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Prevalence and Correlates of Technostress among Academic Staff at the University of Jos, Nigeria

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ABSTRACT

Background: *Technostress is one aspect of stress on the job which in turn is increasingly recognized as a major organizational problem. The considerable amount of time spent on the computer and electronic gadgets by academic staff portends significant increase in levels of psychological and physical stress capable of interfering with their performance at work leading to less efficiency.*

The aim of this study was to find out the level of awareness, prevalence and correlates of technostress among academic staff of University of Jos.

Materials and Methods: *A cross sectional study was undertaken. Multistage sampling method was used to select academic staff in the 12 faculties of the University of Jos, Nigeria. Data Collection was with the use of a semi-structured self-administered questionnaire*

Results: *Almost half (48.6%) of the respondents had no idea of what technostress was, while only 31.3% of respondents knew what it was and had understanding of it. The prevalence of technostress was 54.2%, and the respondents who have over 20 years work experience are at least 3 times more likely not to report technostress compared to those less than 10 years. Slow internet network, increased workload, pressure to stay up to date and work efficiently with the latest technology, lack of technical support and unreliability of technology were other factors contributing to technostress in increasing frequency. However, no statistically significant relationship ($p > 0.05$) was found to exist between technostress and respondents' age group, gender, attendance of technology related training, average number of hours spent per day on technological devices, years of using computer gadgets ($p=0.05$).*

Conclusions: *There is a low level of awareness of technostress among academic staff of University of Jos. The prevalence of technostress among respondent was slightly above half. In general, the respondents had a moderate level of technostress. The more the work experience and the lesser the likelihood of experiencing technostress and the lower the levels of it experienced. However, the age and gender of academic staff as well as the number of hours spent per day on a technological device, attendance of technology-related training as well as years of computer gadgets use did not significantly affect their experience of technostress.*

INTRODUCTION

In recent times, there has been a steady advancement in technology and the roles it plays in our day-to-day activities. Thus, there is a growing perception that rapid advancements in technology are responsible for inducing stress in our lives.¹

Like the term “stress”, “technostress” has been defined in so many ways- sometimes by the same authors- that its utility as a concept is in doubt.² Literally, technostress is a feeling of anxiety or mental pressure from overexposure or involvement with technology (computer).³ In the early 1980's, a psychotherapist and consultant on integrating new technologies into the work place, Craig Brod, described technostress as; “Modern disease of adaptation caused by an inability to cope with new computer technologies in a healthy manner”. This definition became the standard and accepted definition.¹ Four aspects of technostress include physical, emotional, behavioural and psychological.⁴

Technostress is one aspect of stress on the job which in turn is increasingly recognized as a major organizational problem. The National Council on Compensation Insurance of the United States of America has found that stress accounts for 10% of occupational illness claims, averaging \$15,000 each, and this rate doubled in the 1980s.⁵

Academic staff and lecturers that may or may not be undergoing post-graduate training need to go through materials online that are relevant to their studies in order to carry out research, write dissertations and thesis as well as keep abreast with advances in their respective fields. The considerable amount of time spent surfing the internet, Computing, collating and compiling results may take their toll on the lecturers with significant increase in levels of psychological and physical stress capable of interfering with their performance at work leading to less efficiency.

The prevalence of technostress among workers and professionals who make use of technology in their work-related tasks has been seen to vary from relatively high percentages to lower values influenced by diverse factors and coping

measures. Different studies from different parts of the world assessing technostress in different populations especially among reference librarians have given prevalence rates ranging from 51% to 97%^{4, 6, 7}

In the African sub-region and in Nigeria, there have been very few studies on technostress mainly among library staff. In a study conducted among librarians in Eastern and Southern Africa, out of twenty-five librarians, 19 (76%) said that they had experienced technostress, while 6 (24%) said they had not.⁸ Another study among librarians in Covenant University, Nigeria revealed that out of the 34 library staff, 27 (79.4%) experienced technostress while carrying out their library duties while 7 (20.6%) did not often experience technostress. This showed that majority of the library staff did experience technostress while carrying out their professional functions.⁹ Another study carried out among 253 librarians in thirteen public owned universities in the South-West Nigeria showed that 136 respondents (54%) experienced technostress as an occupational frustration variable.¹⁰

The authors are not aware of any studies in any regions of Northern Nigeria on technostress. Moreover, the few studies in Southern parts of the country were essentially on librarians while other academic staff who also use computers and other devices extensively in the course of their works have not been studied. The aim of this study is to find out the level of awareness, prevalence and correlates of technostress among academic staff of University of Jos.

