Bayero Journal of Nursing and Health Care
bjnhc.nur@buk.edu.ng
Volume 3 Issue 1, June, 2021
Pages 811-820 ISSN: 2756-6501

Association between Physical Activity and Stress Levels in Various Domains of Academic Work among Teaching Staff of Faculty of Allied Health Sciences, Bayero University, Kano

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Background: Previous studies have reported variable levels of work-related stress among academics due to factors such as high workload, stiff competition for funding to pursue high-quality research, and increasing administrative responsibilities among others. Nevertheless, there is limited information about work-related stress and its influencing factors among academic staff in Nigerian Universities. Hence, this study aimed to assess the prevalence and pattern of work-related stress, as well as its association with physical activity level among academic staff of the Faculty of Allied Health Sciences (FAHS), Bayero University, Kano. **Method:** This cross-sectional study utilized a Google form generated link containing the study information sheet, consent form, and questionnaires, namely; (i) the International Physical Activity Questionnaire (IPAQ)-short form to assess stress, and (ii) a work-related stress assessment questionnaire to assess work-related stress. The link was shared with respondents via email or Whatsapp® (group platform of the faculty staff). A paper version of the questionnaire was also made available to some respondents. Data obtained was analyzed using frequencies, percentages, mean and standard deviation, as well as and Chi-square test. **Results:** The majority of the participants were males (84.3%), married (86.3%), aged between 31-45 years (74.5%), have a teaching experience of 6-10 years (47.1%). High-stress perceptions were reported for items such as preparation of examination results by 39(76.5%) participants. Also, supervision of students' projects, sourcing for funding for research and career development were identified as sources of high or very high stress by 25(49.1%), 31(60%), and 32(63%) participants, respectively. Many of the respondents reported being either moderate 18(35%) or high 23(45%) physical activity levels. Furthermore, there were significant associations between physical activity level and academic stressing outcomes such as invigilation (p=0.003), delivery of lectures (p=0.003), setting examinations questions (p=0.041), and institutional administration (p=0.045). **Conclusion:** It was concluded that irrespective of physical activity levels, work-related stress, mainly the areas of academic workload and student-related issues, is common among academic staff of the studied population. Therefore, these sources of stress must be addressed to help academics provide quality services.

Keywords: *Work-Related Stress, Academic Staff, University, Prevalence, Physical Activity*

Introduction

Work-related stress is a source of concern among organizations and employees across the globe (Gyllensten & Palmer, 2005; Khurshid, Butt & Malik, 2011; Aftab & Khatoon, 2012). Excessive work-related stress can result in increased human errors, accidents and negatively affect employees'

productivity and overall effectiveness on the job (Akinmayowa, 2009; Armstrong, 2015). Furthermore, work-related stress has a negative influence on the creativity of workers, as well as their overall health, well-being, and morale.

Winefield (2000) indicated that there is a high prevalence of occupational stress among academics in universities. Moreover, risk factors for work-related stress among academics include work overload, home-work interface, role ambiguity, conducting research, demands from colleagues and supervisors, performance pressure, inadequate resources for appropriate performance, insufficient competency to the demands of their role (Ahmandy, Changiz, Masiello and Bromnels, 2007; Ahsan, Abdallah, Fie & Alam, 2009). The level of work-related stress among Nigerian academics has been reported to be significantly high (Ofoegbu and Nwadiani, 2006). Some of the reasons for stress among Nigerian academics include frequent strike actions (school interruption), delay and irregular payment of salary, and lack of instructional facilities. Others include the task of preparation of examination results, invigilation of examination, campus militancy, high cost of living, poor office accommodation, lack of research facilities, lack of annual leave/ holiday, and underfunding of education (Ofoegbu and Nwadiani, 2006).

