



THE EFFECTIVENESS OF A NURSE-LED EDUCATION ON COPING STRATEGIES OF OCCUPATIONAL STRESS AMONG NURSES IN TERTIARY HOSPITALS, EKITI STATE, NIGERIA

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ABSTRACT: This study determined the effectiveness of a nurse-led education on coping strategies in reducing occupational stress among nurses in two selected tertiary hospitals in Ekiti State. The quasi-experimental method was used. One hundred eighteen (118) nurses were selected and allocated into intervention and control groups using a simple balloting technique. The nurses in the intervention groups had three sessions of educational workshops within a month, while those in the control groups had none. Data were collected pre and post-intervention and analysed using Chi-square, Fisher's exact test, and Paired t-tests. The majority (79%) of the nurses were female; the prevalent type of stress experience was due to workload, with a mean stress score of almost three across all groups. There were no differences between the pre and post-intervention stress levels for all types of stress apart from stressful situations due to conflict among nurses. Most participants reported physical symptoms of stress, and multiple coping strategies improved significantly among the intervention groups. The study suggests that nurse-led education could improve the use of coping strategies among nurses.

KEYWORDS: Nurse-led education, Occupational stress, Nurses, Coping strategies, Effectiveness, Tertiary hospital, Ekiti State.



INTRODUCTION

Life and daily activities are full of stressful experiences that cut across all classes of people, including nurses. Stress is a common aspect of life that can either help a person to learn and grow or lead to serious health issues. Stress produces potent neurochemicals and hormones that prime us for action (to fight or run). The worst stressors are those that are continuous, unbroken, unexpected, and uncontrollable. Without intervention, stress can lead to or exacerbate health issues (Stoppler, 2022). In such a situation, both the psychological and physical health of the nurse are altered by work-related issues, forcing the nurse to diverge from normal functioning (Ezenwaji et al., 2017). Occupational stress among nurses has been defined as the physical and emotional responses that occur when a nurse's talents and resources are out of balance with the demands and requests of their profession (Ezenwaji et al., 2017).

Causes of Work-related Stress among Nurses

According to Halpin et al. (2017), the most typical reason for occupational stress among nurses is an excessive workload. Baye et al. (2020) found that nurses' occupational stress increased as a result of heavy workload. Worldwide, it is acknowledged that having insufficient resources, limited capabilities, and a low nurse-to-patient ratio is stressful and has a negative impact on nurses' physical and mental well-being (Adebayo et al., 2016). Nigeria had fewer than 150,000 registered nurses, or one nurse for every 1066 people, to serve its estimated 160 million inhabitants (Faremi et al., 2019). The nurse population in Nigeria was estimated to have reduced to 180,700 in 2022 (Afolayan, 2023). According to Okpua et al. (2019), there is a severe nurse shortage in Nigeria and other developing nations because of a decline in nursing enrollment and pressures that have caused active nurses to leave the workforce before the legal retirement age.

In addition, a survey reveals that the average nurse-patient ratio per shift in Nigerian hospitals is 1:13 (Okpua et al., 2019). The World Health Organization recommends a nurse-patient ratio of 1:2 and 1:5 for deadly complications and common illnesses, respectively (Okpua et al., 2019). Poor remuneration, bad interpersonal interactions, and verbal or physical abuse at work are all risk factors for job-related stress among nurses (Starsc, 2018). In addition, nurses frequently experience stressful situations in the workplace, such as conflicts with coworkers and witnessing the pain, suffering, and death of others, all of which can contribute to job-related stress and burnout (Halter, 2018).

Effects of Work-related Stress

According to Werke and Weret (2023), the possibility of nurses quitting their jobs, conflicts with coworkers, intense displacement, poor health and inability to complete tasks, vulnerabilities in professional communication, lower-quality care delivery, and dissatisfaction with their careers are all possible outcomes for nurses who experience high levels of job-related stress. A decline in the ability to give medical care, psychosomatic problems, poor mental health, alcohol and drug misuse, absenteeism, weariness, abandonment, work accidents, and a loss in concentration, attention, and memory are all repercussions of occupational stress on nurses, according to Husani et al. (2022).

Stress at work considerably reduces memory, focus, and learning abilities, as well as immune system health, all of which are crucial for productive performance at work (Onasoga et al., 2022). Stress also takes on physiological, psychological, behavioral, and organizational



manifestations. All of these ultimately have an effect on how employees perform at work, leading to organizational impacts like absenteeism, job turnover, a toxic work environment, and decreased productivity (Faremi et al., 2019).

