

Relationship between Neck Pain and Quality of Life among Specialist Residents: A Cross-sectional Study

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Abstract: Residents were faced with stress, learning problems, long training hours in hospital wards and clinics; and also increasing use of computers in teaching and learning, during residency period. This become risk factor that could increase the prevalence of neck pain (NP) among residents. Since prolonged use of computers during daily work and leisure activities is often cited as a cause of neck pain, it can also influence resident work performance and reduce quality of life (QoL). The aim of this study is to examine the relationship between NP and QoL in Residents. A cross-sectional based during questionnaire survey using Neck Disability Index (NDI) and QoL SF-36 to Resident of Physical Medicine and Rehabilitation in Jakarta. There was 51 subjects, the frequency of NP was 46(90,2%), there were a moderate correlation between NDI and SF -36 in domain of physical health (PH) ($r=-0,436, p<0,01$), energy/fatigue (EF) ($r=-0,409, p<0,01$), and pain (P) ($r=-0,689, p<0,01$). There was a correlation between NP and QoL in domain of PH, EF, and P.

1 INTRODUCTION

The aim of medical school is to produce competent, professional doctors and promote public health care. But during the medical training period, faced with stress, learning problems, long training hours in hospital wards and clinics; in addition to the increasing use of computers in teaching and learning. thus it is considered a risk factor that can increase the prevalence of musculoskeletal pain among medical students (Alshagga et al., 2013).

Musculoskeletal pain has become a major problem worldwide, and includes a variety of musculoskeletal tissue injuries, some of which are work related. Neck pain has a chronic course that recurs with more than one third of the population suffering persistent neck pain every year. Findings from a cross-sectional analysis from the Saskatchewan Health and Back Pain Survey show that neck pain has a weak relationship to the low quality of life from the physical side and is not related to the quality of life from the mental side. However, it is still unclear whether neck pain is a risk factor or a low outcome of quality of life (Nolet et al., 2015).

Nowadays, laptops are so useful, fast and powerful that they often replace desktop computers and bring many benefits to students. Some postures lie on the floor, use desks that are not designed for computers, and place laptops on someone's lap. Prolonged use of computers during daily work and leisure activities is often cited as a cause of neck pain. Prolonged use of the computer and sitting with rounded shoulders and wrong neck posture disturbs the normal lordotic curve of the neck which causes muscle imbalance and consequently neck pain. Potential risk factors for this might increase computer usage. High reports on computer use are estimated among post-graduate students because they carry out further education and require report writing and research to complete the master's program (Monika and Rana, 2017; Yakshi Bhardwaj and Mahajan, 2017).

Computers increase productivity and work efficiency, but, on the other hand, using it excessively can cause terminal syndromes of visual appearance, accompanied by complaints of muscle aches, vision problems, headaches, and other symptoms. Among these complaints, musculoskeletal problems are the most common (Kang et al., 2012).

Neck disorders associated with musculoskeletal pain include tension neck syndrome and trapezius myalgia and often occur in jobs that require recurrent and repeated submaximal energy by the neck muscles, for example, computer workers, sewing machine operators, and dentists. On the other hand, disorders related to disc degenerative diseases mainly include disorders of the cervical spine and related to work involved in physically demanding work activities, for example, health workers, construction work, agricultural work, and manual material handling (Sun et al., 2017).

While seated, the position of the front head includes flexion of the lower cervical area, extension of the upper cervical area, and round shoulders, which on average reduces the length of muscle fibers, producing extensor torque around the joints of the upper cervical region. This abnormal condition produces musculoskeletal abnormalities which include decreased upward rotation of the scapular, greater internal rotation and anterior tilt, resulting in difficulty in maintaining an upright sitting posture. This is known as Forward head posture (Turtle neck posture). This posture is becoming increasingly common because those who are exposed to the screen monitor are leaning forward, especially on smart phones (Kang et al., 2012; Mubeen, 2016).

A study at a Malaysian medical college found that 65% of students experienced bone muscle pain in the past year and reported an association with clinical years, computer use, and previous trauma history (Jerry Y et al., 2017). In the Bodwal et al. Study, it was found that students often suffer from various musculoskeletal health problems such as pain or discomfort in the neck (69.3%), shoulders (22%), wrists, hands and fingers (27.3%) while very few students experience pain in the forearm (7.3%) and elbows (6.7%) after using a laptop (Monika and Rana, 2017). In the Bhardwaj and Mahajan study, obtained from 500 students, the Neck Disability Index score was: there were no disabilities in 171 (34.2%) students and disabilities in 329 (65.8%) students, where the prevalence of disability due to neck pain was 65, 8% (Yakshi Bhardwaj and Mahajan, 2017). In the study of Knudsen et al by questionnaire on Orthopedic residents, it was found that the most common symptoms were in the neck (59%, 19/32), lower back (55%, 17/31), upper back (35%, 11/31), and shoulders (34%, 11/32).