Physical activity offers one of the major ways of preventing and managing stress (Romas, 2000; Stults-Kolehmainen, 2013). Physical activities in daily life such as walking, cycling, and gardening are typical examples of leisure time physical activities (Silva *et al*, 2016). The physical activity of an individual can be measured in kilocalories and can be classified as occupational, sports, conditioning, household, and other activities. Furthermore, physical activity remains a complex behaviour that encompasses sporting and non-sporting activities (Silva *et al*, 2016). Generally, participating in regular physical activity is of significant benefit to both healthy individuals and some patient populations. Academics in Nigerian universities are known to be sedentary or have low physical activity levels, which predisposes them to be at risk of a number of chronic diseases (Adedoyin *et al*,), Moreover, increased physical activity levels has been associated with reduced stress levels (Gerber *et al*, 2014). Currently, little or no attempt has been made to ascertain the association between physical activity and stress levels among academics in our environment. Hence, this study.

Methodology

Study Design

The study was a cross-sectional survey. It was conducted among the academic staff of the Faculty of Allied Health Sciences (FAHS) of Bayero University, Kano, Nigeria. The FAHS comprises five academic departments, namely: Physiotherapy, Nursing sciences, Medical Radiography, Medical laboratory sciences, and Optometry.

Sample

The population of the study was the entire 79 full-time academic staff of the FAHS, Bayero University, Kano (representing 100% of the population based on census sampling). Part-time or visiting or lecturers on sabbatical contract, non-academic staff those that are not willing to participate in the study were excluded.

Instrumentation

The work-related stress assessment questionnaire was used to assess the level of stress in the various domains of academic work. The questionnaire was adapted from a previous study by Akinmayowa and Kadiri (2014). The initial items in the research instrument had been earlier validated. The reliability of the instrument was also pilot-tested in this study and a reliability coefficient of α=0.85 was obtained. Section A of the questionnaire focused on the socio-demographic variables of the respondents: This consists of gender, marital status, age, teaching experience, and academic rank. Section B contained twenty six (26) questions, which were categorized under five broad

stressors i.e. Academic Workload (AW), Student Related Issues (SI), Research and Career Development (RC), Interpersonal relationships (IR), and Administrative-Related Issues (AI). The respondents were asked to rate how stressful they find each item based on a 5- point Likert scale (1= no stressful, 2= low stress, 3= average stress, 4= high stress, 5= very high stress).

The International Physical Activity Questionnaire (IPAQ) short form was used to assess the physical activity level (International Physical Activity Questionnaire, scoring protocol, 2011) of the respondents. This instrument has been validated in several researches and has been adapted in 12 countries (Craig *et al*, 2003). Reliability and validity of the IPAQ-short version have been well established with 75% of the correlation coefficients observed above 0.65 and ranging from 0.88 (USA2 and GU Ub) to 0.32 (rural SA), a concurrent validity indicated that the pooled values for comparisons between long and short forms were 0.67 (95% CI 0.64–0.70) and a fair to moderate agreement criterion validity of the questionnaire and CSA accelerometers (N =781, p= 0.30, 95% CI 0.23–0.36). (Kurtze, Rangul & Hustvedt, 2008; Craig *et al*, 2003).

The IPAQ short form asked about three specific types of activity undertaken in four domains. The specific types of activities that were assessed are walking, moderate and vigorous-intensity activities as explained by Craig *et al*, 2003). Data from the short IPAQ questionnaires were summarized according to the physical activities recorded (walking, moderate, and vigorous activities) and estimated time spent sitting per week. The data were then used to estimate total weekly physical activity by weighting the reported minutes per week within each activity category by a MET energy expenditure estimate assigned to each category of activity. Moderate-intensity activities were scored between 3 and 6 METs and vigorous-intensity activities as >6 METs. The weighted MET-minutes per week (MET·min·wk1) were calculated as duration frequency per week MET intensity, which was summed across activity domains to produce a weighted estimate of total physical activity from all reported activities per week (Craig *et al*, 2003). The overall score was then classified into low, moderate, and high PA by dividing the weighted score into three for each respondent.

Procedure

Ethical approval was sought and obtained from the Ethics Committee of the College of Health Sciences, Bayero University, Kano. Thereafter, an introductory letter was presented to the five departments to seek administrative approval. Thereafter, the paper and electronic versions [Googleforms] of the questionnaires along with consent forms were distributed to all the potential respondents for completion. The electronic versions of the questionnaires were sent using electronic mails and/or Whatsapp platforms. Paper version of the questionnaire was only presented to those who exhibited a preference for it.