During the course of practice, the researcher observed that nurses experience stress on a daily basis that is killing and affects their behaviors, productivity, health, and attitude towards colleagues and patients; the effects of this work-related stress were left unattended to because a majority of nurses rarely make use of relaxation techniques or coping strategies even though they are aware of it. There is no mental health support in the workplace for the nurses, and nurses even think that they don't need assistance. If action is not taken, there is no way a stressed-up nurse can give holistic care. The problem of work-related stress among nurses is not new, but effective interventions to reduce occupational stress are missing despite signs of being greatly needed.

Additionally, Oyediran et al. (2022) concluded that occupational stress has a negative impact on nurses' work-related quality of life and influences patient outcomes. The study stressed the urgent need for health promotion programs on stress management and stress reduction. Abdian et al. (2022) recommended in their study that the relevant authorities should allocate funds to implement training on coping strategies for healthcare workers, such as nurses, who play a special role in the health sector due to the high and significant costs associated with occupational stress injuries. These were the gaps that were found, which led the researcher to conduct the intervention study.

Coping Strategies for Work-related Stress.

The American Psychological Association (2018) defined coping strategies as "an action, a series of actions, or a thought process used in meeting a stressful or unpleasant situation or in modifying one's reaction to such a situation." Coping strategies are also defined as "a combination of cognitive and behavioral procedures that people employ to deal with various situations, which could be internal or external" (Lazarus & Folkman, 1984). Studies have shown that coping strategies reduce stress and promote mental health. Coping strategies training reduces occupational stress among nurses (Abdian et al., 2022). The following stress-coping techniques were reported to have been employed by nurses: identifying the sources of stress, avoiding unneeded tension, changing the situation, expressing feelings instead of holding them in, better time management, and attitude modification (Onasoga et al., 2022). There are numerous ways to manage stress, including confrontation, distance, seeking social support, taking responsibility, avoiding conflict, and religious coping (Elsayed et al., 2017).

Furthermore, the results of a study by Alkhawaldeh et al. (2020) on the impact of a stress management interventional program on nurses' occupational stress indicate that these programs have a tendency to be successful in lowering occupational stress. This is also supported by the findings of the study on intervention in Brazil by Prado et al. (2018), which shows that there is a reduction in occupational stress among nurses. A study on mental health promotion intervention for nurses working in German psychiatric hospital departments by Bernburg et al. (2019) in Germany revealed a reduction in occupational stress among psychiatric nurses. Hersch et al. (2016) studied reducing nurses' stress and observed a decrease in occupational stress among nurses after intervention in the USA.

Many scholars have done various studies on occupational stress among nurses and coping strategies using a nursing stress scale of '34 items' to assess stress levels with descriptive and



cross-sectional designs. The newly validated Brief Nursing Stress Scale (BNSS) by Sanso et al. (2021) was utilized in this study and contains six items of conditions that have been recognized as the causes of stress for nurses in the performance of their tasks and a quasi-experimental design. This study's objective is to investigate the levels and sources of job-related stress among nurses, the coping mechanisms used by the nurses to control and manage stressful situations, and the effectiveness of nurse-led teaching on coping strategies in reducing occupational stress.

METHODOLOGY

Study Design and Setting

A quantitative research design was used for this study. A two-group quasi-experimental design was employed to determine the effectiveness of nurse-led education on coping strategies for occupational stress among nurses in two selected tertiary hospitals in Ekiti State. The study was conducted from November 2022 to August 2023.

Sampling Procedure and Selection of Study Participants

The sample size was determined based on Mugenda and Mugenda (2003). When the study population is less than 10,000, a sample size of 10% to 30% is a good representation of the target population, and hence 19% is adequate for analysis (Mugenda & Mugenda, 2003). The total population of nurses in the two tertiary hospitals was 564 (i.e., $N = 564$).

$$19\% \text{ of total population} = 19/100 \times 564 = 107.16 = 107$$

Adding a 10% attrition rate / non-responsive rate

$$10\% = 10/100 \times 107.16 = 10.72 = 11$$

$$\text{Sample} = 107 + 11 = 118$$

Table 1: Table showing the selected settings and sample sizes

S/N	Hospital	Number of Nurses	Percentage of study population	Proportionate Sample size
1	Hospital 1	255	49	58
2	Hospital 2	309	51	60
Total		564	100	118

