

# An Investigation of Computer Usage and Ergonomics Awareness Among Library Staff at Three Selected Public Universities in Zambia

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**Abstract** - *With the growing increase of computer use in education, there is increasing concern about computer-related health problems. The lack of knowledge about healthy computer use and ergonomic factors may perpetuate computer-related health problems. It is important to train computer users on healthy computer use. The current study aimed to investigate computer usage among library staff in three Public Universities in Zambia (University of Zambia, Copperbelt University, and Mulungushi University) in relation to risks arising from unhealthy use, and knowledge of computer related ergonomics. Specifically, the study investigated knowledge about physical environment, ergonomics and the health problems associated with computer use. Fifty-six library staff at the three public universities participated in this study. The data was collected in March 2017, using a questionnaire. Data was analysed using the Statistical Package for the Social Sciences (SPSS) version 23. Specifically, means, frequencies, and percentages were used and relevant parametric tests were conducted where necessary.*

**Keywords** - *Ergonomics; University of Zambia; Copperbelt University; Mulungushi University; Zambia*

## I. INTRODUCTION

The International Labour Organisation (ILO) estimates that each year around 2.3 million workers die as a result of occupational accidents and work-related diseases. The economic costs of occupational safety and health problems place a considerable burden on the competitiveness of any organisation.

There are many economic losses that may result from work-related diseases and injuries, in terms of compensation, loss of productivity [1]. Some authors have argued that that musculoskeletal

complaints are a major cause of absenteeism because of sickness in developed countries; they are second only to respiratory disorders as a cause of short-term sickness absence (less than two weeks) [2]. Ergonomics is “study of human abilities and characteristics which

affect the design of equipment, systems, and jobs and its aims are to improve efficiency, safety, and well-being". [3] Adverse ergonomic working conditions can cause visual, muscular and psychological disturbances such as eye strain, headaches, fatigue, Musculoskeletal Disorders (MSDs) such as chronic back, neck and shoulder pain, Cumulative Trauma Disorders (CTDs), Repetitive Strain Injuries (RSIs) and Repetitive Motion Injuries (RMIs), psychological tension, anxiety and depression [4]. There are a "number of factors play a role in ergonomics; these include body posture and movement (sitting, standing, lifting, pulling and pushing), and environmental factors (noise, lighting, temperature, humidity) without proper computer set-up and use, there are many injuries that may result [5]. Tendonitis is the most common problem, involving tendon inflammation and localized pain in the elbow, forearm, wrist or hand. Bad posture can cause fatigue, muscle strain, and, in later stages, pain. Back pain, one of the most common complaints of older men and women, is usually the result of years of faulty posture. In addition, poor posture can affect the position and function of one's vital organs, particularly those in the abdominal region [5]. Awareness of effects of long term use of computer and application of ergonomics in the computer workstation is important for preventing musculoskeletal disorders, eyestrain and psychosocial effects [6]. The application of ergonomics can result in numerous improvements to reduce the potential for occupational accidents and diseases and in the enhancement of basic working conditions.

## II. STATEMENT OF THE PROMBLEM

A library is considered the heart of the university as it supports the core business of the university, being teaching, learning and research. Library staff are the strategic persons in the provision of immeasurable information services to the library community of users. Poor working conditions affect the physical well-being of the library staff. Working in a library can be demanding in terms of physical exertion and working with computers, mice, and monitors requires many of the same skills that successful athletes have [7]. Many library staff spend hours a day in front of a computer without thinking about the impact on their bodies. They physically stress their bodies daily without realizing it by extending their wrists, slouching, sitting without foot support and straining to look at poorly placed monitors. These practices can lead to cumulative trauma disorders or repetitive stress injuries, which create a life-long impact on health and return, affect productivity at work. Awareness of effects of long term use of computer and application of ergonomics in the computer workstation is important for preventing musculoskeletal disorders, eyestrain and psychosocial effects.