The most common complaints are characterized by pain and stiffness in the neck and lower back, followed by pain and stiffness in the upper back and shoulders (Knudsen et al., n.d.). The purpose of this

survey study is to look at the relationship between the value of disability neck pain with quality of life. We are hypothesize that there is a relationship between neck pain disability with quality of life among specialist residents.

2 METHODS

This study used daring cross-sectional survey questionnaire. The target population is residents of Physical Medicine and Rehabilitation at the Faculty of Medicine, University of Indonesia.

Inclusion criteria: 1)Resident of physical medicine and rehabilitation at the Faculty of Medicine, University of Indonesia; 2)Men and Women; 3)Understand English; 4)Cooperative and willing to follow research. Exclusion Criterias are: 1)Non Residents of Physical Medicine and Rehabilitation: 2)In medical treatment; 3)Depression; 4)Have a trauma history; 5)insomnia history ;6)Official leave.

Screening and recruitment of subjects in the form of:

- Subjects are given an explanation of the benefits, objectives and research protocol.
- Data collection is done to get rid of exclusion criteria.
- If the subject meets the criteria and is willing to take part in the research or refuse to participate in the research, fill out the online questionnaire provided.

Questionnaire data collection are:

- Subject characteristics data: age, sex, education level.
- Quality of life data by filling in the SF-36 form.
- Data on neck pain by filling in the Neck Disability Index form.

2.1 Data Analysis

Subject data obtained were processed using SPSS version 20. For the calculation of the value of the Neck Disability Index numerical results were obtained, and the calculation for the SF-36 value used an application from Orthotoolkit.com/SF36 (Dr. Cathy Sherbourne, n.d.; Lins and Carvalho, 2016; Monica and California, n.d.). If the normal distribution uses Pearson correlation and if the distribution is not normal use the Spearman correlation (Akoglu, 2018; Schober et al., 2018).

3 RESULTS

From the characteristics of the respondents in Table 1, it was found that filling in the questionnaire was 12 male respondents and 39 female respondents. The average age of respondents who took the survey was 31 years old with a body mass index of 23.88 kg / m². Respondents who were married as many as 33 people and not married as many as 18 people. The respondents who took part in the survey consisted of a debriefing residency phase of 15 people, an internship of 16 people and an independent of 20 people. The respondents also had a long time span of using a laptop during education between under 3 hours by 5 people to more than 5 hours by 33 people, who had a neck pain experience of 46 people.

Table 1: Corespondent Characteristics.

Respondents	51
Male, n(%)	12(23,5)
Female, n(%)	39(76,5)
Age (years), median(min-max)	31(26-40)
BMI (kg/m ²), median(min-max)	23,88(17,22-30,46)
Marital status, n(%)	
Married	33(64,7)
Unmarried	18(35,3)
Residency Level, n(%)	
Preparation	15(29,4)
Internship	16(31,4)
Independent	20(39,2)
Smoking, n(%)	
Yes	1(2)
No	50(98)
Laptop user, n(%)	
Yes	51(100)
No	0(0)
Laptopn screen time, n(%)	
< 3 hours	5(9,8)
< 5 hours	13(25,5)
> 5 hours	33(64,7)
History of neck pain, n(%)	
Yes	46(90,2)
No	5(9,8)

There were a weak correlation between the value of NDI with the domain of physical functioning ($r = -0.277$, $p < 0.05$), emotional problem domain ($r = -0.342$, $p < 0.05$), emotional well-being domain ($r = -0.350$, $p < 0.05$), social functioning domain ($r = -0.181$, $p > 0.05$), general health domain ($r = -0.156$, $p > 0.05$). While there were a moderate correlation between the value of the neck disability index with the physical health domain ($r = -0,436$, $p < 0.01$),

energy / fatigue domain ($r = -0,409$, $p < 0.01$), pain domain ($r = -0,689$, $p < 0.01$) (table 2).

Table 2: Correlation between Neck Disability Index and SF-36 Questionnaire.

Domain SF-36	Neck Disability Index Score	
	Correlation Coefficient	Sig (2-tailed)
Physical Functioning	-.277*	.049
Role limitations due to physical health	-.436**	.001
Role limitations due to emotional problems	-.342*	.014
Energy/fatigue	-.409**	.003
Emotional well-being	-.350*	.012
Social functioning	-.181	.202
Pain	-.689**	.000
General health	-.156	.276

*.Correlation is significant at the 0.05 level (2-tailed)
 **.Correlation is significant at the 0.01 level (2-tailed)

4 DISCUSSIONS

From the characteristic results it was found that the prevalence of women was 76.5%, according to the study of Alshagga et al the majority were women (72.9%) (Alshagga et al., 2013).