MATERIALS AND METHODS

This was a cross-sectional study carried out at the University of Jos, located in Jos North Local Government area of Plateau State. Plateau State is one of the thirty-six (36) states of Nigeria, located in the North-Central region. Its capital is Jos. The University of Jos abbreviated as Unijos is a federal university in Jos, Plateau State. It started as a campus of the University of Ibadan in November 1971. It became one of the seven universities to be established in 1975. The

university currently has a total of 12 faculties and 87 Departments with about 21,374 students comprising both undergraduate and postgraduate students. The school offers courses in Law, Medical Sciences, Pharmaceutical Sciences, Natural Sciences, Social Sciences, Management Sciences, Education, Environmental Sciences as well as Arts and Humanities. Other recently added faculties are Veterinary Medicine, Agriculture and Engineering.¹¹ These are located in four major campuses on Bauchi Road, Gangare, Lamingo and FarinGada (where the permanent site is located), all in Jos, Plateau State. Statistical figures obtained from the university administration indicate that there is a total of 2600 staff of the university as at the first quarter of the year 2016; 1241 of whom are teaching staff in the 12 faculties, 88 are teaching staff in the other departments and units in the university and 1271 are non-teaching staff.¹²

The study population comprised the academic staff of the University of Jos.

Those who were included in the study were academic staff who gave consent to participate in the study. Academic staff in departments and units that are not under the 12 faculties of the university were excluded.

Using a prevalence rate of 10% (0.10)¹³, an absolute standard error of 0.05 and a standard normal variance of 1.96, it was determined that a sample of 138 participants will be adequate, calculated using appropriate formula for cross sectional study.¹⁴

A multistage sampling technique was used to select the participants. In stage one, the number of academic staff in each faculty to be studied was also obtained by proportionate sampling. This was done by dividing the total number of academic staff in each faculty by the total number of academic staff in the 12 faculties in the university and multiplying by the obtained minimum sample size. The departments within each of the faculties from which the calculated number of lecturers were to be selected were chosen through simple random sampling technique by balloting. The selection of the individual respondents from the

chosen department was also done by simple random sampling technique by balloting.

Ethical Consideration

Approval for the study was obtained from the Ethics and Research Committee of Jos University Teaching Hospital, (JUTH). Informed verbal consent was obtained from each respondent before being enrolled into the study; after being assured of confidentiality and given the option to opt out of the study at any time, without any loss of benefits or penalty.

Procedure

Data collection was through a semi-structured self-administered questionnaire divided into sections; (A) Socio-demographic data, (B) Assessment of awareness of technostress, (C) Assessment of prevalence of technostress, and (D) Factors contributing to technostress. The section on the prevalence of technostress was adapted from the five dimensions of technostress questionnaire by Ragu-Nathan et al. used in a study in 2008¹⁵. Previous study by Ragu-Nathan, *et al.* confirms the reliability of the instrument. They found that Cronbach's Alpha (coefficient of reliability) for all five factors of technostress creators were greater than 0.75.¹⁵ The questionnaire was pretested among 10 academic staff of Federal College of Forestry, Jos. The questions were easy to understand by the staff who shared similar characteristics with the target population.

Scoring and Grading Of Responses

Responses to the first ten items in the section on assessment of the prevalence of technostress were gathered through a 5-point Likert scale anchored as 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree. The maximum score for each item was five. This was done in order to estimate the degree or level to which those who experienced technostress did. The total score of all the items was obtained for each respondent with a maximum score of 50 and a minimum of 10. A respondent with a total score of 10 – 20 was considered to have a low level of

technostress and one with a total score between 21 – 30 was considered to have a moderate level of technostress. Respondents with a total score of 31 – 40 were considered to have a high level of technostress and those with a total score within the range of 41 – 50 were considered to have a very high level of technostress.