Data Analysis

Data analysis was performed on the SPSS version 24 on the Windows software. Both descriptive and inferential statistics were used to analyze the data obtained in the study. Descriptive statistics such frequency distribution tables, percentages, means were used to summarize the study data. The Chi-square test was used to test the association between the perception of stress per item and the level of physical activity. The assumption of significance was based on $P<0.05$.

Results

Out of the 75 that were administered to respondents, 51(68%) questionnaires were retrieved. The demographic profile of respondents as presented in Table 1 showed that the majority of them were males 43(84.3%), 44(86.3%) were married, 38 (74.5%) were between between 31 and 45 years, 24(47.1%) of them having between 6 and 10 years of teaching experience, and they

were of various academic ranks.

Table 1: *Socio-Demographic Characteristic of Study Participants*

Variables	N	%
Gender		
Male	43	84.3
Female	8	15.7
Marital status		
Married	44	86.3
Single	7	13.7
Age		
25-30 years	5	9.8
31-45 years	38	74.5
46-55 years	8	15.7
Teaching experience		
Below 5 years	18	35.3
6-10 years	24	47.1
11-15 years	3	5.9
Above 16 years	6	11.8
Academic rank		
Professor	2	3.9
Associate professor	3	5.9
Senior lecturer	11	19.6
Lecturer 1	23	45.1
Lecturer 2	8	15.7
Assistant lecturer	5	9.8
Departments		
Physiotherapy	20	39.2
Nursing	9	17.6
Medical laboratory science	10	19.6
Medical Radiography	7	13.7
Optometry	5	9.8

n=frequency %=percentage

Table 2: *Levels of Stress in the Various Domains of Academic Work*

Variables	Details	No stress n(%)	Low stress n(%)	Average stress n(%)	High stress n(%)	Very high stress n(%)
Academic workload	Work demands	3(5.9)	5(9.8)	17(33.3)	20(39.2)	6(11.8)
	Delivery of lectures	7(13.7)	13(25.5)	22(43.1)	7(13.7)	2(3.9)
	Invigilation of examination	12(23.5)	8(15.7)	16(31.4)	12(23.5)	3(5.9)
	Preparation of examination results	1(2.0)	5(9.8)	6(11.8)	26(51.0)	13(25.5)
	State of lecturers facilities	6(11.8)	13(25.5)	14(27.5)	12(23.5)	6(11.8)
	Setting examination questions	3(5.9)	13(25.5)	21(41.2)	10(19.6)	4(7.8)
Student related issues	Student population	3(5.9)	3(5.9)	24(47.1)	14(27.5)	7(13.7)
	Project supervision	1(2.0)	5(9.8)	19(37.3)	17(33.3)	8(15.7)
	Student classroom behavior	5(9.8)	13(25.5)	24(47.1)	9(17.6)	-
Research and career development	Promotion criteria	6(11.8)	9(17.6)	14(27.5)	17(33.5)	5(9.8)
	Linkage avenue of professional development	3(5.9)	11(21.6)	16(31.4)	16(31.4)	5(9.8)
	Sourcing of funds for career development	2(3.9)	5(9.8)	13(25.5)	18(35.3)	13(25.5)
	Having required publication for promotion	8(15.7)	6(11.8)	21(41.2)	13(25.5)	3(5.9)
	Obtaining conference incentives	7(13.7)	6(11.8)	21(41.2)	13(25.5)	3(5.9)
	Sourcing for research fund	0(0.0)	5(9.8)	14(27.5)	17(33.3)	15(29.4)
	Access to relevant literature	5(9.8)	9(17.6)	26(51.0)	9(17.6)	2(3.9)
	Publication of finished articles	4(7.8)	12(23.5)	17(33.3)	13(25.5)	5(9.8)
	Linkage to other professions	6(11.8)	16(31.4)	15(29.4)	13(25.5)	1(2.0)
Interpersonal relationships	Relationship with colleagues	25(49.0)	18(35.3)	4(7.8)	3(5.9)	1(2.0)
	Relationship with non-teaching staff	35(68.6)	11(21.6)	2(3.9)	1(2.0)	2(3.9)
	Relationship with students	20(39.2)	16(31.4)	12(23.5)	1(2.0)	2(3.9)
	Relationship with HOD	33(66.0)	10(20.0)	5(10.0)	1(2.0)	1(2.0)
	Relationship with university management	20(39.2)	18(35.3)	9(17.6)	3(5.9)	1(2.0)
Administrative related issues	Leadership behavior of university management	16(31.4)	15(29.4)	9(17.6)	7(13.7)	4(7.8)
	Administrative behavior of HOD	22(43.1)	17(33.3)	6(11.8)	4(7.8)	2(3.9)
	Participation in institutional administration	15(29.4)	13(25.5)	13(25.5)	6(11.8)	4(7.8)