A multistage sampling technique was used to select the study sample. In the first stage, Ekiti State was purposely selected out of the 36 Nigeria States. In the second stage, the selected state was divided into zones based on the existing senatorial districts. A tertiary hospital was selected from each zone. For the zone with two tertiary hospitals, a simple balloting technique was used to select one hospital. Hospital 1 and Hospital 2 were thus selected. In the third stage, proportional and purposive sampling techniques were used to select the study participants to ensure that all cadres were represented. In the fourth stage, a simple balloting technique was



used to allocate 118 nurses who were selected from both hospitals into the intervention and control groups. The total number of nurses in experimental groups from the two selected hospitals was $29 + 30 = 59$, while the total number of nurses in control groups was $29 + 30 = 59$.

Inclusion criteria

For an individual to participate in this study, the participant must be a registered nurse working in any of the wards of the two selected tertiary hospitals. Both males and females willing to participate in the study were included. The nurse must have worked in the setting between 1 year and 35 years. Also, participants must be available to attend the intervention education on coping strategies of occupational stress management if eventually assigned to the intervention group.

Exclusion criteria

Nurses who were not working in the two selected hospitals could not participate in the study. Those who had worked less than 1 year or were not willing to participate in the study could not participate.

Data collection instrument

A structured questionnaire was adapted after a thorough review of the literature by the researchers and experts in nursing research. The questionnaire has four sections, namely:

1. Socio-Demographic Data, which contains seven items.
2. Assessment of Occupational Stress Level: the validated Brief Nursing Stress Scale (BNSS,) which includes six items of situations that have been identified as causes of stress among nurses in the performance of their duties, was adopted for this section (Sanso et al., 2021).
3. Effects of Occupational Stress Experienced by the Nurses, which contain 10 items of symptoms of stress from the review of the literature.
4. Coping Strategies that are being used by the nurses contain 18 items that were adapted from Brief COPE (Carver, 1997).

Data collection

Research assistants were engaged and trained to assist the researcher. Data collection was in three phases:

Phase one: This phase was the initial stage where consent was obtained, and the instrument was administered to the nurses in both intervention and control groups after familiarizing with the group and expressing goals to them. The instrument was administered during this pre-intervention phase to obtain baseline data on levels and sources of occupational stress and the coping strategies adopted by the nurses. The same instrument was administered to the two groups within four-week intervals.

Phase two: This is the intervention phase, in which the experimental group underwent three education sessions on coping strategies within one month. Each session was a workshop with a group discussion. Each session lasted for 60 minutes using the teaching protocol developed



based on WHO recommendations (WHO, 2020). The control groups were not involved in this phase.

First session: The first session was held in the first week of phase 2. The definition of stress, causes of occupational stress in the nursing profession, physical and psychological symptoms of stress, coping styles, and occupational stress management were discussed. At the end of the first session, leaflets were distributed to the intervention group to take home for reflection. The leaflets were equally given to the control group at the end of the whole study.

Second session: Sufficient information about Self-awareness, Johari window model, and unhealthy coping mechanism were presented in the second section and held in the second week of phase 2.

Third session: The coping strategies guide for stress by WHO (2020) was used to instruct the participants. They were equally taught relaxation techniques (breathing exercises). The remaining one week was used for follow-up and monitoring.

Phase three: This phase involved the administration of post-test instruments, which were done exactly one-month post-intervention. The posttest instrument was still the same questionnaire used in phase one. This was administered to the same participants in phase one who were in both control and intervention groups.

Data analysis

The data were cleaned, sorted, and coded to ensure that there were no errors or missing data. Data were entered into the Microsoft Excel spreadsheet before being exported to Statistical Package for Social Sciences [SPSS] version 25 for analysis. Descriptive analysis was undertaken and presented in the form of tables. Chi-square, Fisher's exact test, and Paired t-test were used to determine the relationship between variables. The level of significance was set at 5% [0.05]. Pre- and post-intervention data of the groups were compared to determine the effectiveness of the nurse-led education on coping strategies.

Ethical consideration

The ethical approval letters were obtained from Hospital 1 with Ref: EKSUTH/A67/2023/05/005 dated 9th May 2023 and Hospital 2 with Ref: ERC/2023/05/05/975B dated 10th May 2023.