Proactive Ergonomics emphasises the prevention of work related musculoskeletal disorders through recognising, anticipating and reducing risk factors in the planning stages of new systems of work or workplaces. The true magnitude of MSDs at the workplace, caused by computer usage is unknown in Zambia and hence this study. This study was carried out to determine the awareness of physical and

psychological effects of prolonged computer usage and application of ergonomics in the workstation in Zambian public universities.

### III. OBJECIVES OF THE STUY

The main objective of this study was to investigate computer usage and ergonomics awareness among library staff at three public universities in Zambia. The specific objectives of the study were:

1. To investigate the physical environment in which library staff were operating,
2. To investigate the intensity of computer usage among library staff,
3. To determine levels of ergonomics awareness among library staff, and;
4. To investigate risks arising from unhealthy use of computers.

### IV. LITERATURE REVIEW

Literature was reviewed in relation to symptoms experienced by Librarians. The literature review indicates that there has never been a study of this type done in Zambia and that studies in this area are overall limited. In a study by [8], it was found that librarians' health is affected by ergonomic factors. The study, which was conducted in public libraries in Hamadan, Iran, which is a developing country found that 52.6% of staff had musculoskeletal (back, neck and surrounding areas, shoulders, hand/wrist, elbow/forearm) symptoms and disorders with the neck and back discomfort presenting the greatest complications due to improper working tools. In another study by [9], it was found

that there was an increase in upper extremity musculoskeletal disorders amongst computer (desktop, laptop and tablet) users aged between 20 – 60 years. Pain was the primary outcome measure. The study reported musculoskeletal complaints of the arm, neck and shoulder (CANS), were numerous and complex. Poor ergonomic designs of workplaces and computer devices; coupled with repetitive tasks and static body postures have in these studies been identified as other factors that are associated with poor usage computers ergonomically. The study in Japan by Iwakiri (2004) concluded that “prevalence of eye strain and/or pain (72.1%) was the highest, followed by neck stiffness and/or pain (59.3%), low back stiffness and/or pain (30.0%) and hand or arm strain and/or pain (13.9%). Women consistently reported more discomfort than men” [10]. Another study in Malaysia found that there was “a great risk of developing Occupational Overuse Syndrome (OOS) in neck and wrist regions amongst the sample population. Many users had high Rapid Upper Limb Assessment (RULA) scores of the wrist. Most (88.9%) were using the traditional keyboard without wrist rest” [11]. And a study among computer professionals in India concluded that “A significant proportion of the computer professionals were found to be having health problems and this denotes that the occupational health of the people working in the computer field needs to be emphasized as a field of concern in occupational health” [12].

## V. METHODOLOGY

A cross-sectional survey was conducted among the library staff of the three public Zambian public universities, namely: University of Zambia, Copperbelt University, and Mulungushi University. The target population were all library staff who had been working in the university libraries for at least one year. The inclusion criterion was all the library staff who were using computers in the last one year prior to the commencement of the study. This study excluded all staff not involved in typical library work; such as bindery staff, cleaning staff, security staff, and clerical staff such as messengers. Institutional ethical clearance was obtained and all those library staff willing to participate during data collection were included in the study. The participants were surveyed using pre-tested structured questionnaires, which included collection of information on the demographic profile, practice of ergonomic principles while working on a computer (viewing distance, positioning of screen, avoiding glare, frequent breaks, posture, etc.) and symptoms of ergonomic related symptoms experienced while working on computer continuously within the past one year immediately preceding the study. The eye symptoms were redness, burning sensation of eye, headache, blurred vision, dry eyes, and neck and shoulder pain. Respondents were asked to mark whether they had none, mild, moderate to severe problems experienced related to computer use. The data was analysed using SPSS version 23. The descriptive data were presented as percentages, unadjusted odds ratio to

measure the strength of association and 95% confidence interval were calculated. The chi-square test of significance was used for analyses of categorical variables. Bn

