who are not frequently involved in this type of care (50%), experienced a high level of job control stress. Also, practitioners who believed that they were competent to provide HIV/AIDS care were more likely to report job control stress (70%) than nurses who infrequently offer these services (48%). Only 49% of the nurses who rarely take holidays reported high levels of job control stress as opposed to 65% of the nurses who frequently schedule time-off from work. Conversely, a 47% of clinicians who often do not show up for work reported high stress levels related to their control of the work environment compared with 66% who had high rates of absenteeism.

Shift work stressors

Nurses who had earned a degree or higher qualification were less likely to report high levels of shift work stress (43%) than practitioners with fewer qualifications (61%). Similarly, nurses who do not frequently provide HIV/AIDS care, those who do not feel competent providing care and those who rarely take holidays were significantly less likely to experience shift work stress than their peers who frequently are involved in HIV/AIDS care (41% vs.56%), who feel more competent as care providers(44% vs.56%) and those who frequently take time off (38% vs. 54%).

Logistic regression results

Given that relatively few predictors are significantly

Table 1. Association between work environment stress and background factors, care and coping behaviors.

| Variable | Role demand stressor | | | Control stressor | | | Shift work stressor | | |
|---|----------------------|----|--------------|------------------|----|--------------|---------------------|----|---------------|
| | Chi-square | df | Sig. | Chi-square | df | Sig. | Chi-square | df | Sig. |
| Background factor | | | | | | | | | |
| Citizenship | 0.3 | 1 | 0.565 | 7.7 | 1 | 0.006 | 3.0 | 1 | 0.081 |
| Highest qualification | 0.0 | 1 | 0.906 | .5 | 1 | 0.467 | 6.2 | 1 | 0.0013 |
| Nursing qualification | 0.7 | 2 | 0.695 | 0.2 | 2 | 0.890 | 0.7 | 2 | 0.689 |
| Age at last birthday | 1.5 | 2 | 0.478 | 3.5 | 2 | 0.176 | 1.0 | 2 | 0.601 |
| Marital status | 0.1 | 1 | 0.759 | 2.3 | 1 | 0.133 | 0.0 | 1 | .0990 |
| No. of dependent children | 1.8 | 2 | 0.400 | 1.6 | 2 | 0.456 | 3.3 | 2 | 0.191 |
| HIV/AIDS care and MCH duties | | | | | | | | | |
| Providing HIV care | 4.1 | 1 | 0.042 | 4.4 | 1 | 0.035 | 4.0 | 1 | 0.046 |
| Feel confident to provide HIV/AIDS care | 0.2 | 1 | 0.673 | 9.2 | 1 | 0.002 | 2.9 | 1 | 0.089 |
| Conducting NCH duties | 0.2 | 1 | 0.693 | 0.8 | 1 | 0.372 | 0.4 | 1 | 0.550 |
| Coping behavior | | | | | | | | | |
| Taking food supplements | 0.1 | 1 | 0.769 | 0.5 | 1 | 0.478 | 1.3 | 1 | 0.252 |
| Taking holidays | 0.6 | 1 | 0.441 | 3.6 | 1 | 0.057 | 4.2 | 1 | 0.040 |
| Absenteeism | 1.5 | 1 | 0.223 | 6.2 | 1 | 0.013 | 1.7 | 1 | 0.194 |
| Exercise to maintain good health | 0.1 | 1 | 0.752 | 2.3 | 1 | 0.127 | 0.7 | 1 | 0.388 |
| Putting in extra time | 1.9 | 1 | 0.169 | 0.0 | 1 | 0.869 | 0.1 | 1 | 0.813 |

associated with each of the dimensions of work environment stress, only a single regression model is considered for each dependent variable. For the work role demand stress, the only independent variable is frequency of performing HIV/AIDS care. For job control and shift work stress, a conditional forward stepwise procedure was used to add predictive variables into the models. This procedure began with the predictors most highly related to the dependent variable.

Predictive model for work role stress

As previously reported, HIV/AIDS Care Involvement

is the only significant predictor of our measure of work role stress. The results of the logistic regression of this dependent variable are shown in Table 3.

The odds of a nurse who frequently performs HIV/AIDS care experiencing high levels of work role stress are almost twice that for a nurse who does not frequently perform such care. This logistic regression model correctly predicts 66.5% of Botswanan nurses on their reported level of work role stress.