RESULTS

Socio-demographic Characteristics of the Respondents

A total of 118 nurses (58 nurses from Hospital 1 and 60 nurses from Hospital 2) participated in the study, with a mean age of 38 years. Overall, the socio-demographic characteristics of the groups in both hospitals were similar. More than half (53%) of the participants were aged above 30 years of age. The majority (79%) were female. Most (69%) were married. More than half (64%) worked for 40-60 hours per week. Almost half of the respondents in all the groups were midwives (41.4 and 51.9), and more than half (57%) reported not taking breaks while on duty. 34.5% of the respondents have working experience of 1 to 5 years, while 31.0% have worked above 20 years.

Table 2: Socio-demographic characteristics of the respondents

	Hospital 1			Hospital 2		
Variable	Experimental n (%)	Control n (%)	Fisher's exact (p-value)	Experimental n (%)	Control n (%)	Fisher's exact (p-value)
Age group						
0 – 30	9(32.1)	6(21.4)	0.8(0.6)	14(46.0)	9(30.0)	1.8(0.3)
Above 30	19(67.9)	22(78.6)		16(53.3)	21(70.0)	
Gender						
Female	28 (96.6)	23 (79.3)	4.1 (0.10)	29(96.7)	28(93.3)	0.4(1.1)
Male	1 (3.4)	6 (20.7)		1(3.3)	2(6.7)	
Marital Status						
Single	3(10.3)	8(27.6)	3.0(0.3)	8(27.6)	7(24.6)	1.2(0.8)
Married	24(82.8)	20(69.0)		20(69.0)	22(75.9)	
Widowed	2(6.9)	1(3.4)		0(0.0)	0(0.0)	
Divorced/Separated				1(3.4)	0(0.0)	
Years of practice						
1-5	7(24.1)	7(24.1)	2.6(0.7)	10(34.5)	8(26.7)	2.0(0.8)
6-10	4(13.8)	3(10.3)		5(17.2)	4(13.3)	
11-15	6(20.0)	9(31.0)		5(17.2)	4(13.3)	
16 – 20	4(13.8)	1(3.4)		2(6.9)	5(16.7)	
Above 20	8(27.6)	9(31.0)		7(24.1)	9(30.0)	
Specialty						
Midwifery	12(41.4)	12(41.4)	4.3(1.0)	14(51.9)	13(43.3)	8.0(0.6)
Mental Health	1(3.4)	0(0.0)		1(3.7)	3(10.0)	
Public Health	0(0.0)	1(3.4)		1(3.7)	3(10.0)	
Paediatrics	1(3.4)	1(3.4)		3(11.1)	0(0.0)	
A&E	1(3.4)	2(6.9)		0(0.0)	0(0.0)	
ICN	0(0.0)	0(0.0)		1(3.7)	2(6.7)	
Orthopaedics	0(0.0)	0(0.0)		1(3.7)	2(6.7)	
Anaesthesia	0(0.0)	0(0.0)		0(0.0)	1(3.3)	
Nephrology	1(3.4)	0(0.0)		0(0.0)	1(3.3)	
Ophthalmic	3(10.3)	2(6.9)		1(3.7)	1(3.3)	
Others	7(24.1)	8(27.6)		0(0.0)	0(0.0)	



Nil Specialty	0(0.0)	0(0.0)		5(18.5)	6(20.0)	
Working hours/week						
Less than 40	7(24.1)	7(25.0)	1.2(0.7)	6(20.0)	5(17.2)	0.3(1.0)
40—60	21(72.4)	18(64.3)		22(73.3)	21(72.9)	
Above 60	1(3.4)	3(10.7)		2(6.7)	3(10.3)	
Usual break						
< 30 minutes	3 (17.6)	5 (21.7)	2.6 (0.5)	8(28.6)	12(42.9)	4.8(0.1)
30-60 minutes	8 (47.1)	11 (47.8)		4(14.3)	8(28.6)	
>60 minutes	2 (11.8)	0		0(0.0)	0(0.0)	
No break	4 (23.5)	7 (30.4)		16(57.1)	8(28.6)	

Stress Level of the Respondents

The stress level of the respondents was assessed based on the Brief Nursing Scale, which assigned numerical scores to different experiences of stress, including 1, 2, 3, and 4 for never, occasional, frequent, and always, respectively. The mean score for each type of stress was compared between pre-intervention and post-intervention for both groups across the two hospitals using the paired t-test, as shown in Table 3. The results showed that the most prevalent type of stressful experience is due to workload, with a mean score of almost three across all groups of the two hospitals. This was followed by stressful experiences due to lack of support, which was around 2 in all the groups. There were no differences between the pre and post-intervention stress levels for all types of stress apart from stressful situations due to conflict among nurses, which significantly increased among the experimental group in Hospital 1.

