

# Ergonomic Challenges of Employees Using Computers at Work in a Tertiary Institution in Ghana

Kumah DB\*, Akuffo KO, Afram DE, Ankamah E and Osae EA

Department of Optometry, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

\*Corresponding author: David Ben Kumah, Department of Optometry, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, Tel: +2-33-200-466-637; E-mail: ben56kay@gmail.com

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## Abstract

**Objective:** Ergonomically designed workstations have direct bearing on the comfort and safety of office computer users. Tremendous usage of computers in most offices of emerging economies have however, not seen accompanying applications of ergonomics in the design of computer workstations despite the numerous benefits. Injuries and discomforts therefore have higher propensity to occur since most offices formally designed for paper-based work now accommodate computer workstations, without corresponding redesigning. The study therefore sought to assess computer workstation designs in administrative offices at Kwame Nkrumah University of Science and Technology, with the aim of creating awareness of ergonomics and its application among administrative office computer users.

**Method:** A total of 150 office employees purposively sampled participated in this study. Respondents selected included secretaries, research assistants and data and account processors. This cross-sectional study consisted of a checklist (computer workstation components, visual complaints and ergonomics knowledge), work posture observations and measurements of workstation linear distances and monitor tilt angle. Descriptive statistics using Statistical Package for Social Sciences (SPSS) Version 20.0 was used for data analysis.

**Results:** Almost half (50%) of respondents had monitors facing windows without appropriate blinds, 42% with monitor tilt angle less than 10 degrees and majority (76%) observed monitors either at or above horizontal eye level. Most (70%) of the workers acknowledged not having knowledge of ergonomics while 100% noted that they did not have any ergonomic assessment of their workstations. Neck, back and shoulder pains were reported by 85% of respondents while 73% complained of eyestrain.

**Conclusion:** The study revealed lack of information and skills in ergonomics contributing to poor ergonomic conditions and consequent visual discomforts among computer users in the work place.

**Keywords:** 7ca di hf/ K cf\_gUjcb/ 9f[cbca ]W/ 5Xa ]b]gfUjY/ H]hU] YA i gWcg YYU X]gfXf

## Introduction

Of ce'kcf\_ ]g'fUd]Xm]WU] ]b] žUgbYk XjYcda Yblg ]b Wa di hf Hwbc'c[ mik \ ]W a U Y 'cVg Ugf' fY Ya Yf ]b[ " T is' Ya Yf ]bW dfYgblg cWdUjcbU' \YU' UbX gZhm dfcVYa g Zf' Vch a UbU Ya Ybi UbX Ya d'cnYg OQ K \ ]Y h Y f rst' Zk' XWwXg cZhY XjYcda Ybi cZ h Y Wa di hf' Zf' Vi gbYg ZWgX' a U]b'm cb U lca U]b[ 'Uk ]XYfU] YcZ ]bX] gf ]U d'fcWgYgh YbY h]gd V'ci [ \ h dYfgbU Wa di hf g'Ud'fcX ]Wj ]hm'c'g UbX Yb]hU]ba YbhXj ]Wg'c' \ca Yg UbX kcf\_d'UWg Y Yfnk \Yf' A cY fYWhi refinements' ]b Wa di hf g'UbX ]bZfa U]cb' hWbc'c[ mg W U]g a cV] Y Xj ]Wg' \U Y \Xlc U'c]icZM gbYg UbX Wbg a Yf' ZWgX' Udg Xjg ]bYXlc \Yd dYcd Ylc VYa cYcf ]U]n]Zef cient UbX d'fcX ]Wj YcQ