Data Analysis

The data collected was analyzed using Epi-info software version 3.5.4 and quantitative data were presented using means and standard deviation while qualitative data was presented using frequency tables, percentages and charts. Tests of statistical significant relationships were carried out using Chi-square test and Linear Correlation test. A 95% confidence interval was used and probability values of ≤ 0.05 were considered statistically significant.

RESULTS

A total of 144 respondents participated in this study. From Table 1, the highest proportion of respondents, 59 (40.9%) were aged 41 – 50 years. Their mean age was 45.31 ± 8.84 years. There were more males 113 (78.5%) than females. More than half of the respondents, 80 (55.6%) had spent 10 years or less of service in the university while mean duration of service was 11.61 ± 9.03 years. Study participants were gotten from all the twelve faculties of the university. The faculty with the highest proportion of respondents was Natural Sciences, 33 (22.9%).

Seventy-eight respondents (54.2%) had gone through a form of technology-related training. A third of the respondents, 52 (36.1%) had been using computers for between six to 10 years and mean duration of computer use by respondents was 12.27 ± 4.95 years.

Ninety-three respondents (64.5%) spent 5 hours or less every day on the average on a technological device while 44 (30.6%) spent 6 – 10 hours per day on a technological device. The mean time duration spent by respondents per day on a technological device was 5.12 ± 3.03 hours. Only

22 respondents (15.3%) had attended a form of stress management training.

Table 2 shows that almost half of the respondents, 70 (48.6%) had never heard about technostress prior to the study. Twenty-nine respondents (20.1%) had heard about it prior to study, but did not know and understand what it was, while 45 respondents (31.3%) had heard and understood what technostress meant prior to the study.

Prevalence of technostress was found to be 54.2% (95% CI 45.7% 62.5%) among the respondents as more than half of the respondents admitted that they did experience technostress.

This was corroborated using the mean values gotten from the technostress assessment questions as 78 (54.2%) respondents had technostress scores above the mean of 25.6 ± 6.7 .

Thirty-seven respondents (25.7%) had a low level of technostress with scores ranging from 10 to 20. The highest proportion of respondents, 74 (51.4%) had a moderate level of technostress with scores of 21 – 30, 31 respondents (21.5%) had a high level of technostress with scores of 31 – 40 and 2 respondents (1.4%) had a very high level of technostress with scores ranging from 41 – 50.

The most common factor contributing to technostress recognized by majority of the respondents, 112 (77.8%) was slow internet network.(See Table 4). Other factors contributing to technostress in the work environment of respondents in order of frequency included: Increased workload (52.8%), pressure to stay up to date and work efficiently with the latest technology (43.8%), lack of technological support (41.0%), inadequate technological skills (29.9%), lack of computer training (27.8%), rapid technological change (21.5%) and unreliability of technology (13.2%).

A correlation coefficient of -0.219 was obtained with a p-value of 0.0495 in the correlation between the number of years, prior to the study, that respondents had used computers and their technostress scores. (See Table 5) There is therefore no statistically significant relationship between years of computer usage of computers by

respondents prior to the study and their technostress levels ($p = 0.050$).

Table 5 shows that there was a statistically significant relationship between the duration of service of respondents in the university (years of

work experience) and the technostress experienced by them ($p < 0.05$).

Those with over 20 years' experience at least 3 times more likely not to report technostress compared to the <10years group! No difference with the 11-20 years' group

