

Preliminary Results from a Pilot Survey of Occupational Overuse Syndrome (OOS) and computer use among NTEU members at Central Queensland University

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A study such as this on OOS and computer use could not have been conducted 10 years ago as generally speaking most academic staff did not use computers to a significant extent at that time. Technical staff were more likely to have used computers or typewriters ten years ago, but among the general staff as a whole keyboard usage has increased many fold. This study, therefore, is a preliminary snapshot of roughly the first ten years of computer use among university staff and the responses appear to indicate significant problems, which can only get worse unless work practices are changed and working conditions improved.

Background

By 1998-99 it was apparent that Occupational Overuse Syndrome (OOS) and seemingly related stress problems had become major causes of lost work time at CQU. Anecdotal evidence to the author indicated that the problem might be even more serious with students in heavy computer use areas such as Information Technology, Information Systems and Multimedia.

In 1999 the University Health and Safety Committee (UH&SC) requested an academic from the School of Health and Human Performance to determine the extent of the potential problems by surveying CQU staff and students. While this was planned for early 2000, the departure of that academic late 1999 effectively meant that the survey was abandoned.

As a result the Executive of the CQU Branch of the National Tertiary Education Union (NTEU) authorised a pilot survey of members to initiate the process. It was anticipated that this might lead to further studies with the Student Association in particular having expressed an interest in surveying the student body.

The author, a NTEU life member and recently retired, agreed to supervise the survey. The author has been the NTEU representative to the UH&SC for some years and himself suffers from the effects of prolonged keyboard/mouse use. A request for assistance was made of union activists but no response was received. Assistance was received from the Queensland Workers Health Centre and is gratefully acknowledged, as is the assistance of the Branch Secretary in preparing mailing labels and sending out reminder notices, but the author accepts responsibility for any faults in the survey and its analysis.

Survey Procedure and Limitations

The survey instrument (Appendix A) was primarily designed from the author's knowledge of OOS as it results from computer use. The survey attempts to collect enough demographic data to analyse the results, information on computer use, extent of adverse effects, and a description of the individual's general computer work place. Respondents were assured that replies to the survey would be kept confidential and the results only presented in aggregate form.

The instrument contained a general explanation and rationale for the survey, the survey questions and a page of further information entitled 'RSI on the Internet' from the Spring 1999 issue of the ACT RSI Support Group Newsletter. This latter page had a blank back which, when folded to the outside, received the address label for delivery via internal campus mail and could be removed to ensure confidentiality of the reply.

A total of 320 survey forms were distributed using the most recent (mid-March 2000) version of the NTEU membership list. Unfortunately, while there was considerable staff turn-over at the end of 1999, departing members remain on the membership list until the end of March unless they explicitly advise the union of their departure. It may also take some time for new members to appear on the membership list for printing address labels.

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Reminder notices were sent by e-mail to the activists mailing list and to the complete staff list. Several members responded that they had lost or thrown out their forms and requested another. A separate count was not kept of these individuals as all had indicated that they did initially receive the form.

One form was returned indicating that the addressee was no longer at CQU, 59 were returned all or partially completed and one individual responded by e-mail indicating that “[I found] the survey tedious and consigned it to the round file”. Anecdotal comments to the author indicated, perhaps in jest, that others were either “too stressed” or “too busy” to respond. However, the e-mail message was counted as a response, resulting in an 18.8% response to the 319 remaining forms by the specified deadline.

Reviewing the completed form it is obvious that some questions were unclear, and thus misunderstood. For example, Question 7 “Number of hours per day spent using the computer over the last month” sometimes received replies for either a weekly or monthly total. These were converted to a daily total using a month of four weeks and a week of five days. Similar interpretations for other questions were made consistently and are noted in the results section.

Clarifying these questions, and simplifying or eliminating others, is required prior to the survey instrument being used for a wider audience.

Finally, it should be remembered that the results are self-reported and some staff obviously had considerable difficulty either remembering or categorising their activities. This is particularly so for the quantitative replies (hours per day, minutes between breaks, etc.) but also means that descriptors such as heavy or light have different meanings for each individual.

Preliminary Results

A selection of questions were coded and entered into a spreadsheet for this initial analysis. Further analysis of these and the remaining questions will be forthcoming later in the year.

Demographic: Thirty-seven academic (30 full-time, 6 part-time) and 23 general (21 full-time, 2 part-time) staff replied to the questionnaire (n=60, but only 59 provided full- part-time data).