Q]h]b[ 'U]UXg UbX WbX ]W]b[ X] ]n'ci h]Ygcb h Y Wa di hf' Zf \ci fgcb YbXXa UbX U Wa di hf kcf\_gUjcb ]m d' 7cbgXf ]b[ 'h Y 'cb[ 'kcf\_]b[ \ci fg UbX Xa UbX cb' U a cXfb' of ce'kcf\_Yf h Y bU]i fYUbXXjg ]b'cZg W'kcf\_gUjcb'g'ci X'W'd'fc'd'f'lc' Ybg fYh Y Wa Zf]ZgZhm UbX h YlcU' kY' !V]b[ 'cZh Ykcf\_Yf' T e'Ud' ]W]cb cZh Yscientif c X]m ]bYcZf ]cbca ]Wg' def ned Ugh Y h Y g' ]bW'cZ

f tting'kcf\_d'UWwX]h]cbg UbX 'cV Xa UbXg'lc' h Y WdU] ]hYg UbX ]bU] ]hYg cZ h Y ]bXj ]X U' kcf\_Yf ' OQ ]g U j ]HU' Y'a Ybi ]b' h Y craf'ing' cZ d'fc'd'f'm Xjg ]bYX' kcf\_gUjcb' " T e' WbW]li cZ Ub Yf ]cbca ]W'mXjg ]bYX' kcf\_gUjcb' ]g Wa d'Y' UbX XjYbXg cb' U a n]UX cZY'a Yblg' < ck Y Yfz h ]g ga d'm'g'ci X'W'bg]icZU d'fc'd'f' gU]b] žUX'ei UY Xjg' \Y] \ ]z UbX d'fc'd'f' X]g UbW'cZ Wa di hf' Zca h Y i g'fg Yng'Ugk Y' U]g Yj ]fcb a YbU' ]gg Yg W'Ug'd'fc'd'f' ] \ ]b] ž bc]g' Y Yg'la cb[ 'ch YfgQ Q

T e'd'fcV'a 'cZUb]a d'fc'd'f'kcf\_gUjcb Xjg ]b'a U]h'YX' Ylc 'UW cZ\_bck 'X] Y cf' ]bUd'fc'd'f' ]U Y Udd' ]W]cb' cZ Yf ]cbca ]Wd'f' ]bWd' Yg' Kcf\_gUjcb' Xjg ]bg signif cantly' af'ect' kcf\_]b[ 'dcgi fYz k \ ]W ]b li fbz'Wb]f ]m h]g'lc' d'ng' ]W ga d'ca g'Y d'f' ]bW'X'V'm ]g U'8 ]g ]Um I b]h]f] 8I Ecd'f'Uc'fg O'z' Q' T e' U] Yfg' \YU' W'bg'ei YbWg'cZh ]g X]m'd'U'W]h a cgim ]bW'X'Y' a i gW'cg'YYU' X]gfXf'g UbX j ]g U X]g'Wa Z'f]g'": cf' ]bg UbW'Z' Yf ]cbca ]W'kcf\_gUjcb' def'iciency' \U]f'Xg ]b UY'd'c'f'h'd'f'g'bhX'lc' h Y i b]h'X'G'U'ng'6i fYU' cZ'U'c'f'G'U]g ]W' U]g VYb' bch'X'U]g h Y Z'g' ]g ]fck ]b] W]m' c'f'nc'Zkcf\_'fYU]X' ]b'gg'g'Q Q UbX kcf\_Yf' Wa d'Yg U]cb' W]a g'Ugk Y' U]g U]g'bh]W]a 'fYX'U] ]W'm g'U]b[ X] Ylc g'a YQ Q

h'a c]h'W'g'z'ga d'ca g'cZ'Wa di hf' j ]gcb' g' ]b'X'ca Ycf X] ]HU Y'n] g'f'U]b' c'W'f' V'W] g'Y'h Y ]g U' X'a UbXg'cZh Y'hg' Y ] Y b

U]l]h'g cZ hY ]bXj ]X U' lc' Wá ZfhUvm dYzfa ' hYá " T ese ga dlca g'a UmVY Wl gX VmYf ]cbca ]Wkcf\_gU]cb Z]i fYg g W U g dccf' ]\h]b]z ]' UY cb' X] ]HU' gMYbē ]a dcdYf' j ]k ]b] ' X]gU]Wgē dccf' gU]b] ' dfcWá fYz i bWffYMX j ]gcb' dfcVYa g UbX U Wá V]bU]cb'cZ hYgZUMfgOQ

