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Work Stress, Workload and the Efficiency of Nurses in Tertiary Health Facilities in Southwest, Nigeria

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Abstract: *This study examined the levels of work stress and efficiency of nurses in tertiary health facilities in Southwest, Nigeria, and tested whether work stress and workload were significantly related to nurses' efficiency. A descriptive survey design was adopted. From a population of 3,590 nurses in the six states of Southwest, Nigeria, a sample of 210 nurses was drawn from three tertiary health facilities using a multi-stage sampling procedure. Data were gathered with a validated, self-designed instrument, the Work Stress, Physiological Parameters and Efficiency Questionnaire (WSPPEQ), which yielded a reliability coefficient of 0.78. Descriptive statistics (frequency counts, percentages, mean and standard deviation) answered the research questions, while Pearson Product Moment Correlation tested the hypotheses at the 0.05 level of significance. Results showed that the level of work stress (68.1% moderate) and the level of efficiency (65.2% moderate) of the nurses were both moderate. Work stress was significantly and negatively related to efficiency ($r = -0.246$, $p < 0.05$), and workload was significantly and negatively related to efficiency ($r = -0.557$, $p < 0.05$), with workload showing the stronger association. The study concluded that rising work stress and, more strongly, rising workload depress the efficiency of nurses. It is recommended that stress-reduction strategies, adequate staffing and improved conditions of service be instituted to lower the workload of nurses and thereby raise their efficiency.*

Keywords: work stress, workload, efficiency, nurses, tertiary health facilities

INTRODUCTION

Nurses are the backbone of healthcare as they are always present at the bedside of the patient. Due to the nature of their work, they are constantly exposed to a variety of occupational stresses with immediate and long-term implications for their health, patient safety and quality of care provided. Today's workplace is full of deadlines, frustrations and competing demands that always challenge the human coping mechanisms. While stress can be beneficial in small amounts, allowing a person to be more alert and focused, when someone is constantly in emergency mode, the mind and body

suffer, and their work becomes uncoordinated, unproductive and out of sync with what was intended.

For most people, work is the most time-consuming activity that expends energy towards an end. Occupational demands increase over time and can eventually become more than the person can handle, which results in stress. While a small stress load can be good in that it keeps a worker alert and motivated in challenging situations, when the stress load exceeds the capacity to cope, physical health, mental health and productivity on the job suffer. Workplace stress has been known to decrease productivity and can contribute to absenteeism; up to eighty per cent of work-related injuries and forty per cent of employee turnover have been attributed to stress, according to the American Institute of Stress (Glazer & Gyurak, 2018). The disgruntled medical worker is likely to develop a bad attitude to work, be less productive or leave the job, ultimately leading to a patient's dissatisfaction, while a satisfied worker is more likely to be more productive, original and dedicated to the work.

The role of nursing care is considered a daunting and challenging job. The primary causes of occupational stress among nurses are the high expectations that are placed on them with the anxiety and tension that comes with health issues, and the excess of duties with limited authority. If the level of a stressor is beyond the individual's tolerance, then negative consequences are more likely, including nurses' performance of their duties and their emotional health and wellbeing. Bedside care in particular is a drain on energy on many fronts: musculo-skeletal strain builds up throughout the course of a shift; nurses have to be vigilant enough to work out the calculations of drugs and respond to the important questions of patients and relatives. In countries with limited resources, the situation of the nursing workforce is often marked by limited resources, lack of staff support and organizational deficiencies (Casu & Giaquinto, 2018).

Work stress is closely related to workload. Important stressors that increase the load on each nurse include inadequate staffing, sleep deprivation, constant emotional demands and physical suffering (Sathiya et al., 2016). If there are more patients than a nurse can reasonably manage, the overwork will result in fatigue, errors and reduced productivity. This situation is exacerbated by Nigeria's perennial nurse shortage, partly due to the fact that some nurses are migrating to other countries for better opportunities, which leaves fewer people to provide the same level of care (Ogundipe et al., 2015).
Efficiency, on the other hand, is defined as the degree to which an organisation turns its input into outputs to the optimum extent, or how much goods and/or services are produced from the least resources. Efficiency in nursing involves a competent standard of care in line with the code of ethics for the profession, effective interpersonal relationship, therapeutic communication and the use of technology to meet the needs of the patient. Efficient high-quality nursing practice results in faster recovery and shorter hospital stays, and efficiency is achieved by minimizing waste and maximizing all processes (American Quality Alliance, 2017). The process of achieving higher performance, more care outcomes for less resources, time and money, is now the top priority for health-sector managers, as health systems globally face increasing costs and financial constraints.