Predictive model for job control stress

The four variables (HIV/AIDS care, citizenship,

competency to provide HIV/AIDS care and absenteeism) observed in the bivariate analyses to be statistically associated with job control stress were included in the logistic regression. A final model was determined using the forward stepwise method. The variables were added to the model according to their relative importance for predicting the odds that a nurse would have a high level of job control stress relative to a low level of stress. The independent measures were added in the order shown in Table 4.

The most important single predictor among the four variables was provision of HIV/AIDS Care. Nurses who frequently provide HIV/AIDS care were about twice as likely to experience stress related

Table 2. Percent of nurses who experience different forms of stress by background, care, and coping behaviors strategies

| Background | Stressor | | |
|---|-------------|-------------|-------------|
| | Role demand | Control | Shift work |
| Citizenship | | | |
| Citizen | 32.7 | 56.0 | 53.0 |
| Non-citizen | 38.5 | 84.6 | 34.6 |
| Highest qualification | | | |
| Diploma or lower | 33.7 | 56.6 | 60.7 |
| Degree or higher | 34.5 | 61.8 | 42.7 |
| HIV/AIDS and MCH duty | | | |
| Frequency of providing HIV care | | | |
| Infrequent | 24.3 | 50.0 | 40.6 |
| Frequent | 38.6 | 65.4 | 55.5 |
| Feel competent to provide HIV care | | | |
| Not very competent | 31.4 | 48.2 | 44.0 |
| Very competent | 34.3 | 69.7 | 56.4 |
| Coping behaviour | | | |
| Taking holidays | | | |
| Hardly | 29.6 | 49.1 | 37.7 |
| Frequent | 35.5 | 64.1 | 54.2 |
| Absenteeism | | | |
| Hardly | 30.7 | 65.7 | 46.7 |
| Frequent | 39.7 | 46.6 | 56.6 |
| Total | 33.5 | 59.8 | 50.5 |

Table 3. Results of logistic regression of work role stress.

| Y = 1 if role demand stressor is high | B | S.E. | Wald | df | Sig. | Odds ratio | 95% C.I. (Odds ratio) | |
|---------------------------------------|--------|-------|--------|----|-------|------------|-----------------------|-------|
| | | | | | | | Lower | Upper |
| HIV/AIDS care | | | | | | | | |
| Infrequent | 0 | | | | | 1.0 | | |
| Frequent | 0.672 | 0.333 | 4.074 | 1 | 0.044 | 2.0 | 1.02 | 3.76 |
| Constant | -1.137 | 0.279 | 16.642 | 1 | 0.000 | 0.3 | | |

to their limited control of the work environment as clinicians who do not frequently provide such care. Citizenship was the next factor added to the predictive regression model, followed by competency providing care and finally, absenteeism. Non-citizens were almost 8 times as likely to report high job control stress as citizen

nurses, while nurses who feel competent providing care were just over twice as likely to feel control stress as those who do not feel competent, and clinicians who are rarely absent were about twice as likely to feel high control stress as those are frequently absent. The percentage of nurses whose correct level of job control

Table 4. Results of logistic regression for job control stress and predictors.

| Factor added at each stage | B | S.E. | Wald | df | Sig. | Odds ratio | 95% C.I. (Odds ratio) | |
|---|--------|------|------|----|-------|------------|-----------------------|-------|
| | | | | | | | Lower | Upper |
| 1) HIV care | | | | | | | | |
| Infrequent | 0 | | | | | 1.0 | | |
| Frequent | 0.763 | 0.34 | 5.00 | 1 | 0.025 | 2.1 | 1.10 | 4.19 |
| 2) Citizenship | | | | | | | | |
| Citizen | 0.000 | | | | | 1.0 | | |
| Non-Citizen | 2.028 | 0.67 | 9.08 | 1 | 0.003 | 7.6 | 2.03 | 28.42 |
| 3) Feel competent to provide HIV/AIDS care | | | | | | | | |
| Not very competent | 0.000 | | | | | 1.0 | | |
| Very competent | 0.812 | 0.32 | 6.37 | 1 | 0.012 | 2.3 | 1.20 | 4.23 |
| 4) Absenteeism | | | | | | | | |
| Frequent | 0.000 | | | | | 1.0 | | |
| Hardly | 0.740 | 0.35 | 4.59 | 1 | 0.032 | 2.1 | 1.07 | 4.12 |
| Constant | -1.217 | 0.41 | 8.91 | 1 | 0.003 | 0.3 | | |