DfdYf' Yf ]cbca ]WYg] b UbXUk] ga YbhcZ hY Wá di hf' UbX hY kcf\_ ' Yj ]fcbá Ybh h YZcfY d'UmUb' ]a dcfU]b]fc'Y ]b' Y' Ymof ce g]h]b] ' U g ]h Wb' ]bWYgY dfcX Wj ]m UbX kcf\_Yf' Wá Zfh Ym XWYg]b] hYj ]g U Xá UbXgcZ hY h'g."

@]hUi fY fY ]k' cb' h]g g VYMi fY YUX ' ]hY ]bZfa U]cb' cb Yf ]cbca ]WUg]ga Ybi ]b' ; \UbU' : i fh Yfa cfZj Ym' ]hY ]g\_ bckb Uá cb] g]d]cZg]cbUg]fY ]fX]b] ' WbX V]Ykcf\_gU]cb UbX hY \YU h Wbgēi YbWg Ugg V]hX k ]h' dfc'cb] X Wá di hf' i gY U g k Y' U g ]a dcdYf' kcf\_gU]cb X]g]b"

T is g]i Xrik Ugh YZcfY Wff]YXci hlc Uggg Wá di hf' kcf\_gU]cbg g]h d' ]b Uá ]b]g]fU]j Y of ces UbX hY WU' Yb] Yg kcf\_Yg ZW U h h Y kcf\_ d'UW ]b' hY hf]U]m ]bg]h ]hcbz k ]h' hY Ua ' cZ WU]b] Uk UYbYgg cZ Yf ]cbca ]Wg UbX ]g Udd ]W]cb' Uá cb] ' Uá ]b]g]fU]j Y of ce' Wá di hf' i gYg UbX Vm Y h b gcb' hY U]f' i b] Yfglm Wá a i b]h'

### Methods

T is' X]g]d]j Y Wcgg]g]m]cbU' g]i Xn kUg i bXf]U' Yb' U h Uá ]b]g]fU]j Y of ces' cZ hY ? k Uá YB\_fi a U' I b] Yfglm Z G]WbW UbX H Wbc'c]m ]P BI G]H ? i a U g ]" T e' I b] Yfglm ]g\_ g]h U h X U d d c l ]a U Y m c b U % ' \_ a % Z W ] h a U c i h + ' \_ a ' U k U n i Z c a ' h Y W b f U V i g b Y g g X ] g f ] W i c Z h Y W m c Z ? i a U g ]" T e' s t a f ' g f Y b ] h ' c Z h Y I b ] Y f g l m ] g U h 8 5 % k U g ' z - , ' W a d f ] g b ] ' c Z % 8 5 % g b ] c f ' a Y a V f g f ] b ] c f ' W m f y g z ' i b ] c f ' W m f y g U b X g b ] c f ' U a ] b ] g ] f U c f g z - - & g b ] c f ' s t a f ' f b c b ! h U W ] b ] ' g d d c f h s t a f ' k ] h ' f r s t ' X ] f Y L U b X % z - \* ' i b ] c f ' s t a f ' f ] d d c f h s t a f ' k ] h ' Y g g ' h U b ' f r s t ' X ] f Y L O S Q T e d U f ] W d U b ] g ' f Y W i ] h X Z f ' h Y g i X n k Y Y U a ] b ] g ] f U ] j Y k c f \_ Y g f ] Y W m U f ] g z f Y g U f W U g g U b ] g U b X X U U b X U W m b h d c W g g f g k \ c f c i ] b Y n k c f \_ U h U w a d i h f ' Z f U h c U ' c Z ( \ c i f g c f ' a c f Y X f ] b ] ' U b , \ c i f d f ] c X c Z k c f \_ z U W g y d e f n i t i o n ' V g X c b ] ' Y b Y U m U W d h X Y f ] c b c a ] W i ] X Y ] b Y g O % Q