The physiology of the stress response provides a partial explanation of why there can be a negative effect on performance over time when a person is under occupational stress. When adrenaline is made, it is part of a natural process in the body known as the fight-or-flight response, which the body normally goes back to after the danger or need has passed. Any factor, or combination of factors, that can trigger this response is called a stressor and when the external factor causes a response that the body cannot cope with, the person is under stress. When the stressors are ongoing and frequent, as is often the case in a busy hospital ward, the repeated activation of this response adds up, resulting in fatigue, irritability and reduced concentration, which all have a direct impact on the quality of care a nurse can provide (Roberts & Grubb, 2014).

Patterns of employment, working hours and job content are different in the health care service sector than in others, as are the challenges at practice, the welfare and employment outcomes, which include stress at work, that is most noticeable. The service sector employs a relatively high proportion of people in Nigeria, and the hospital and healthcare sector employs a reasonable proportion of people. However, despite the high demand for acute-care services, hospitals are not able to provide such services due to the high cost, inefficient operations, lack of infrastructure and changing expectations of potential healthcare workers (Skaler & Anisman, 2011). In this context, absenteeism and turnover, which reduce treatment quality, are often exacerbated by uncontrolled stress at work, and by the increased workload of those who continue to work, because of the reduced staffing levels.

Nurses have been likened to the backbone of the healthcare business, having a closer relationship with patients than any other profession (Ogundipe et al., 2015). This closeness puts a strain on their coping mechanisms and makes their efficiency crucial to the performance of the whole hospital. The efficient, quality nursing care not only reduces the length of stay in the institution but also saves precious resources; on the other hand, inefficient nursing increases the expenses and recovery time of the patient. It is therefore of practical importance to hospital managers and health policy in general to understand the forces which increase or decrease nursing efficiency.

While the relationship between stress and workers' performance has been explored, evidence from tertiary hospital in Southwest, Nigeria is limited, and studies that simultaneously investigate the relationship between workload and work stress to a directly measured index of nursing efficiency are rare. Most of the literature is done separately in stress and workload areas or in relation to burnout and job satisfaction, not on efficiency of service delivery. It is against this background that the present study assessed the levels of work stress and efficiency among nurses in tertiary health facilities in Southwest, Nigeria and examined whether work stress and workload were significantly related to their efficiency. Specifically, the study sought to determine the level of work stress of the nurses; to determine their level of efficiency; to establish the relationship between work stress and efficiency; and to establish the relationship between workload and efficiency. Two null hypotheses were tested at the 0.05 level of significance: that there is no significant relationship between work stress and efficiency of nurses, and that there is no significant relationship between workload of nurses and their efficiency.

METHOD

The study adopted a descriptive survey design. This design was considered more suitable than experimental alternatives because no manipulation of variables was involved; the variables were observed and analysed as they occurred naturally, enabling the researcher to describe and interpret the relationships among work stress, workload and efficiency and to make generalisations from the responses obtained.

The population comprised 3,590 nurses working in the tertiary health facilities of the six states of Southwest, Nigeria, namely Oyo, Ogun, Osun, Ekiti, Ondo and Lagos. A sample of 210 nurses was selected from three tertiary health facilities using a multi-stage sampling procedure. At the first stage, three states (Lagos, Osun and Ekiti) were selected by simple random sampling; at the second stage, one tertiary health facility was selected from each state by simple random sampling; and at the third stage, proportional sampling was used to draw respondents from each institution, yielding 82 nurses from Lagos University Teaching Hospital, Ikeja; 48 from Ekiti State University Teaching Hospital, Ado-Ekiti; and 80 from Obafemi Awolowo University Teaching Hospital, Ile-Ife. Respondents were further divided into male and female through stratified sampling.

Data were collected using a self-designed, closed-ended instrument titled the Work Stress, Physiological Parameters and Efficiency Questionnaire (WSPPEQ). The instrument comprised two broad sections: Section A elicited socio-demographic information, while Section B contained items measuring the study variables, including work stress, workload and efficiency. The instrument was subjected to face and content validity by experts in Human Kinetics and Health Education and in Tests and Measurement, who confirmed its suitability. Reliability was established through a test-retest procedure in which twenty copies of the questionnaire were administered twice, two weeks apart, to twenty nurses in the specialist clinics of a teaching Hospital, who did not form part of the main study. The two sets of scores were correlated using Pearson Product Moment Correlation, giving a reliability coefficient of 0.78.