Table 1: Socio-demographic data of the respondents

Variable	Frequency (n=144)	Percentage (%)
Age (years)		
≤30	4	2.8
31 – 40	44	30.5
41 – 50	59	40.9
51 – 60	25	17.4
61 – 70	9	6.3
Missing	3	2.1
Gender		
Female	31	21.5
Male	113	78.5
Duration of Service (years)		
≤10	80	55.6
11 – 20	37	25.7
21 – 30	22	15.3
31 – 40	5	3.5
Faculty of Respondents		
Agriculture	3	2.1
Arts	21	14.6
Education	20	13.9
Engineering	5	3.5
Environmental Sciences	3	2.1
Law	12	8.3
Management Sciences	4	2.8
Medical Sciences	18	12.5
Natural Sciences	33	22.9
Pharmaceutical Sciences	9	6.3
Social Sciences	13	9.0
Veterinary Medicine	3	2.1
Hours spent on a technology device per day		
≤ 5	93	64.6
6 – 10	44	30.6
11 – 15	5	3.5
16 – 20	2	1.4
Respondents with technology-related training		
No	66	45.8
Yes	78	54.2
Duration of computer usage (years)		
≤5	15	10.4
6 – 10	52	36.1
11 – 15	47	32.6
16 – 20	21	14.6
21 – 25	7	4.9
Missing	2	1.4
Respondent with stress management training		
No	120	83.3
Yes	22	15.3
Missing	2	1.4

Table 2: Awareness and prevalence of technostress among respondents

Variable	Frequency (n =144)	Percentage (%)
Awareness of technostress		
No, I had no idea of what it was	70	48.6
I had heard of it, but did not know what it was	29	20.1
Yes, I knew and understood what it was	45	31.3
Experience of technostress		
No	66	45.8
Yes	78	54.2
Level of Technostress		
Low	37	25.7
Moderate	74	51.4
High	31	21.5
Very high	2	1.4

Table 3: Respondents’ responses to assessment of technostress

	As a lecturer,	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
1.	I am forced by this technology to do more work than I can handle	39 (27.3)	36 (25.2)	17 (11.9)	32 (22.4)	19 (13.3)
2.	I am forced by this technology to work with very tight time schedules	31 (21.7)	33 (23.1)	24 (16.8)	43 (30.1)	12 (8.4)
3.	I have to sacrifice my vacation and weekend time to keep current on new technologies	34 (23.8)	38 (26.6)	21 (14.7)	32 (22.4)	18 (12.6)
4.	I feel my personal life is being invaded by this technology	26 (18.3)	36 (25.4)	25 (17.6)	41 (28.9)	14 (9.9)
5.	I need a long time to understand and use new technologies	39 (27.3)	50 (35.0)	18 (12.6)	29 (20.3)	7 (4.9)
6.	I do not have enough time to study and upgrade my technology skills	23 (16.1)	44 (30.8)	22 (15.4)	44 (30.8)	10 (7.0)
7.	I feel constant threat to my job security due to new technologies	58 (41.1)	55 (39.0)	12 (8.5)	14 (9.9)	2 (1.4)
8.	I am threatened by co-workers with newer technology skills	45 (31.5)	61 (42.7)	21 (14.7)	12 (8.4)	4 (2.8)
9.	There are constant changes in computer software in my place of work	21 (14.8)	31 (21.8)	35 (24.6)	41 (28.9)	14 (9.9)
10.	There are constant changes in computer hardware in my place of work	28 (19.7)	49 (34.5)	28 (19.7)	29 (20.4)	8 (5.6)

FACTORS CONTRIBUTING TO TECHNOSTRESS

Table 4: Respondents’ perception of factors contributing to technostress in respondents’ work environment

Factors contributing to technostress*	Frequency	Percentage (%)
Slow internet connection	112	77.8
Increased workload	76	52.8
Pressure to stay up to date and work efficiently with the latest technology	63	43.8
Lack of technical support	59	41.0
Inadequate technological skills	43	29.9
Lack of computer training	40	27.8
Rapid technological change	31	21.5
Unreliability of technology	19	13.2

Multiple responses allowed*

Table 5: Relationship between duration of service of respondents and technostress experienced by them

Technostress				
Variable	Yes	No	TOTAL	OR (95CI)
Duration of Service (years)				
≤10	52 (65.0)	28 (35.0)	80 (55.6)	1
11-20	16 (43.2)	21 (56.8)	37 (25.7)	1 (0.45-2.25)
>20	10 (37.0)	17 (63.0)	27 (18.7)	3.16 (1.17-8.15)
TOTAL	78 (54.2)	66 (45.8)	144 (100.0)	

$\chi^2 = 8.7513; df = 2; p = 0.0126$

DISCUSSION

We found that almost half (48.6%) of the respondents had no idea of what technostress was, while only 31.3% of respondents knew what it was and had understanding of it. The prevalence of technostress according to our findings was 54.2%, and the respondents who have over 20years experience are at least 3 times more likely not to report technostress compared to those less than 10years. Slow internet network, increased workload, pressure to stay up to date and work efficiently with the latest technology, lack of technical support and unreliability of technology were other factors contributing to technostress in increasing frequency.