T e' g]i Xn fYU kUg Xj ]XX ]b]c' gY Yb' W g]f g' Wá d]g]b] ' hY I b] Yfg]mg]l' W' Y]g UbX hY gWcc' Uá ]b]g]fU]cb" Ci hlcZ h YgZ Zi f' W g]f g k Y Y f U b X c a ' m g Y W X i g ] b ] ' U g a d' Y f U b X c a ' g ] a d' ] b ] h W b ] e i Y ' C b Y \ i b X Y X U b X f f y ' f ] S L f y g c b X b ] g d f y g b h c b ' h Y X ] i g c Z h Y j ] g ] g k \ c ' W b g b h X h c ' d U f ] W U Y ' ] b ' h Y g i X m k Y Y g ] a d' X Z c a ' h Y g Y W g ] f g Z f ' h Y g i X n

### Data collection technique

T e' a U c f ' ] b g ] f i a Y b i i g Y X Z f ' h Y g i X n k U g U g ] f i W f Y X e i Y g ] c b b U f Y f g d d ' Y a Y b ] f m % " T e' e i Y g ] c b b U f Y k U g X ] g ] b X k ] h @ \_ Y h g W Y e i Y g ] c b g V g X c b ' Y f ] c b c a ] W i ] X Y ] b Y g U i W a d i h f k c f \_ g U ] c b X ] g ] b g z i b X ] b ' ] h U i f Y O % Q T e' e i Y g ] c b b U f Y g k Y Y g Y Z U a ] b ] g ] f Y X U b X W H U b ' d n g ] W ' a Y g f Y a Y b ] g c Z k c f \_ g U ] c b g k Y Y f U ' Y b ' T e' e i Y g ] c b b U f Y W b g g ] X c Z z i f ' g W ] c b g E i Y g ] c b g c b X á c ] f U d \ W z d n g ] W ' k c f \_ g U ] c b ' W U F W M ] g ] W z j ] g U ' g f U b g a d l c a g ] g f Y U h X l c W a d i h f i g ] Y U b X Y f ] c b c a ] W g \_ b c k ' Y X Y

### Instruments

H d Y a Y g f Y k U g i g X l c ' a Y g f Y ' ] b Y f X ] g U b W g U b X d c f U M f i g X l c ' a Y g f Y U b ] ' Y c Z ] h c Z h Y a c b ] c f "

### Measurements of linear distances and angles

T e' a Y g f Y a Y b ] g k Y Y X ] g ] b X l c ' e i U b ] Z n h Y U W i U ' k c f \_ ] b ] d c g ] f Y c Z Y U W ] b X j ] X U ' Y a d' c n Y k \ ] Y U i \ ] g # Y f ' W a d i h f k c f \_ g U ] c b " T e' Y a d' c n Y k U g U g X X l c ' a U b ] U b ' \ ] g # Y f ' i g U k c f \_ ] b ] ' d c g ] f Y g k \ ] Y a Y g f Y a Y b ] g k Y Y H U ' Y b ' i g b ] ' a Y g f ] b ] l d ' c m U b ] D c m D h f Y L h Y f ] n m m f W z



f[UF]b[ Y[cbca ]gWi Xaf ect h Yf kcf\_ \U]g d c g i f y g U x d h X  
 UbXh Yf d Y V d h c b g l c k U f X g h Y X g a Z f l g h Y r k Y Y l d Y ] b V b [ "

S/N	Symptoms	Severe	Moderate	Mild	Never
1	Eyestrain	8.0	24.0	42.0	26.0
2	Blurred near vision	5.3	2.0	16.0	76.7
3	Glare	2.0	5.0	13.0	80.0
4	Difficulty focusing	0.0	8.0	13.3	78.7
5	Blurred distance vision	3.0	4.0	13.0	80.0
6	Burning, itching	6.0	14.0	38.0	42.0
7	Dry eye	8.7	10.0	26.0	55.3
8	Headaches	7.0	9.0	32.0	52.0
9					