Table 3: Comparison of the mean stress scores of the respondents across both hospitals

	Intervention			Control		
Variable	Pre	Post	Test statistics T-value, p-value	Pre	Post	Test statistics T-value, p-value
Hospital 1						
Stressful situation due to the process of dying or death of a patient	1.9	1.8	0.49, 0.62	1.8	1.9	-0.49, 0.63
Stressful situation due to conflict with doctors	1.5	1.6	-0.53, 0.60	1.6	1.6	0.46, 0.65
Stressful situation due to lack of support at work	2.0	2.1	-0.72, 0.48	2.2	2.1	0.49, 0.63
Stressful situation due to conflict with other nurses	1.3	1.6	-2.14, 0.04	1.7	1.6	0.44, 0.66
Stressful situation due to workload	2.7	2.5	1.00, 0.33	2.7	2.5	0.81, 0.42



Stressful situation due to uncertainty of treatment	1.6	1.7	-0.56, 0.57	1.8	1.8	0.00, 1.00
Hospital 2						
Stressful situation due to the process of dyeing or death of a patient	1.9	1.7	1.16, 0.26	2.0	1.9	0.89, 0.38
Stressful situation due to conflict with doctors	1.6	1.6	0.24, 0.81	1.7	1.5	1.10, 0.29
Stressful situation due to lack of support at work	2.3	2.0	1.19, 0.25	2.2	2.1	0.50, 0.62
Stressful situation due to conflict with other nurses	1.7	1.6	0.40, 0.69	1.6	1.4	1.42, 0.17
Stressful situation due to workload	2.7	2.6	0.47, 0.64	2.7	2.7	0.15, 0.88
Stressful situation due to uncertainty of treatment	1.9	1.8	0.65, 0.52	1.9	1.8	0.57, 0.57

Effects of Occupational Stress on Nurses

Table 4 presents the effects of stress on the nurses in the selected hospitals. Nurses predominantly reported physical symptoms, including headache, palpitation, and muscle pain. A lesser proportion of the nurses reported mental health consequences of stress, including anxiety and feelings of hopelessness.

Table 4: Effects of Occupational Stress on the Nurses

Variable	Hospital 1 n (%)				Hospital 2 n (%)			
	Never	Occasional	Frequent	Always	Never	Occasional	Frequent	Always
Headache	7 (12.3)	35(61.4)	11 (1.3)	4 (7.0)	5(8.6)	34(58.6)	16(27.6)	3(5.2)
Palpitation	0	33(57.9)	22(38.6)	2(3.5)	4(6.7)	33(55.0)	22(36.7)	1(1.7)
Muscle Pain	5(8.8)	35(61.4)	12(21.1)	5(8.8)	5(8.9)	27(48.2)	16(28.6)	8(14.3)
Sleep problem	18(22.0)	28(50.0)	9(16.1)	1(1.8)	17(30.4)	25(44.6)	12(21.4)	2(3.6)
Nausea	45(78.9)	10(17.5)	2(3.5)	0	36(61.0)	21(35.6)	1(1.7)	1(1.7)
Feeling of hopelessness	40(70.2)	14(24.6)	3(5.3)	0	38(64.4)	20(33.9)	1(1.7)	0
Anxiety	21(36.6)	32(56.1)	3(5.3)	1(1.8)	29(51.8)	24(42.9)	3(5.4)	0
Irritability	19(33.3)	31(54.4)	6(10.5)	1(1.8)	27(46.6)	26(44.8)	4(6.9)	1(1.7)
Inability to concentrate	28(49.1)	25(43.9)	4(7.0)	0	29(50.9)	27(47.4)	1(1.8)	0
Forgetfulness	26(45.6)	26(45.6)	4(7.0)	1(1.8)	31(52.5)	26(44.1)	2(3.4)	0



Coping Strategies

Table 5 shows the mean score for each coping strategy across the two hospitals. The coping strategies used frequently (mean score of 3 or above) by the respondents include time management, maintaining a positive attitude, religious activities, taking actions to reduce stress, being physically active, and getting emotional support. In addition, the use of some coping strategies improved significantly among the experimental groups but not in the control groups. These include avoidance of stressful situations, dealing with stressful situations, getting emotional support, and maintaining a positive attitude in Hospital 1. Similarly, avoidance of stressful situations, relaxation exercises, religious activities, and taking action improved significantly in Hospital 2 among the nurses in the experimental group. In addition, the blaming of self was reduced significantly among the experimental group in Hospital 1. There was no significant difference in the coping strategies pre- and post-intervention in the control groups in both hospitals.