Respondent ages were heavily weighted (44.1%, n=59) towards the 36-45 age range. There were no respondents in the 25 and under age range, seven (11.9%) were 26-35, 17 (28.8%) were 36-45, 26 (44.1%) were 46-55, and 9 (15.3%) were 56 or over.

Daily computer use at work was 5.1 hours per day (n=57) with variations from a high of 12 to a low of one hours per day. As expected, figures for computer use at other locations were lower and part-time staff had a higher non-CQU use than full-time staff. The following table provides more detail.

Category	Min	Max	Average	n=
Work: Full-time	1	12	5.4	49
Work: Part-time	1	7	2.75	8
Other: Full-time	.5	5	2	20
Other: Part-time	1	3	2.2	5

Most staff (57 of 58) indicated that the reported computer use was typical of their normal workload.

Staff reported working on the computer up to 240 minutes between breaks, with 19 of 47 staff indicating that they worked an hour or more between breaks. The average time between breaks was reported to be 52.4 minutes for academic staff and 54.3 minutes for general staff.

Question 14, asking how much mouse work was required for the respondent’s job should have included a “moderate” choice as all respondents selecting “Other” indicated some variation of this categorisation. The breakdown for academic staff was 15 High, 9 Moderate (Other) and 5 Low (n=29) and for general staff was 11 High, 2 Moderate (Other) and 11 Low (n=20).

Question 21, “Do you experience any of the following as a result of computer use?”, supports the prior anecdotal evidence. Note in particular that 69% of respondents reported problems focussing their eyes, 63.6% reported dry/itchy eyes, 59.3% reported suffering headache/migraine, 58.5% reported suffering emotional stress, 76.8% reported neck pain, and

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58.2% reported shoulder pain occasionally or frequently with computer use. The difference in reported pain between mousing arm (45.3%) and non-mousing arm (7.5%) is also likely significant and indicates that mousing causes problems for many computer users. The table below provides more detail.

	Never	Occasionally/ Frequently	n=
Eyes losing focus	18 (31%)	40 (69%)	58
Dry/itchy eyes	20 (36.4%)	35 (63.6%)	55
Headache /Migraine	22 (40.7%)	32 (59.3%)	54
Emotional stress	22 (41.5%)	31 (58.5%)	53
Neck pain	13 (23.2%)	43 (76.8%)	56
Lower back pain	30 (55.6%)	24 (44.4%)	54
Loss of circulation in legs	37 (66.1%)	19 (33.9%)	56
Tingling in legs or feet	34 (63%)	20 (37%)	54
Tingling in hands/fingers	36 (65.5%)	19 (34.5%)	55
Mousing arm pain	29 (54.7%)	24 (45.3%)	53
Non-mousing arm pain	49 (92.5%)	4 (7.5%)	53
Shoulder pain	23 (41.8%)	32 (58.2%)	55
Upper arm pain	37 (68.5%)	17 (31.5%)	54
Lower arm pain	40 (74.1%)	14 (25.9%)	54
Wrist pain	30 (54.5%)	25 (45.5%)	55
Fingers pain	42 (76.4%)	13 (23.6%)	55

Finally, it is obvious that the university has not adequately communicated its workplace health and safety policies to staff as 35.7% of respondents (n=56) indicated that their work unit did not have any health and safety policies or guideline on workplace standards for computer use.

Implications for the Future

This preliminary report looked briefly at about half of the item responses from the pilot study. Obviously additional analysis is required to complete the results, particularly with regard to the status of staff work stations and work areas.

It appears equally obvious, however, that staff have indicated major areas of concern with regard to OOS and the use of computers. Further analysis and study are indicated to guide policy and practice changes.

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Appendix A, the survey instrument follows.

Pilot Survey: Occupational Overuse Syndrome (OOS) and computer use among NTEU members at Central Queensland University

Purpose of the Pilot Study

Occupational Overuse Syndrome (OOS) or musculoskeletal disease was formerly called Repetitive Strain Injury (RSI) and in some countries is better known as Cumulative Trauma Disorder (CTD). Essentially it refers to the injuries, often long-term and very painful, that result from repeated physical movements doing damage to tendons, nerves, muscles, and other soft body tissues. In other words, OOS results from ignoring the aches associated with repetitive tasks or the maintenance of constrained postures, particularly when associated with poorly designed or equipped workplaces.