N=frequency, %=percent, HOD=Head of Department

The results of the study have indicated that academic staff reported variable levels of stress per domain assessed in the study as presented in Table 2. In terms of academic workload (domain),26(51%) and 13(25.5%) respondents reported a high and very high

level of stress in the area of preparation of examination results. In the student-related issues domain, 17(33.3) and 8(15.7%) respondents regarded supervision of students' projects to be responsible for high stress or very high stress.

The results of the study further found that majority of the respondents reported sourcing of funds for research was reported by 17(33.3%) and 15(29.4%) respondents as a source of high and very high stress, respcetively. Similarly, sourcing of funds for career development also contributed to high and very high stress among 18(33.5%) and 13(25.5%) respondents. Meanwhile, linkage to other professions was perceived by 6(11.8%) and 16(31.4%) to be either a source of none or low stress. The interpersonal relationships domain offered the least sources of stress across the entire results. Here, relationship with non-teaching staff was rated highest in terms of offering none 35(68.6)% or low stress 11(21.6%) by the respondents, followed by relationship with HOD which was rated as a source of no stress by 33(66%) respondents. Lastly, the domain of administration related issues was also found to be rated as source of none or low stress by a significant proportion of the respondents.

The results of the self reported physical activity levels of the participants reveled that 23 (45%) were of high physical activity levels, 18(35%) respondents were of moderate physial activity levels, while the reamaining 10 (20%) were of low physical activity level. Finally, Table 3, the results of this study further indicated that there was no significant association between physical activity levels with the demographic variables and most of the percieved stress outomes($p>0.005$). Only few academic items from the stress questionnaire were significantly associated physical activity; invigilation ($p=0.05$), delivery of lectures ($p=0.03$) and institutional administration ($p=0.043$).

Table 3: *Association Between Physical Activity And Level Of Stress In The Various Domains Of Academic Work*

Variables	X^2	df	p-value
Gender	3.186	3	0.391
Marital status	0.821	3	0.782
Age	5.952	3	0.422
Teaching experience	8.177	9	0.485
Department	6.995	12	0.892
Academic rank	14.551	15	0.456
Work demands	12.616	12	0.403
Delivery of lectures	29.731	12	**0.030**
Invigilation of examinations	29.545	12	**0.005**
Preparation of examinations results	11.180	12	0.473
State of lecturers office accommodation	9.290	12	0.731
Setting of examination question	21.692	12	0.073
Student population	16.381	12	0.199
Project supervision	13.864	12	0.267
Student class room behavior	6.666	9	0.697
Promotion criteria	14.557	12	0.279
Linkage to avenues of professional development	18.696	12	0.119
Sourcing of fund for career	9.705	12	0.614

development			
Having required publication for promotion	13.657	12	0.323
Obtaining research incentives	12.456	12	0.451
Sourcing for research fund	5.310	9	0.860
Access to relevant literature	13.123	12	0.347
Publication of finished articles	8.099	12	0.797
Linkage to other professionals	16.268	12	0.130
Relationship with colleagues	10.860	12	0.422
Relationship with staff	6.709	12	0.803
Relationship with students	8.256	12	0.726
Relationship with HOD	9.486	12	0.538
Relationship university management	11.393	12	0.411
Leadership behavior of university management	20.362	12	0.059
Administrative behavior of HOD	12.746	12	0.361
Institution administration	21.415	12	**0.043**