## Conclusion and Recommendation

Kcf\_gUjcbgYa d'cnXXZf`Wa di hf`kcf\_`UihYi b|j Yfg|hmXy |UY WbgXYfUVmiZca `hY Yf|cbca |Wkcf\_gUjcb`Xyg| b`dYf`gUbxUfXg UbXfYWa a YbXUjcbgZca `|bXi gf|U|nXkcf`X`FYgcbXbfg`UWYX \_bck`YX|Y fY|UfX|b|`Yf|cbca |Wdf|bVd`Yg`Ubx`hYf`Udd`|Wjcbg k|H|b`UJ|g`U`8|gd`Urf`b|hif|8I`Eof`ce`Ybj|fcb`Yb|T`erefore, hY kcf\_gUjcbg`g`fj`YmX`k`fY`bch`Yf|cbca |W`mg|ZY`Ubx`Wa`Zf|UfY`Zf`dfc`cb|`YX`Wa`di`hf`i`g`

K YfYWa a YbXhU

% 7ca di hf`kcf\_gUjcbg|b`of`ces`g`ci`XVY`U`Xci`hZ`ck|b| Yf|cbca |W`g|UbxUfXg|i`|XY|bYg`UbXfYWa a YbXUjcbg`

& 9f|cbca |W`mXy|`bYXZU|`|H`Ygfk`cf`gUjcb`Wa`dcbYb|g`L`g`ci`XVYdfcj`|XX|`b`cfXf`tc`V`h`f`a`U`b|U`b`UbxZ`ck`Yf|cbca |W`g|UbxUfXg`

## Limitation of Study

5gUWcgg|gW|cbU`gi`Xm`Wa`dfY`Ybgj`YcW`Uf`Ubx`|`YbYU`YU`h`U`g`g`a`Yb`k`fY`bch`Wff|YX`ci`h`Zf`U`bmfYgcbXb|`T`e`U`h`cfg`U`W`bck`YX|Y`h`|g`U`|a`|H|cb`Ug`a`i`gW`cg`Y`YU`X`|g`f`X`f`g`W`i`X`U`f`|g`Y`g`U`g`U`f`Y`g`h`c`Za`YX`W`Wa`d`|W`j`cb`g`U`b`X`b`ch`Z`ca`Yf|cbca |W`d`e`f`i`c`i`e`n`c`i`e`s`|`b`k`cf`g`U`j`cb`g`c`b`n`|`T`e`g`i`X`m`X`b`ch`c`c`\_`U`i`h`Y`W`i`g`U`f`Y`U`j`cb`g`|`d`V`h`k`Y`b`h`Y`d`c`g`i`f`Y`g`U`g`U`c`d`h`X`V`m`f`Y`g`c`b`X`b`g`|`b`h`Y`g`i`X`m`k`|`h`h`Y`c`W`U`f`g`a`d`l`c`a`g`h`Y`m`Y`d`Y`|`Y`b`W`K`Y`W`i`X`h`i`g`b`ch`h`Y`h`Y`Y`h`h`h`i`c`k`|`W`h`Y`g`d`d`c`g`X`d`c`c`f`d`c`g`i`f`Y`g`W`b`h`|`M`h`X`h`c`h`Y`X`j`Y`c`d`a`Y`b`h`c`Z`h`Y`g`Y`g`a`d`l`c`a`g`

## Acknowledgements

K YhU`g`a`i`W`K`|`|`b`Y`n`C`k`i`g`!`5`b`g`U`U`b`X`5`V`|`U`j`8`U`f`k`U`Z`f`h`Y`f`Wa`a`|`a`Y`b`i`|`b`h`Y`d`f`Y`d`U`f`U`j`cb`c`Z`h`Y`f`n`a`l`g`i`X`b`U`i`X`K`X`|`Y`a`c`e`d`e`o`u`l`o`s`k`t`u`l`d`a`s`m`s`n`