Table 5: Comparison of the Use of Coping Strategies

Variable	Intervention			Control		
	Pre	Post	Test statistics T-value, p-value	Pre	Post	Test statistics T-value, p-value
Hospital 1						
Avoidance of stressful situations	2.4	3.2	-2.70, 0.01	2.4	2.5	-0.57, 0.58
Dealing with stressful situations	2.8	3.4	-2.52, 0.02	2.8	2.	-0.29, 0.77
Time management	3.4	3.6	-1.13, 0.27	3.1	3.2	-0.64, 0.52
Getting emotional support	2.8	3.3	-2.59, 0.02	3.1	3.5	-1.81, 0.08
Being physically active	2.8	3.2	-1.44, 0.16	3.0	3.0	-0.14, 0.89
Rest or break	2.8	3.0	-0.86, 0.40	2.8	2.7	0.37, 0.71
Doing relaxation	2.8	3.2	-1.29, 0.21	2.8	2.9	-0.16, 0.87
Smoking drinking alcohol	1.1	1.0	1.00, 0.33	1.2	1.2	0.21, 0.83
Blaming self	1.7	1.3	2.10, 0.05	1.5	1.5	0, 1.00
Drinking tea coffee	1.4	1.6	-0.74, 0.47	1.6	1.4	0.81, 0.43
Self-medication	1.3	1.2	0.25, 0.80	1.4	1.2	1.04, 0.31
Turning to work	2.2	2.9	-3.18, 0.004	2.3	2.2	-0.19, 0.85
Seeking counselling	2.0	2.1	-0.45, 0.66	2.2	2.2	-0.12, 0.91
Maintaining positive attitude	3.1	3.6	-2.11, 0.04	3.0	2.8	1.31, 0.20
Religious activities	3.1	3.4	-1.32, 0.20	3.0	3.1	-0.40, 0.70
Thinking hard	2.6	3.0	-0.95, 0.35	2.9	2.7	0.80, 0.43
Taking action	3.6	3.5	0.17, 0.87	3.1	3.4	-1.24, 0.22
Giving up attempt	1.7	1.8	-0.52, 0.61	1.7	1.7	0.13, 0.90
Hospital 2						
Avoidance of stressful situations	2.0	2.7	-2.55, 0.02	2.4	2.4	.00, 1.00



Dealing with stressful situations	2.5	2.9	-1.63, 0.12	2.7	2.8	-0.49, 0.63
Time management	3.0	3.3	-1.10, 0.28	3.3	3.2	0.70, 0.49
Getting emotional support	2.7	2.9	-1.19, 0.25	2.8	2.9	-0.66, 0.52
Being physically active	2.4	2.9	-1.73, 0.10	2.8	3.0	-1.30, 0.21
Rest or break	2.4	2.8	-1.75, 0.09	3.0	3.0	.00, 1.00
Doing relaxation	2.7	3.3	-2.37, 0.03	3.2	2.9	1.19, 0.24
Smoking drinking alcohol	1.1	1.0	0.44, 0.66	1.0	1.0	1.00, 0.33
Blaming self	1.3	1.3	0.00, 1.00	1.3	1.3	.00, 1.00
Drinking tea coffee	1.6	1.8	-0.61, 0.55	1.4	1.6	-1.10, 0.28
Self-medication	1.2	1.1	0.81, 0.43	1.4	1.4	0.21, 0.83
Turning to work	2.0	2.5	-2.30, 0.03	2.6	2.2	1.52, 0.14
Seeking counselling	1.8	2.0	-1.00, 0.33	1.6	1.5	0.36, 0.72
Maintaining positive attitude	2.6	3.1	-3.64, 0	3.2	3.0	0.82, 0.42
Religious activities	2.7	3.3	-2.56, 0.02	3.0	3.0	-0.20, 0.85
Thinking hard	2.4	2.9	-2.77, 0.01	2.6	2.8	-0.80, 0.43
Taking action	3.0	3.5	-3.19, 0	3.3	3.4	-0.57, 0.57
Giving up attempt	1.6	1.3	1.81, 0.08	1.9	1.4	1.59, 0.13

DISCUSSION

The level of occupational stress among hospital nurses

The results showed that the level of stress among the respondents was between 1 and 2 for most types of stressful experiences, signifying never and occasionally stressed, respectively. However, stressful experiences due to workload were reported as frequent, with a mean score of almost three across all groups of the two hospitals. This was followed by stressful experiences due to lack of support, which was mostly above 2. There were no significant differences between the pre and post-intervention stress levels for all types of stress apart from stressful situations due to conflict among nurses, which significantly increased among the experimental group in Hospital 1.