## VI. RESULTS

### A. *Biographical characteristics of the respondents*

Fifty-six (56) library staff participated in this study; 22 (39.3%) from the Copperbelt University, 7 (12.5%) from Mulungushi University, and 27 (48.2%) from the University of Zambia. Table 1 presents a summary of the respondents' demographic characteristics. Twenty-four (42.9%) participants were males and 32 (57.1%) were females. The youngest was aged 23 years while the oldest was aged 62 years; the average age was 37.02 years. Regarding their highest qualifications attained, five (8.9%) had certificates in library and information science (LIS), 15 (26.8%) had diplomas in LIS, 20 (35.7%) had a first degree in LIS, 10 (17.9%) had a master of LIS, while one respondent had other qualifications. Five (8.9%) did not disclose the highest qualifications they had obtained. The majority (48; 85.7%) of the respondents were in fulltime employment while a few (4; 7.1%) were on part time; four (7.1%) did not disclose their employment status. The minimum number of years in employment was one year while the maximum number of years in employment was 27 years; giving an average work experience of 11.98 years. Table 1.

**Table 1: biographical characteristics of the respondents**

Variable	Values	Frequency	Percentage
Gender	Males	24	42.9
	Females	32	57.1
Academic qualifications	Certificate in LIS	5	8.9
	Diploma in LIS	15	26.8
	Degree in LIS	20	35.7
	Masters in LIS	10	17.9
	Other	1	1.8
Employment status	Fulltime	48	85.7
	Part time	4	7.1

### B. Work history and work load

Table 2 presents a summary of the mean time respondents spent on various activities in the library. On average, respondents spent 29.3% of their time scanning and photocopying documents; 27.2% on document analysis, reviews, corrections, and word processing; 26.2%

on administration and supervision; 17.1% on official communication (phone calls, emailing, etc.); 15.9% on cataloguing, classification, and data entry; 11.9% on shelving, filing, and sorting; 7.9% on interacting with library clients; 4.6% on document preparation; and 13.6% on other activities.

**Table 2: Average percentage of time spent on various activities**

Activity	Mean %
Scanning, photocopying, etc.	29.3%
Document analysis, review, correction, word processing	27.2%
Administration, supervision	26.2%
Official communication (phone calls, emails)	17.1%
Cataloguing, classification, data entry	15.9%
Shelving, filing, sorting, etc.	11.9%
Interacting with library clients	7.9%
Document preparation	4.6%
Other activities	13.6%

Respondents were asked to indicate the percent of their days in a week were heavy work load days. The study further reveals that 3.6% of the respondents reported that 1-25% of their working days are heavy work load days; 14.3% reported that 26-50% of their working days are heavy

workloads; 48.2% of the respondents reported that 51-75% of their working days are heavy workloads; 30.4% of the respondents reported that 76-100% of their working days are heavy workloads. These results indicate that 81.5% of the respondents reported that 51-100% of their

working days are heavy workload days.

See Table 3

**Table 3: What percent of your days are heavy workload days?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-25%	2	3.6	3.7	3.7
	26-50%	8	14.3	14.8	18.5
	51-75%	27	48.2	50.0	68.5
	76-100%	17	30.4	31.5	100.0
	Total	54	96.5	100.0	
Missing	not stated	2	3.		
Total		56	100.0		

Furthermore, Table 4 below reveals that the majority (52.8%) of the respondents very often or often had worked more than 5 days or more than 40 hours per week, in

the last one year. Furthermore, 82.1% (46) of the respondents usually work from their offices all day.

**Table 4: Frequency of work for more than 5 days or more than 40 hours in the last one year**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	very often	10	17.9	18.9	18.9
	often	18	32.1	34.0	52.8
	rarely	18	32.1	34.0	86.8
	never	7	12.5	13.2	100.0
	Total	53	94.6	100.0	
Missing	not stated	3	5.4		
Total		56	100.0		

### ***C. Usage of Computers and other related technologies by library staff***

The third objective of this study was to establish the extent to which library staff used computers and other related technologies. To achieve this objective, respondents were asked to indicate the percent of their time they spent keying

(typing). Table 5 shows that 12.5% of the respondents spent 1%-25% of their time keying; 14.3% spend 26-50% keying; 30.4% spend 51-75% of their time keying; and 35.7% of the respondents spent 76%-100% of their time keying. These results reveal that 71.2% of the respondents spent 51%-100% of their time keying (typing).