Occupations ranging from meat packers to musicians have characteristic RSIs that can result from the typical tasks they perform. The rise of computer use and flat, light-touch keyboards that permit high speed typing have resulted in an epidemic of injuries of the hands, arms, and shoulders. Use of pointing devices like mice and trackballs are as much a cause, if not more so. The thousands of repeated keystrokes and long periods of clutching and dragging with mice slowly accumulates damage to the body : another name for the condition is Cumulative Trauma Disorder. This can happen even more quickly as a result of typing technique and body positions that place unnecessary stress on the tendons and nerves in the hand, wrist, arms, and even the shoulders and neck. Lack of adequate rest and breaks and using excessive force almost guarantee trouble. (Paul Marxhausen, Computer Related Repetitive Strain Injury, Univ. of Nebraska-Lincoln / Electronics Shop RSI Web Page /, 1996, <http://www.engr.unl.edu/ee/eeshop/rsi.html/>)

OOS and stress, seemingly related in many cases, are two of the main reasons for lost

work days at CQU and anecdotal evidence suggests that many students are similarly affected. The CQU Branch of the NTEU is concerned about this situation and has authorised this pilot study to help determine the union's response to this health/industrial issue.

If the results of this pilot study indicate that further study would be appropriate, similar studies will likely be conducted with CQU students, etc.

Management of the Study

The pilot study is being conducted by Lynn Zelmer, recently retired from CQU's full-time staff and a life member of the NTEU. Dr Zelmer has been the NTEU representative to the CQU Health and Safety Committee for some years and himself suffers from the effects of prolonged keyboard/mouse use. The study is being conducted in consultation with the Queensland Workers Health Centre.

Remove the page with your address, fold and tape/staple the completed questionnaire so that the address below is visible and return by 7 April 2000 via CQU internal mail to Lynn Zelmer, Faculty of Informatics and Communication, Building 19, Rockhampton Campus. Queries about the survey should be sent to L.Zelmer@CQU.edu.au.

Confidentiality

Replies to this pilot survey will be kept confidential and the results will only be presented in aggregate form to maintain individual confidentiality.

Thank you for participating in this pilot study...

Please return by 7 April 2000 via CQU Internal Mail

**Deliver to: NTEU/CQU Branch OOS Survey
c/- Lynn Zelmer
Faculty of Informatics and Communication
Building 19
Rockhampton Campus
Central Queensland University**

**Pilot Survey: Occupational Overuse Syndrome (OOS) and computer use
among NTEU members at Central Queensland University**

- | | | | | | | |
|---|------------------------------|-----------------|-----------|--------------------|-------|-------|
| 1 | Position [Circle one/two] | Academic | General | Supervisory | | |
| 2 | Appointment [Circle one] | Full time | Part time | | | |
| 3 | Work location [Circle one] | Division | Faculty | | | |
| 4 | Age by category [Circle one] | < 25 | 26-35 | 36-45 | 46-55 | 56 + |
| 5 | Keyboard use? [Circle one] | "hunt and peck" | | rapid "two-finger" | | Touch |

Computer Use

- | | | | | | |
|----|--|----------------|--------------|-------|------|
| 6 | Years using computer/typing [Circle one] | < 5 | 5-10 | 11-15 | 16 + |
| 7 | Number of hours per day spent using the computer over the last month [Please complete] | | | | |
| | | At work: _____ | Other: _____ | | |
| 8 | Is this typical of your normal usage? [Circle one] | Yes | No | | |
| 9 | How many weeks of the year is this pattern typical? [Please complete] | _____ | | | |
| 10 | How long has this been your normal pattern? | | | | |
| | [Please complete] _____ [Circle one] | Weeks | Months | Years | |
| 11 | If this is not normal please briefly explain your normal usage: | | | | |

- 12 Health and safety guidelines suggest that keyboard users should take regular breaks that include looking up from the keyboard/screen to rest your eyes and getting up from the computer/work station to move around or exercise.

Estimate your normal time between breaks [Please complete] _____ minutes and briefly describe your normal break activities:

- 13 What do you think would be an optimum break schedule for yourself or computer users (staff, students or family members) working under your supervision? [Please complete]

A break from keyboard duties of _____ minutes every _____ minutes.

- 14 How much computer keyboard/mouse work is required in your job [Circle one]

Heavy Light Other _____

- 15 Describe your normal computer work location(s) [Circle one/two]

Individual office	Work team/multi-person office	Computer lab
Computer in other work area	Home	Portable in ad hoc location (airport, etc.)