The level of stress among nurses was found to be extremely high among clinical nurses in Nigeria in a previous study (Anyebe et al., 2014). As shown, excessive workload across all groups of the two hospitals was the most common stressor, closely followed by lack of support at work, then the process of dying and death of a patient. Workload has been previously and consistently found to be ranked highest by other researchers (Halpin et al., 2017; Faremi et al., 2019; Onasoga et al., 2022). This implies that unless action is taken to reduce the workload, change the shift hours, employ more staff, or reduce some tasks from nurses, nurses will continue to be at the center of occupational stress due to the nature of the job.

The finding on lack of support at work as the second most stressful aspect of nurses' job is, however, not supported by findings from the study of Faremi et al. (2019) in southwest Nigeria, which ranked death and dying as the second most frequent stressful aspect of nurses' work. The setting of the present study is also from Southwest Nigeria. However, the findings of the current study are consistent with other studies in different settings that work environment, management attributes, poor interpersonal relationships in the workplace, and psychological or physical abuse in the workplace and institutional settings themselves have been associated with



occupational stress (Dall'Ora et al., 2015; Nwozichi and Ojewole, 2015; Starsc, 2018). This implies that mentorship and supportive supervision might be lacking in the practice. The findings revealed the process of dying and death of patients as the third frequent stressful aspect of nurses' jobs. This is supported by the findings of Ogundipe et al. (2015).

There was a mild reduction, albeit non-significant, in the stress level of some types of stressful experiences in the intervention group compared to the control group. There were no significant differences between the pre and post-intervention stress levels for all types of stress apart from stressful situations due to conflict among nurses, which significantly increased among the experimental group in Hospital 1. This implies that nurse-led education on coping strategies at short-term (one-month interval) intervals did not have a significant effect on reducing the stress level of nurses. This may be due to the focus of the intervention on coping strategies rather than reducing stress levels through other interventions such as reduction of workload, rescheduling of duty hours, and employment of more staff. This finding is not consistent with previous studies in different settings (Hersch et al., 2016; Prado et al., 2018; Alkhawaldeh et al., 2020), which found that coping strategies training is effective in reducing occupational stress among nurses.

The effects of occupational stress on selected hospital nurses in Ekiti State, Nigeria.

Physical symptoms were predominantly reported by nurses in this study, including headache, palpitation, and muscle pain. A smaller proportion reported mental health consequences such as anxiety and feelings of hopelessness. This is supported by previous studies (Olabisi et al., 2022; Ogundipe et al., 2015; Husani et al., 2022; Onasoga et al., 2022; American Psychological Association, 2018) that nurses experience a high level of anxiety, headache, stomachache, sleep disturbances, short temper, poor mental health, and helplessness or powerlessness in their workplace due to poor working environment and increase the level of workplace violence.

Coping strategies for occupational stress

The coping styles commonly adopted by nurses found in this study were time management, maintaining a positive attitude, religious activities, taking actions to reduce stress, being physically active, and getting emotional support. The use of some of the coping strategies improved significantly among the intervention groups in both Hospital 1 and 2 after participation in nurse-led education on coping strategies. These include avoidance of stressful situations, dealing with stressful situations, and getting emotional support. Blaming of self was also reduced among the experimental group. This finding is consistent with the study of Onasoga et al. (2022), which found that identifying the sources of stress, avoiding unneeded tension, changing the situation, expressing feelings instead of holding them in, better time management, and attitude modification. However, Starsc (2018) found that nurses reduce or eliminate stress by talking and resting, and less commonly, they do yoga and meditation. After the intervention, coping strategies improved among the intervention groups compared to the control groups. This implies that the educational intervention was impactful and equally improved the coping strategies that were used by the nurses even at a short time (one-month interval). The aim of education on coping styles is to change the external factors that confront the individual or the internal factors that strengthen the ability to deal with what comes the individual's way.