When asked whether they were fast or slow typists, 79.6% of respondents rated themselves as fast typists. Furthermore, when asked about the kind of keyboard

they used most, all the respondents (100%) indicated that they used a standard keyboard.

**Table 5: Keyboard activity and use**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-25%	7	12.5	13.5	13.5
	26-50%	8	14.3	15.4	28.8
	51-75%	17	30.4	32.7	61.5
	76-100%	20	35.7	38.5	100.0
	Total	52	92.9	100.0	
Missing	not stated	4	7.1		
Total		56	100.0		

Respondents were further asked if they used additional special equipment in their work. Table 6 presents a summary of the equipment used by library staff. Topping the list was a trackball mouse (97.3%). Others were sit-stand desk (24.1%), arm

rest (13.8%), vertical mouse (10.3%), wrist support (6.9%), touch screen (3.4%), footrest (3.4%). The results also revealed that there were no respondents who used a glare reduction screen shield, document holder, or a task lighting.

**Table 6: Special equipment library use in their work**

Special equipment used on the job	Count	Table N %
Trackball mouse	23	79.3%
Sit-stand desk	7	24.1%
Arm rest (not on chair)	4	13.8%
Vertical mouse	3	10.3%
Wrist support	2	6.9%
Touch screen	1	3.4%
Footrest	1	3.4%
Glare reduction screen shield	0	0.0%
Document holder	0	0.0%
Task lighting	0	0.0%
Total	29	100.0%

Respondents were asked to indicate the percent of the time they spent talking on the telephone or mobile phone. Table 7 shows that 73.2% of the respondents spent

1-25% of their time talking on the phone; 7.1% spent 26-50% on the phone; 12.5% spent 51-75% of their time on the phone;

and 5.4% of the respondents spent 76-100% of their time on the phone.

**Table 7: Time respondents spent on the telephone/mobile**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-25%	41	73.2	74.5	74.5
	26-50%	4	7.1	7.3	81.8
	51-75%	7	12.5	12.7	94.5
	76-100%	3	5.4	5.5	100.0
	Total	55	98.2	100.0	
Missing	not stated	1	1.8		
Total		56	100.0		

**D. Levels of ergonomics awareness among library staff**

To determine levels of ergonomics awareness among library staff, respondents were asked to indicate how many times, on average, they took short breaks from their workstation. Three (5.4%)

indicated that they often took short breaks from their workstation; 25.0% often took short breaks; and 53.6% rarely took short breaks. These results reveal that the majority (53.6%) rarely took short breaks from their workstation. See Table 8.

**Table 8: Frequency of the respondents taking a walk away from their workstation in a day**

		Frequency	Percent	Valid Percent
Valid	very often	3	5.4	6.4
	often	14	25.0	29.8
	rarely	30	53.6	63.8
	Total	47	83.9	100.0
Missing	not stated	9	16.1	
Total		56	100.0	

**Risks arising from unhealthy use of computers** Respondents were asked whether they had experienced any health problems in the past one year while using their computer monitors. Table 9 presents the health problems the respondents had experienced in the past one year whilst using their computer monitors. Topping on the list is headaches (55.3%), followed by sore or tired eyes (eye strain) (53.2%),

burning, itching, or red eyes (40.4%), watery eyes (38.3%), blurred vision (29.8%), glare (light) sensitivity (27.7%), dry eyes (23.4%), and double vision (17.0%).



**Table 9: Symptoms experienced by respondents while using a computer monitor**

Symptoms	Frequency	Table N %
Headaches	26	55.3%
Sore or tired eyes (eye strain)	25	53.2%
Burning, itching, or red eyes	19	40.4%
Watery eyes	18	38.3%
Blurred vision	14	29.8%
Glare (light) sensitivity	13	27.7%
Dry eyes	11	23.4%
Double vision	8	17.0%
<b>Total</b>	<b>47</b>	<b>100.0%</b>

Respondents were further asked to rate the level of discomfort they had experienced because of these eye-related symptoms during the last 7 days (Table 10). Eight (14.3%) experienced no discomfort; 12 (21.4%) experienced a little discomfort; 17

(30.4%) experienced moderate discomfort; 7 (12.5%) experienced ‘bad’ discomfort; 6 (10.7%) experienced very bad discomfort; one (1.8%) respondent experienced almost unbearable discomfort.