However, no statistically significant relationship ($p > 0.05$) was found to exist between technostress and respondents' age group, gender, attendance of technology related training, average number of hours spent per day on technological devices, years of using computer gadgets ($p=0.05$).

The level of awareness found is similar to that of a study conducted among academic and non-academic workers in ObafemiAwolowo University, Ile ife, Osun State, where 77% of the respondents were not knowledgeable about the associated stress with increased time of computer use for their work.¹⁶ This finding could be due to the fact that most academic staff had not attended any stress management training and a significant proportion had not attended any technology related training where the concept of technostress could have been taught and explained.

The prevalence rate in this study was consistent with that of a study carried out among university librarians in the South-West of Nigeria that showed that 54% of respondents experienced technostress as an occupational frustration variable.¹⁷ Another study with a similar prevalence was the one carried out among library staff in college and research libraries in the United States of America that showed that about half (51%) of the respondents experienced technostress.⁵ However, the prevalence of technostress was higher in a study among librarians in Covenant University, Nigeria which revealed that most of

the respondents (79.4%) experienced technostress.¹⁸ Another study conducted in Eastern and Southern Africa among librarians also showed a high prevalence of technostress (76%) among respondents.¹⁹ The relatively lower prevalence of technostress found in this study among academic staff of University of Jos as compared with those of the various cited studies, most of which were among librarians, could be as a result of the greater level of usage and exposure to computer technologies among librarians, especially in modern 21st Century libraries.

Our study findings emphasize and reiterate the important roles of work experience gained with increasing duration of service in equipping respondents to cope better with stress induced by usage of technological devices.

The findings above were similar to an empirical study of technostress among Indian academicians which showed that those with greater technological awareness had less technostress than their counterparts who had less technology awareness. This was explained by the fact that they were familiar with the changes, upgrades and evolutions in information technology and found it easier to adapt to the fast changing technology in academic environment.

Similar to our findings, a study among librarians in Covenant University, Nigeria revealed that slow internet network was the ranked highest factor contributing to technostress.¹⁸ However, a study carried out in Edo and Delta states showed that quick pace of technology change and lack of proper technology training were the major causes of technostress in the study environment.²⁰

In contrast to our study findings where we found no relationship to exist between age and gender, a number of studies both locally and foreign found significant differences in the age and sex levels of technostress.^{18,21,22} In these studies, males and older employees were more likely to experience technostress than females and younger employees.

CONCLUSION

There is a low level of awareness of technostress among academic staff of University of Jos. The

prevalence of technostress among respondent was slightly above half. In general, the respondents had a moderate level of technostress. Thus it could be inferred from this study that a little more than half of the academic staff of University of Jos experienced technostress at moderate levels.

The prevalence of technostress and the extent to which it is experienced depended on the number of years of work experience by academic staff of the university. The more the work experience and the lesser the likelihood of experiencing technostress and the lower the levels of it experienced. However, the age and gender of academic staff as well as the number of hours spent per day on a technological device, attendance of technology-related training as well as years of computer gadgets use did not significantly affect their experience of technostress.

We recommend that programmes like seminars should be organized to educate and inform staff about technostress. Technology related training on how to use computer gadgets, relevant software and new hardware and good ergonomic practices should be regularly organized. This will help individuals to be more conversant with using the relevant and available hardware and software in a bid to make them less predisposed to experiencing technostress. Easily accessible high speed internet network with wide coverage should be made available to all academic staff of the university in all campuses as a means of reducing the impact of poor internet quality causing technostress on the staff. These will increase productivity and reduce stress.

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