Table 5. Shift work stress and predictors.

| Factor added at each stage | B | S.E. | Wald | df | Sig. | Odds ratio | 95% C.I. (Odds ratio) | |
|------------------------------|--------|-------|--------|----|-------|------------|-----------------------|-------|
| | | | | | | | Lower | Upper |
| Highest qualification | | | | | | | | |
| Degree or higher | 0.000 | | | | | 1.0 | | |
| Diploma or lower | 0.686 | 0.300 | 5.2232 | 1 | 0.022 | 2.0 | 1.10 | 3.58 |
| Taking holidays | | | | | | | | |
| Hardly | 0.000 | | | | | 1.0 | | |
| Frequent | 0.669 | 0.336 | 3.971 | 1 | 0.046 | 2.0 | 1.01 | 3.77 |
| Constant | -0.772 | 0.313 | 6.097 | 1 | 0.014 | 0.5 | | |

stress was predicted from this model was 65.3%.

Predictive model for shift work stress

Initially three variables were included in the predictive model for shift work stress: HIV/AIDS care, education qualification, taking holidays. During the step-wise regression, the frequency of providing HIV/AIDS care was deleted. Table 5 shows the results of the logistic regression analysis of the shift work stress dependent variable.

Education attainment is the most important predictor, followed by taking holidays. Probably, Botswanan nurses with low educational attainments who are highly involved in HIV/AIDS care experience significant shift work stress. Clinicians with a nursing diploma or lower qualifications are about twice as likely to report shift work stress as those with a higher degree or qualification. Nurses who frequently took holidays were also twice as likely to experience shift-work stress. The logistic regression model including the measures of education attainment and leave taking predicted the level of shift work stress in 57.8% of the nurses.

DISCUSSION

This analysis found that nurses in Botswana who frequently provided HIV/AIDS care experienced significantly more self reported stress with regard to several dimensions of their work environment, that is, role demand, job control, and shift work. While these findings are very important and suggest the need for specific interventions, it is also noteworthy that frequency of providing care to HIV/AIDS patients is not related to reported stress from supervisors, workload, patients, patient families, death of a patient, clarity of duties, change, work-home conflicts, nurse families or various strategies for coping with everyday life. Overall, the evidence suggests that HIV/AIDS care in Botswana is mostly provided by highly educated and specialized nurses who because of the complex and often conflicting work demands placed upon them experience stress related to their work flow and scheduling. However, because they are employed in a modern, well-developed healthcare system which is relatively well staffed and resourced, the stress resulting from the burden of HIV-illness care demands and additional non HIV/AIDS responsibilities does not affect other areas of their work or home life. Consequently, they do not have to come up with major new strategies to cope with everyday life.

CONCLUSION AND RECOMMENDATIONS

Nonetheless, the fact that the predictive logistic regression models used in this study suggest that nurses in Botswana who frequently provide HIV/AIDS care, and their colleagues who have limited education, or who are not citizens would benefit from interventions which will help them deal with stresses and strains in their immediate work environment should not be overlooked. This level and type of stress may be far different from that experienced by nurses over a decade ago, as reported by UNAIDS (2000) and the Botswana Ministry of Health (2003) which reported depression, loss of self esteem, withdrawal from clients, excessive fatigue and a deep sense of shame to be associated with the stigma of treating AIDS patients. Currently, nurses with frequent involvement in HIV/AIDS care in Botswana would probably benefit from in-service education modules on positive stress management, healthy lifestyles, regular exercise and appropriate nutrition. Optimally, follow-up counseling by professionals on all of these issues would be available. Comprehensive programs such as these should reduce nurse's burnout and turnover. Also, non-degreed nurses (those with diplomas) could be offered in-service training in AIDS prevention, counseling, treatment and care so that they feel more competent in their roles. This measure may also help to stabilize and maintain the existing nurse work force.

LIMITATIONS

This study is limited by the fact that it is a one-time sample survey which provides a single measurement of nurse' work role performance, work environment stress, job performance, coping behaviors and self assessed professional competence in Botswana. The study principals have comparable data from a survey completed by a similar national sample of Botswana nurses 20 years ago. It will be interesting to look at changes in professional roles, attitudes and work environments over this period during which the country has experienced a major HIV/AIDS epidemic and substantial improvements in its healthcare. However, to better measure changes and trends in the Botswana's nursing profession and its work environment, similar national sample surveys with the same or comparable respondents should be completed every two years.

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