- 16 Type of computer(s) normally used and location [Please complete/circle]

Principal computer	Desktop	Portable	Terminal	Other _____
	Exclusive use		Shared	Other _____
	CQU	Home	Other _____	

% of your total computer use on this machine: _____ %

Secondary computer	Desktop	Portable	Terminal	Other _____
	Exclusive use		Shared	Other _____
	CQU	Home	Other _____	

% of your total computer use on this machine: _____ %

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17 Estimate the percent of your total computer use on each of the following applications. Please include all use, whether at CQU, home or elsewhere.

- Copy typing Writing (composing text as you enter it)
 E-mail/web mail Web searching Program coding
 Data entry/search/retrieval (eg course advisers/library) Games
 Artistic development (including graphics, web design/development)
 Page layout or equivalent (desk top publishing or web, video editing, etc)
 System administration or equivalent Other

18 How frequently are you interrupted (by phone or in-person contacts) while working on the computer? [Please complete]

- Every minutes Seldom Never

19 Briefly describe how you respond to those interruptions:

Outcomes

20 How would you describe your general health? [Circle one]

- Excellent Good Average Bad

21 Do you experience any of the following as a result of computer use? [Circle]

Eyes losing focus	Never	Occasionally	Frequently
Dry/itchy eyes	Never	Occasionally	Frequently
Headache /Migrane	Never	Occasionally	Frequently
Emotional stress	Never	Occasionally	Frequently
Neck pain	Never	Occasionally	Frequently
Lower back pain	Never	Occasionally	Frequently
Loss of circulation in legs	Never	Occasionally	Frequently
Tingling in legs or feet	Never	Occasionally	Frequently
Tingling in hands/fingers	Never	Occasionally	Frequently
Mousing arm pain	Never	Occasionally	Frequently
Non-mousing arm pain	Never	Occasionally	Frequently
Shoulder pain	Never	Occasionally	Frequently
Upper arm pain	Never	Occasionally	Frequently
Lower arm pain	Never	Occasionally	Frequently
Wrist pain	Never	Occasionally	Frequently
Fingers pain	Never	Occasionally	Frequently
Other _____	Never	Occasionally	Frequently

22 Have you taken sick leave or otherwise missed work as a result? [Circle one]

- Yes No

23 Have you sought medical assistance for any of these conditions? [Circle one]

- Yes No

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Workstation and work area

24 Describe your normal work station/work area by checking the appropriate characteristics:

Chair: _____ 5-point rolling castors _____ height adjusted for you
_____ seat slope adjusted for you _____ back adjusted for you
_____ footrest

Keyboard: _____ height adjusted for arms and hands to be parallel to floor

Mouse or mouse replacement: _____ beside keyboard or part of keyboard

Monitor: _____ height adjusted so you view by looking straight ahead (not up/down)

_____ anti-glare screen installed _____ tilt adjusted to minimise glare

_____ located so you can refocus your eyes by looking up to medium distant view

_____ located to minimise contrast from sun (ie, not facing directly into the sun)

Climate: _____ workstation located out of draft but with adequate air circulation

_____ user control over air conditioning/heating

_____ office air conditioned but I open windows

25 Do you use speech recognition software? [Circle one] Yes No

26 Do you frequently talk on the phone while using the computer? [Circle one] Yes No

27 If Yes, do you use any of the following: [Please check]

_____ shoulder cradle _____ speaker phone _____ headset and microphone

28 Do you have more than one CQU site where you normally use a computer (eg, own office, computer lab, reception area)? [Circle one] Yes No

29 Do you have a CQU-supplied computer at home? [Circle one] Yes No

30 Do you regularly/frequently take a CQU computer home for work purposes? [Circle one]
Yes No

31 If you felt that your work situation re computer use was not satisfactory have you attempted to get improvements? [Circle one] Yes No n/a

32 If Yes, briefly describe what you did and the result; if No, indicate why not:

Other keyboard/mouse use

33 Do you regularly use other keyboards (eg piano, electronic keyboard) or engage in other tasks which are repetitive (eg knitting, longhand writing)? [Circle one] Yes No

Support:

34 When assigning your workload does your supervisor take into account the potential health effects and amount of time you will spend on the computer? [Circle one] Yes No

35 If you are setting assignments or activities for students or staff under your supervision, do you consider the effect this may have on their computer use? [Circle one]
Yes No no such duties

36 Does your work unit have any health and safety policies or guideline on workplace standards for computer use? [Circle one] Yes No

37 If Yes, how are these communicated to staff and students?