**Table 10: Level of discomfort you have experienced due to eye-related symptoms**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	8	14.3	15.7	15.7
	Little	12	21.4	23.5	39.2
	Moderate	17	30.4	33.3	72.5
	Bad	7	12.5	13.7	86.3
	Very bad	6	10.7	11.8	98.0
	Almost unbearable	1	1.8	2.0	100.0
	<b>Total</b>	<b>51</b>	<b>91.1</b>	<b>100.0</b>	
Missing	not stated	5	8.9		
<b>Total</b>		<b>56</b>	<b>100.0</b>		

The respondents were asked to indicate the last time they had had their eyes examined by a doctor or other health care provider. Table 11 reveals that 19 (33.9%) respondents had last consulted a doctor

over their eye-related health problem in last one year; 7 (12.5%) in the last 2-3 years; and 11 (19.6%) in the last 4+ years. Eighteen (32.1%) had never had their eyes examined.

**Table 11: Respondents last time had their eyes examined by a doctor or another health care provider**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 year ago	19	33.9	34.5	34.5
	2-3 years ago	7	12.5	12.7	47.3
	4+ years ago	11	19.6	20.0	67.3
	Never examined	18	32.1	32.7	100.0
	Total	55	98.2	100.0	
Missing	not stated	1	1.8		
Total		56	100.0		

Respondents were further asked whether they had experienced pain, stiffness, burning, numbness or tingling, lasting one week or more, in some specified areas of their bodies while using their computers, in the past one year. Table 12 shows that 65.6% had experienced pain in the back;

62.5% had experienced pain in the neck and surrounding areas; 50.0% had experienced pain in the shoulders; 40.6% had experienced pain in the hand and wrists; and 37.5% had experienced pain in the elbow/forearm.

**Table 12: Pain, stiffness, burning, numbness or tingling in various parts of the body**

Parts of the body	Frequency	Table N%	Seen a Doctor	
			Yes	No
Back	21	65.6%	5 (23.8%)	16 (76.2%)
Neck and surrounding areas	20	62.5%	6 (21.7%)	22 (78.6%)
Shoulders	16	50.0%	3 (13.6%)	19 (86.4%)
Hand/wrists	13	40.6%	2 (15.4%)	11 (84.6%)
Elbow/forearm	12	37.5%	0 (0.0%)	12 (100.0%)
Total	32	100.0%		

Table 13 shows that the majority (52.2%) of those who experienced pain in the neck had episodes of pain lasting 1-24 hours; the majority (57.9%) of those who experienced pain in the shoulders had episodes of pain lasting 1-24 hours; the majority (45.5%) of those who experienced pain in the elbow/forearm

had episodes of pain lasting 25 hours-1 week; the majority (41.7%) of those who experienced pain in the hand/wrist had episodes of pain lasting less than 1 hour; and the majority (33.3%) of those who had experienced pain in the back had episodes of pain lasting 1-24 hours.

**Table 13: How long does each episode of the above problems usually last?**

	<1hr	1-24hrs	25hrs-1week	1 week-1 month	1-6 months	>6 months	Total
Neck	17.4%	52.2%	13.0%	8.7%	4.3%	4.3%	100.0%
Shoulder	26.3%	57.9%	5.3%	0.0%	10.5%	0.0%	100.0%
Elbow/Forearm	18.2%	27.3%	45.5%	0.0%	9.1%	0.0%	100.0%
Hand/Wrist	41.7%	33.3%	8.3%	0.0%	8.3%	8.3%	100.0%
Back	16.7%	33.3%	25.0%	12.5%	4.2%	8.3%	100.0%

**E. Psychosocial Factors**

Respondents were asked several questions regarding their work environment, the extent to which they have freedom to determine what is to be done, and job satisfaction.