The results suggested a relationship between the value of disability neck pain with quality of life and the relationship was followed by a negative correlation of weak-moderate. This is consistent with the study of nolet, et al who also found an association between neck pain and quality of life in the future (Nolet et al., 2015). The prevalence of neck pain experienced by residents due to laptop use by 90.2% according to research Bodwal et al. Some students reported neck pain due to incorrect sitting position for hours, sleeping in the wrong position, length of study, while traveling, constantly seeing at whiteboard, use a high pillow and increased mental pressure after using a laptop (Monika and Rana, 2017).

5 CONCLUSIONS

Our study has limitations which may be possible due to the selection bias and the small amount of sample. Therefore, the instrument may not fully capture the impact of neck pain on some quality of life. Future research needs to examine the course of neck pain on quality of life while controlling for confounding effects.

REFERENCES

- Akoglu, H., 2018. User's guide to correlation coefficients. *Turk. J. Emerg. Med.* 18, 91–93. <https://doi.org/10.1016/j.tjem.2018.08.001>
- Alshagga, M.A., Nimer, A.R., Yan, L.P., Ibrahim, I.A.A., Al-Ghamdi, S.S., Radman Al-Dubai, S.A., 2013. Prevalence and factors associated with neck, shoulder and low back pains among medical students in a Malaysian Medical College. *BMC Res. Notes* 6. <https://doi.org/10.1186/1756-0500-6-244>
- Dr. Cathy Sherbourne, n.d. RAND SF-36. RAND Corporation.
- Jerry Y, D., Alexander, A., Joshua E, S., Paul D, K., Joseph T, N., Darren R, L., 2017. Neck Pain and Low Back Pain in Medical Students: A Cross-Sectional Study. *Int. Arch. Public Health Community Med.* 1. <https://doi.org/10.23937/iaphcm-2017/1710002>
- Kang, J.-H., Park, R.-Y., Lee, S.-J., Kim, J.-Y., Yoon, S.-R., Jung, K.-I., 2012. The Effect of The Forward Head Posture on Postural Balance in Long Time Computer Based Worker. *Ann. Rehabil. Med.* 36, 98. <https://doi.org/10.5535/arm.2012.36.1.98>
- Knudsen, M.L., Ludewig, P.M., Braman, J.P., n.d. Musculoskeletal Pain In Resident Orthopaedic Surgeons: Results Of A Novel Survey 7.
- Lins, L., Carvalho, F.M., 2016. SF-36 total score as a single measure of health-related quality of life: Scoping review. *SAGE Open Med.* 4, 205031211667172. <https://doi.org/10.1177/2050312116671725>
- Monica, 1776 Main Street Santa, California 90401-3208, n.d. 36-Item Short Form Survey (SF-36) Scoring Instructions [WWW Document]. URL https://www.rand.org/health-care/surveys_tools/mos/36-item-short-form/scoring.html (accessed 9.8.19).
- Monika, Rana, P., 2017. Prevalence Of Neck Pain And Laptop Using Behaviour Among Post Graduate Students. *Int. J. Physiother. Res.* 5, 2271–2275. <https://doi.org/10.16965/ijpr.2017.185>
- Mubeen, I., 2016. Prevalence of Upper Cross Syndrome among the Medical Students of University of Lahore. *Int. J. Physiother.* 3. <https://doi.org/10.15621/ijphy/2016/v3i3/100851>
- Nolet, P.S., Côté, P., Kristman, V.L., Rezai, M., Carroll, L.J., Cassidy, J.D., 2015. Is neck pain associated with worse health-related quality of life 6 months later? A population-based cohort study. *Spine J.* 15, 675–684. <https://doi.org/10.1016/j.spinee.2014.12.009>
- Schober, P., Boer, C., Schwarte, L.A., 2018. Correlation Coefficients: Appropriate Use and Interpretation. *Anesth. Analg.* 126, 1763–1768. <https://doi.org/10.1213/ANE.0000000000002864>
- Sun, Y., Nimbarde, A.D., Motabar, H., 2017. Physical Risk Factors Associated with the Work-Related Neck/Cervical Musculoskeletal Disorders: A Review 17.
- Yakshi Bhardwaj, Mahajan, R., 2017. Prevalence of Neck Pain and Disability in Computer Users. <https://doi.org/10.13140/rg.2.2.19924.50565>