Discussion

Khatoon, 2012; Mondal, Shrestha & Bhaila, 2011). Also, some other studies have reported female lecturers to experience more stress on the job than their male counterparts (Boyd & Wylie, 1994; Okebukola & Jegede, 1989). The participants of this study were relatively young, as the majority of The main aim of this study was to assess the association between physical activity and stress levels in various domains of academic work among teaching staff of Faculty of Allied Health Sciences, Bayero University, Kano. The major results of this study indicated that academic staff of FAHS experience work-related stress mainly in the domains of academic workload, student-related issues and in the area of research and career development. Domains pertaining to interpersonal relationships and administrative related issues were mostly rated as no or low stress by the respondents. Nevertheless, our results indicated that most work-related stress items were not associated with physical activity levels.

The majority of the respondents of the study were males. Even though the association between gender and the study variables was present in the present study, just as in another that reported no significant difference in the level of stress experienced by both male and female lecturers (Ofoegbu & Nwadiani, 2006). However, some studies have found male teachers reporting more stress than their female counterparts (Aftab & them were between 31 and 45 years. This also explains their relatively low years of working experience (<10 years). This is not surprising because the FAHS is a relatively young faculty that was established (in 2015) in Bayero University Kano.

The respondents perceived the compilation of examination results to be a source of high or very stressful. This finding has been identified earlier by Archibong, Bassey and Effiom (2010), and it is quite understandable because results of students in the faculty still being are compiled manually, with series of meeting starting from departmental, faculty to central board levels that are characterized by a high possibility of frequent correction and resubmissions. Additionally, the undergraduate programmes that are run in the faculty have a very complex system of grading the status of students. Also, some of the staff of the faculty lack adequate IT knowledge and capacity and often operate with limited resources (Babatope, 2010). The

resulting system also accommodates possible re-sit or special-sit, repeat and advice to withdraw statuses, thereby making staff of the faculty working endlessly throughout the academic year with little or no holiday. We recommend the need for a more computerized system of collating and compiling results of students in order to ensure efficiency and fewer chances of errors. Another reason that the respondents perceive as a source of high or very high stress is pertaining to undergraduate student project supervision. We also think that this is attributable to the high number of students that are enrolled in the various programmes (Agboola & Adeyemi, 2013; Archibong, Bassey & Effiom, 2010), meanwhile, most of the academic staff that participated in this study were of junior rank, which may mean that they are less experienced. Nevertheless, certain measures should be put in place to mitigate these sources of stress among academic staff. For example, stress management seminars and programmes should be organized regularly for academic staff. These seminars and programmes should be geared towards preventive measures and coping strategies that they could adopt to reduce work stress.

Furthermore, the results of this study indicated that a significant proportion of the academic staff reported a lack of funds to do research or further develop their career being a source of stress. Researchers and academics in Nigeria are known to fund their research and there is limited funding for post-graduate studies (Baro, Bosah & Obi, 2017; Egwunyenga, 2008). Presently, the Tertiary Education Trust Fund (TETFund), which is a government establishment, is the major organization that offers the most opportunities for funding research and career development. However, the chance of being nominated is slim due to the high number of applicants and the limited spaces. Furthermore, getting funding from other international organization has proven to be difficult because high quality submission is required. Most Nigerian academic lack such experience, international collaborators or co-investigators, and infrastructure to attract these funding (Olukoju, 2002).

Fortunately, the respondents in this study reported interpersonal relationships and administrative related issues were not sources of stress or less stressing. Academic staff duties in the study area are quite flexible and with some degree of autonomy and academic freedom (Arikewuyo & Ilusanya, 2010). The leadership of departments, faculties and university management are highly democratized thereby endearing mutual respect and understanding. This may explain the less stressful interpersonal relationships.

Finally, the results of this study have indicated that the respondents rated themselves as having either moderate or high physical activity levels. Nevertheless, these physical activity levels were only significantly associated few work-related stress items mainly under academic workload and student-related issues domains.

Conclusion

It was concluded that irrespective of physical activity levels, work-related stress in the areas of academic workload, student-related issues and lack of funding were common among academic staff of the studied population. Therefore, these sources of stress must be addressed to help academics provide quality services.

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