**F. Work Environment**

When respondents were asked how often they faced conflicting demands from fellow staff, 57.1% stated that they rarely faced this problem; 8.9% occasionally faced this problem; 21.4% sometimes faced the problem; 7.1% often faced the problem; and 5.4% very often faced the problem

When asked how often their supervisors were willing to listen to their work-related problems, 9.3% reported that their supervisors were rarely willing to listen to their problems; 1.9% reported that their supervisors occasionally were willing to listen to their work-related problems; 11.1% reported that sometimes their supervisors were willing to listen to their problems; 7.1% reported that often their supervisors were willing to listen to their work-related problems; and 63.0% reported that very often their supervisors were willing to listen to their work-related problems (Table 14).

**Table 14: Work environment related issues**

	Rarely	Occasionally	Some times	often	very often	Total
How often do you face conflicting demands from people you work with?	57.1%	8.9%	21.4%	7.1%	5.4%	100.0%
How often is your supervisor willing to listen to your work-related problems?	9.3%	1.9%	11.1%	14.8%	63.0%	100.0%
How often does your job leave you with too little time to get everything done?	27.3%	21.8%	30.9%	10.9%	9.1%	100.0%

Furthermore, 27.3% of the respondents reported that their jobs rarely left them with too little time get everything done; 21.8% reported that occasionally their jobs left them with too little time to get everything done; 30.9% reported that

sometimes their jobs left them with too little time to get everything done; 10.9% reported that often their jobs left them with too little time to get everything done; and 9.1% reported that very often their jobs left

them with too little time to get everything

### G. Influence

Respondents were asked a series of questions regarding how much influence they had over their work (Table 15). When asked how much influence they have over the amount of work they do, 1.9% reported they have very little influence; 5.6% have little influence; 35.2% have moderate influence; 27.8% have much influence; and 29.6% have very much influence. When asked how much influence they have over the availability of materials they need to do their work, 18.5% reported they have very little influence; 14.8% have little influence; 48.1% have moderate influence; 11.1% have much

done (Table 11).

influence; and 7.4% have very much influence. When asked how much influence they have over the policies and procedures in their workplace, 33.3% reported they have very little influence; 29.6% have little influence; 24.1% have moderate influence; 9.3% have much influence; and 3.7% have very much influence. When asked how much influence they have over the arrangement of furniture and other equipment at their workplace, 24.1% reported they have very little influence; 14.8% have little influence; 33.3% have moderate influence; 13.0% have much influence; and 14.8% have very much influence.

**Table 15: Respondents influence in determining what is to be done on their jobs**

	very little	little	moderate amount	much	very much	Total
Amount of work	1.9%	5.6%	35.2%	27.8%	29.6%	100.0%
Availability of materials	18.5%	14.8%	48.1%	11.1%	7.4%	100.0%
Policies and procedures	33.3%	29.6%	24.1%	9.3%	3.7%	100.0%
Arrangement of furniture & equipment	24.1%	14.8%	33.3%	13.0%	14.8%	100.0%

### H. Job satisfaction

Respondents were asked to rate their levels of satisfaction with their jobs (Table 16). When asked to rate their satisfaction with the amount of influence they have over the decision affecting their jobs, 24.5% reported that they were not at all satisfied; 32.1% were somewhat satisfied; 35.8% were quite a bit satisfied; and 7.5% were very much satisfied. When asked to rate their overall satisfaction with the physical environment (e.g. lighting, ventilation, furniture, equipment, etc.) at their

workplace, 36.4% reported that they were not at all satisfied; 27.3% were somewhat satisfied; 23.6% were quite a bit satisfied; and 12.7% were very much satisfied.