The instrument was administered by the researcher with the assistance of eight trained research assistants drawn from the three participating hospitals. All 210 copies were administered and retrieved after completion. The collected data were analysed using both descriptive and inferential statistics. Frequency counts, percentages, mean scores and standard deviations were used to describe the levels of work stress and efficiency, while Pearson Product Moment Correlation was used to test the hypotheses at the 0.05 level of significance. Levels of work stress and of efficiency were classified as low, moderate or high by using one standard deviation below and above the respective mean scores as the boundaries of the moderate band.

RESULTS

The level of work stress of nurses in tertiary health facilities of Southwest, Nigeria is presented in Table 1. Of the 210 nurses sampled, 26 (12.4%) recorded a low level of work stress, 143 (68.1%) recorded a moderate level and 41 (19.5%) recorded a high level. Since the majority fell within the moderate band, the level of work stress of the nurses was moderate.

Table 1: Level of work stress of nurses in tertiary health facilities of Southwest, Nigeria

Level of work stress	**Frequency**	**Percentage (%)**
Low (4.00–6.48)	26	12.4
Moderate (6.49–11.89)	143	68.1
High (11.90–17.00)	41	19.5
Total	**210**	**100.0**

Mean = 9.19; SD = 2.71; N = 210.

The level of efficiency of the nurses is presented in Table 2. Of the 210 nurses sampled, 32 (15.2%) recorded a low level of efficiency, 137 (65.2%) recorded a moderate level and 41 (19.5%) recorded a high level. The concentration of respondents within the moderate band indicates that the level of efficiency of the nurses was moderate.

Table 2: Level of efficiency of nurses in tertiary health facilities of Southwest, Nigeria

Level of efficiency	**Frequency**	**Percentage (%)**
Low (15.00–45.63)	32	15.2
Moderate (45.64–61.82)	137	65.2
High (61.83–75.00)	41	19.5
Total	**210**	**100.0**

Mean = 53.73; SD = 8.10; N = 210.

Hypothesis 1: There is no significant relationship between work stress and efficiency of nurses in tertiary health facilities of Southwest, Nigeria.
As shown in Table 3, the computed r-value of -0.246 was significant at the 0.05 level (p = 0.000); the null hypothesis was therefore rejected. The relationship between work stress and efficiency was low but statistically significant and negative in direction, indicating that increases in work stress were associated with corresponding declines in the efficiency of the nurses, and vice versa.

Table 3. Pearson correlation between work stress and efficiency of nurses

Variable	N	Mean	SD	r	p
Work stress	210	9.19	2.71	-0.246*	0.000
Efficiency	210	53.73	8.10		

*$p < 0.05$.

Hypothesis 2: There is no significant relationship between workload of nurses and their efficiency. As shown in Table 4, the computed r-value of -0.557 was significant at the 0.05 level (p = 0.000); the null hypothesis was rejected. The relationship between workload and efficiency was moderate, statistically significant and negative, showing that as the workload of the nurses increased, their efficiency declined correspondingly. Notably, the workload–efficiency association (r = -0.557) was stronger than the work stress–efficiency association (r = -0.246), suggesting that the sheer volume of work weighed more heavily on efficiency than the experience of stress alone.

Table 4: Pearson correlation between workload and efficiency of nurses

Variable	N	Mean	SD	r	p
Workload	210	36.99	7.25	-0.557*	0.000
Efficiency	210	53.73	8.10		

*$p < 0.05$.

DISCUSSION

The study revealed that the work stress experienced by the nurses in the tertiary health facilities in Southwest, Nigeria was moderate. This is not consistent with Aiken et al. (2014) who found that nurses had higher rates of burnout, turnover intention and lower job satisfaction and Papageorgiou et al. (2017) who found that the majority of their respondents perceived that nurses are susceptible to stress related illness. However, it is in line with Conway et al. (2018) whose study revealed that the majority of the respondents were in agreement that nurses' work schedules were more stressful than other health workers which was known to have a negative impact on nurses' efficiency. The moderate level seen here instead of a high level could be due to coping practices and management attention in the sampled institutions that keep stress within a manageable level.

The level of efficiency of the nurses was likewise moderate. This finding was consistent with the study of Kumudhavalli and Karthi (2019) which found moderately positive correlation between performance and structural empowerment with cumulative effect of structural empowerment on the efficiency of staff nurses. The 'moderate' rating indicates that the nurses were working to an acceptable level, but there was a significant potential for improvement with better working conditions and support.