LIMITATIONS OF THE STUDY

The quasi-experimental study design of this study is unable to provide conclusive evidence on stress level, effects of stress, and effectiveness of nurse-led education due to confounding factors. In addition, the study was limited to the registered nurses working in the two selected tertiary hospitals in Ekiti State. The results of the study may not be applicable to nurses in other settings, such as primary care and private hospitals. Some participants were unable to attend some of the sessions due to busy schedules, which might have affected the results of the study. However, the overall impact on the study would have been minimal as there were few regular participants in the sessions.

CONCLUSION

This study investigated the effect of nurse-led education on occupational stress among nurses in the selected hospitals. The study found that workload and lack of a supportive system are the most prevalent causes of stress among the nurses. Although there was no improvement in occupational stress experience post-intervention, there was a significant improvement in the use of coping strategies. Thus, this indicates that nurse-led education could improve the use of coping strategies among nurses. Reducing workload and providing a supportive system could potentially address the most prevalent underlying causes of occupational stress among nurses in Nigeria.

IMPLICATION TO RESEARCH AND PRACTICE

Practice

The findings of this study will promote healthy coping responses to occupational stress, improve the quality of the working environment, and support nurses' mental health needs.

Nursing research

Data from this study will add to the existing studies on occupational stress, effects, and coping strategies among nurses.

Conflicts of Interest

Nothing to declare.

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**APPENDIX:**

QUESTIONNAIRES ON DETERMINING THE EFFECTIVENESS OF A NURSE-LED EDUCATION ON COPING STRATEGIES OF OCCUPATIONAL STRESS AMONG NURSES IN TERTIARY HOSPITALS, EKITI STATE

Section A: Socio-demographic characteristics

1. Age: years
2. Gender: a. Male b. Female
3. Marital status: a. Single b. Married c. Widow/widower d. Divorced/separated
4. Number of years of working as a nurse
 - a. 1-5years b. 6-10years c. 11-15years d. 16-20years e. Above 20 years
5. Specialty.....
6. Average working hours per week
 - a. Less than 40 hours b. 40- 60 hours c. More than 60hours
7. Duration of break during an 8-hour shift.....

Section B. Assessment of stress level among nurses (Brief Nursing Stress Scale)

	How frequently have you experienced the following stressful situation in the last 1 month?	Never	Occasionally	Frequently	Always
8.	Stressful situations due to the process of dying or death of patients.				
9.	Stressful situation due to conflict with doctors.				
10.	Stressful situation due to lack of support at work.				
11.	Stressful situation due to conflict with other nurses.				
12.	Stressful situation due to workload.				
13.	Stressful situation due to uncertainty of treatment.				

Section C. Effects of occupational stress on nurses

S/N	How frequently have you experienced the following symptoms in the last 1 month because of a stressful situation at work?	Never	Occasionally	Frequently	Always
1.	Headache				
2.	Palpitation				
3.	Muscle/joint pains				
4.	Sleep problem				
5.	Nausea, vomiting, diarrhoea or abdominal pain				
6.	A feeling of hopelessness or helplessness				
7.	Anxiety				



8.	Irritability or anger				
9.	Inability to concentrate				
10.	Forgetfulness				

Section D. Coping Strategies for Occupational stress

	How do you reduce or eliminate work-related stress?	I haven't been doing this at all	A little bit	A medium amount	I've been doing this a lot
11.	Avoidance of stressful situations				
12.	Dealing with stressful situations (accepting or altering them)				
13.	Time management				
14.	Getting emotional support from others or speaking to someone (e.g., colleagues, family members)				
15.	Being physically active (e.g., walking, jogging, dancing)				
16.	Rest/break (e.g., short break, annual leave, sick leave)				
17.	Doing relaxation activities to think about it less (e.g., watching TV, reading novels, listening to music, yoga, breathing exercise, daydreaming, sleeping, shopping)				
18.	Smoking /Drinking alcohol				
19.	Blaming self for things that happened				
20.	Drinking tea, coffee or chewing cola nuts				
21.	Self-medication (e.g., sleeping tablets, painkillers, marijuana, cocaine, heroin)				
22.	Turning to work or other activities to take my mind off things				
23.	Seeking counseling services				
24.	Maintaining a positive attitude (trying to see it in a different light, to make it seem more positive)				
25.	Religious activities (praying or meditating)				
26.	Thinking hard about what steps to take				
27.	Taking action to try to make the situation better				
28.	Giving up the attempt to cope.				