**Table 16: levels of job satisfaction among respondents**

	not at all	somewhat	quite a bit	very much	Total
Satisfaction with the amount of influence over the decisions affecting job	24.5%	32.1%	35.8%	7.5%	100.0%
Overall satisfaction with the physical environment	36.4%	27.3%	23.6%	12.7%	100.0%

## VII. DISCUSSIONS

The present study on computer usage and ergonomic awareness among library staff at three public universities in Zambia, has revealed that many of the library staff performed jobs that required long working hours on computers. Furthermore, the study has revealed that most of the staff are engaged in job activities that require usage of computers and other ICT related equipment. These jobs include scanning, photocopying, word processing, communication, data entry and searching and retrieval of information. These jobs inevitably expose library staff to various health risks associated with computer usage. As more library tasks are being done using computers, the higher the likelihood of library staff suffering from computer related health problems.

In this study, library staff revealed poor ergonomic principles among library staff. For instance, the majority of the library staff were not taking short breaks from their workstations. Taking short breaks has been shown to reduce health risks arising from computer usage. These results suggest that the majority of the library staff were practicing poor ergonomic practice. Furthermore, very few of the library staff had access to devices that reduce health risks emanating from constant use of computers. The majority of

the library staff used computers without ergonomic features like glare reduction screen shields, footrests, touch screens, wrist supports, sit-stand desks, document holders, and arm rests. These devices help reduce discomfort and health risks arising from heavy usage of computers.

The study has revealed that 87.5% of the library staff had any one of the symptoms of computer related health. Similar findings were reported by other investigators. For instance, [12] reported 76% among computer professionals in Delhi, India. It was reported by [10] that 72.1% among office workers in their self-reported survey were having eye strain and/or pain whilst [11] reported even higher prevalence of 46% to 87% of various eye symptoms among their respondents. In this study, library staff reported experienced health problems ranging from headaches, vision related symptoms, body pains, neck, shoulder, elbow/forearm, hand/wrist, and back pains. The majority of the respondents also suffered discomfort of varied episodes due to these health problems. Furthermore, the results indicate that the majority of the respondents rarely visited a medical doctor or health care provider for medical check-ups or to seek medical attention regarding their health problems arising from poor usage of computers.

## VIII. CONCLUSION

The study found that the practice of ergonomics principles among library staff revealed nearly all the library staff surveyed do not pay attention to ergonomics. The failure to take short breaks during work, using anti-glare screens, and using ergonomically designed equipment were prevalent. Since the majority of the library staff surveyed reported experiencing health problems related to heavy usage of computers, we can conclude that these problems which ranged from headaches, vision related symptoms, body pains, neck, shoulder, elbow/forearm, hand/wrist, and back pains, are due to poor ergonomics. Furthermore, very few library staff take regular medical check-ups. We can conclude that health related problems were not attended to on time.

This study also demonstrates why libraries should apply ergonomics. The results of this study, which found that the back (65.6%) and the neck (62.5%) of library staff were the two areas most affected, are similar to that of a study done by [8], which found that 52.6% of staff had musculoskeletal (back, neck and surrounding areas, shoulders, hand/wrist, elbow/forearm) symptoms and disorders; with the neck and back discomfort presenting the greatest complications due to improper working tools.

### Recommendations

The study makes the following recommendations:

1. Library management in the respective institutions surveyed should develop ergonomics training programmes to

promote better ergonomic practices among library staff and to increase awareness of ergonomic issues.

2. Identify and enlist help from ergonomics experts and medical professionals so as to provide early diagnosis, treatment, and advice regarding health problems arising from usage of computers and digital devices.
3. Acquire and install ergonomically designed computers, other digital devices and furniture for the job at hand.
4. Review individual jobs with a goal of restructuring duties and increase variety in activities being performed.
5. Establish ergonomic guidelines in order to improve ergonomic practice.
6. Encourage library staff to take regular physical exercises.
7. Encourage library staff to regularly go for medical check-ups.
8. Ergonomics is important, it should be part of the policies and procedures in libraries.
9. Libraries should include ergonomics in the job descriptions of staff so as act as a form of awareness.
10. Periodic health checks of the musculoskeletal (back, neck and surrounding areas, shoulders, hand/wrist, elbow/forearm), should be a requirement and be performed periodically on staff as a risk assessment for early interventions aimed at upping productivity and work continuity.

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