The analysis showed that there was a significant negative correlation between work stress and efficiency. This is consistent with AhsanRaza and Naweed-e-Sehar (2022) who showed a small but statistically significant negative relationship between occupational stress and efficiency, which means that an increase in occupational stress will have a negative effect on the individual. The present finding is in opposition to the findings of Khosa et al. (2014) who reported that job stress and burnout had no impact on the job performance and efficiency of nurses. The negative association of stress beyond tolerable limits confirms the notion that stress beyond tolerable limits degrades the quality and quantity of care that nurses can offer.

There was also a strong, negative relationship between workload and efficiency which was greater than the relationship between work stress and efficiency. This is in line with the findings of Pines and Kanner (2012) that heavy workload has a negative effect on nurses, which can be seen through increased blood pressure, accelerated pulse, inability to concentrate on work and loss of appetite, all of which affect their performance. This is also consistent with Sathiya et al. (2016) which found that lack of staff and resources, sleep deprivation and constant emotional demands were significant stressors. The relative greater workload effect suggests that the practical significance of staffing levels is greater than the effects of stress-management interventions alone: fewer patients per nurse might have a greater effect on efficiency.

The two noteworthy correlations together paint a clear picture. Work stress and workload are conceptually different but empirically related; an overload of patients is in itself a powerful source of stress and the stress of a shift is a further impediment to the speed and accuracy of work. Both are working against efficiency and the greater weight given to workload indicates that the amount of demand on each nurse is the more immediate limitation on efficiency in the facilities sampled. This finding is consistent with the broader evidence that chronic under-staffing of Nigerian hospitals, partly due to the exodus of trained nurses, exposes nurses remaining in the hospitals to disproportionate workload (Ogundipe et al., 2015). Even well-coping nurses can be negatively affected by having too few staff to care for the number of patients they have.

The practical consequence of this is that interventions to improve nursing efficiency should work on two fronts at once. Stress-management training, counselling and organisational support help to tackle the psychological aspect of workload, while recruitment, task-shifting and rational duty rostering tackle the structural aspect. The workload–efficiency association was the stronger of the two, suggesting that structural changes that lessen the burden per nurse may bring the greater improvements, although the moderate levels of stress and efficiency found here suggest that there is still room for improvement before it becomes critical.

It is important to note that the size of the correlations should be interpreted in conjunction with the direction and significance of the correlation. While low in absolute terms, the work stress–efficiency coefficient was statistically significant in a sample of 210 nurses, which indicates that the effect is not incidental, but real, and that even slight increases in perceived stress have measurable impact on the quality and quantity of care. The moderate strength of the workload

coefficient, on the other hand, indicates that there is a significant load on performance, which is likely to increase further if staffing levels continue to be reduced. These trends are similar to the dose–response concept of occupational demands, where performance remains relatively stable under tolerable levels of stress and workload, but then drops off at a certain point. Looking at both indicators, and not just one or the other, would provide hospital managers with an earlier warning of an impending decline and a stronger foundation on which to target scarce resources.

Limitations

The main drawback of the study was that some of the respondents were hesitant to fully respond to the questionnaire items, even after repeated visits to the participating institutions were made, all the administered questionnaires were not retrieved. This challenge did not have a discernible impact on the findings. Further, the use of self-report for the work stress, workload and efficiency measures and the limitation of the sample to three tertiary facilities in three states, limits generalisation of the results to the wider Southwest, Nigeria with due caution.

CONCLUSION

The study found out that the work stress level of the nurses in the tertiary health facilities of Southwest region of Nigeria was moderate, and their efficiency level was also found to be moderate. The work stress and workload had significant negative relationship with efficiency and workload was more significant. The impact of work stress and, in particular, workload on the efficiency of nurses' care provision in practical terms is negative. Stress management and, importantly, workload reduction are therefore key enablers to enhance nursing efficiency in such facilities. The only way to safeguard and improve the quality of care received by patients in tertiary hospitals is to give both the attention they deserve, with proper staffing and supportive management.

Recommendations

Based on the results, it is recommended that stakeholders in the health sector work together to create a conducive workplace for effective and efficient service delivery in order to improve the existing work stress and efficiency level of nurses. Strategies for stress reduction, in addition to managerial, organisational and individual interventions should be implemented to improve efficiency and service delivery. Government should enhance the conditions of service by paying salaries promptly, providing befitting accommodation, paying leave bonuses and providing job security to improve the morale and reduce turnover intention. Government should also carry out periodic review of the remuneration of nurses according to international standards and hire more nurses to replace those who leave, as this will alleviate the stress of workload. Lastly, all types of nurses should be exposed to relevant seminars, workshops and conferences on stress management and coping strategies for effective service delivery.

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