

Association Between Personal and Environmental Factors, Body Position on Low Back Pain at Dr. Moewardi Hospital, in Surakarta

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ABSTRACT

Background: Low Back Pain or LBP often encountered in daily practice, especially in industrialized countries. The study showed that 90.9% of LBP patients experienced a relapse more than once in a year, the relapse was triggered by personal factor, work environment and lack of health information. The purpose of this study was to analyze factors associated with recurrence prevention in patients with Low Back Pain at Medical Rehabilitation Instalation Dr. Moewardi Surakarta Hospital

Subjects and Method: The study was an observational analytic study with cross sectional design. A total of 60 patients with LBP. That data was collected with a questionnaire and analyzed by using multiple logistic regression.

Results: There was a positive correlation between personal factors and recurrence prevention in Low Back Pain: there was a correlation between age and recurrence prevention in Low Back Pain but it was not statistically significant (OR=2.09; 95% CI= 0.36 to 12.09; p=0.412), there was a correlation between sex and recurrence prevention in Low Back Pain but it was not statistically significant (OR=1.52; 95% CI=0.08 to 28.78; p=0.781), there was a correlation between education level and recurrence prevention in Low Back Pain but it was not statistically significant (OR=2.38; 95% CI=0.41 to 14.05; p=0.337), there was a correlation between employment and recurrence prevention in Low Back Pain and it was statistically significant (OR=9.16; 95% CI=1.35 to 62.39; p = 0.024), there was a correlation between perceptions of Low Back Pain and recurrence prevention in Low Back Pain and it was statistically significant (OR=27.81; CI=95% 2.14 to 361.33; p=0.011). There was a positive correlation between environmental factors and recurrence prevention in Low Back Pain: there was a correlation between accessibility to health service and recurrence prevention in Low Back Pain but it was not statistically significant (OR=0.49; 95% CI=0.02 to 14.81; p=0.684), there was a correlation between environment accessibility and recurrence prevention in Low Back Pain but it was not statistically significant (OR=0.73; 95% CI=0.04 to 14.22; p=0.834), there was correlation between family support and recurrence prevention in Low Back Pain and it was not statistically significant (OR=0.30; 95% CI=0.02 to 5.50; p=0.303) .There was a positive correlation between education on Proper Body Mechanics with recurrence prevention in Low Back Pain and it was statistically significant (OR=35.33; 95% CI=1.65 to 757.32; p=0.023). The most dominant variable in LBP recurrence prevention was patients perceptions of Low Back Pain (p=0.011).

Conclusion: Employment, perceptions of Low Back Pain, and education on proper body mechanic were variables was statistically significant for LBP relaps prevention in this study.

Keywords: personal factors, environmental factors, education on proper body mechanics, relapse prevention, LBP

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BACKGROUND

Every individual holds to perform activities or job to fulfill their needs. Some of the activities or jobs needs quite big energy or muscle strength so that it may generate some ailments, one of them is *Low Back Pain* (LBP). LBP is the most commonly suffered skeletal muscle disorder among other skeletal muscle disorders (Depkes RI, 2007).

LBP is commonly found in daily practices, especially in Industrialized Countries. It is estimated that 70-85% citizens of developed countries have experienced the episode through their life (Sadeli, 2001). Five out of ten people experience recurrence every year (Tana dan Delima, 2013).

Factors related to the emergence of LBP ailment are among others personal factor that includes age in which the older the person is, the higher risk to catch LBP will be, sex types, body weight and body height, smoking habit, and environmental factor (occupational risk factor) in which both men and women do their activities excessively such as moving things, pushing, pulling, bending and working with continually twisting body. A lot of truck drivers suffer from Low Back Pain. Women who are frequently pregnant are also more at risk for LBP (Strong, 1996).

A study shows that 90.9% of LBP patients endure recurrence more than once in a year (Tana and Delima, 2013). Recurrence is common, usually it does not prevent patients from doing the activity, however what is concern is that if it turns to be chronic LBP with uncertain recurrence. The recurrence it self is triggered by patients' return to their activities after the pain episode ends. The activities are influenced by clinical, social and economic factor (Devo dan Weinstein, 2001).

Recurrence is caused by personal factors such as age, in which 41-64 is the

most frequent age to suffer from recurrence, heavy physical worker is more frequent to suffer recurrence, male is likely to experience recurrence (Pogalad, 2010). Working environment factor may generate stress and it leads to recurrence (Novita, 2014), lack of family support may increase stressor so it leads to recurrence (Handayani et al., 2012). In addition, lack of information is also related with recurrence (Sianturi, 2014).

Based on the data from Medical Rehabilitation Installation of RSUD Dr. Moewardi Surakarta (2015) there are 90 LBP patients in Medical Rehabilitation Installation of RSUD Dr. Moewardi Surakarta, in which 40% of them endure recurrence and 60% do not regularly visit Medical Rehabilitation Installation of RSUD Dr. Moewardi Surakarta so that the recurrence is not identified. Recurrence is caused by occupational risk factor and do not implement proper body mechanics education in their daily life. Medical Rehabilitation Installation of RSUD Dr. Moewardi Surakarta provide regular schedule for LBP patients to join therapy program with once a week visit arrangement.

SUBJECT AND METHOD

The study was a qualitative study. The study approach used was observational analysis with Cross Sectional design. The population in the study was LBP patients in Medical Rehabilitation Installation of RSUD Dr. Moewardi Surakarta. The total sample of the study was 60 respondents. Sampling technique used was purposive sampling.

The independent variable in the study were age, sex types, level of education, occupation, perception toward low back pain, access to healthcare service, environmental accessibility, family support, and proper body mechanic education, whereas

the dependent variables in the study were Low Back Pain recurrence prevention.

Data collection technique used was primary data which were directly obtained from LBP patients who visited Medical Rehabilitation Installation of RSUD Dr. Moewardi Surakarta. The instrument of the study used was questionnaires which had been through *Pearson product moment* validity test and *Alpha Cronbach* reliability test.

RESULT

Bivariate Analysis by using Chi Square obtained the following result: there was an association between age and LBP recurrence prevention and it was statistically significant ($p=0.004$). There was an association between sex types with LBP recurrence prevention and statistically significant (OR= 3.44; $p=0.031$), there was an association between education level with LBP recurrence prevention and statistically

significant ($p=0.046$), there was an association between occupation with LBP recurrence prevention ($p=0.001$), there was an association between perception toward LBP with LBP recurrence prevention and statistically significant ($p=0.001$), OR= 69.89, there was an association between health care service access with LBP recurrence prevention and statistically significant (OR=9.0; $p=0.001$), there was an association between environmental accessibility with LBP recurrence prevention and statistically significant ($p= 0.001$), there was an association between family support with LBP recurrence prevention and statistically significant ($p= 0.031$), there was an association between *proper body mechanics* education with LBP recurrence prevention and statistically significant (OR=22.67; $p=0.001$).

Tabel 1. Regresi Logistik Berganda

Variable	OR	95% CI		p Wald test
		Lower Limit	Upper Limit	
Age	2.09	0.36	12.09	0.412
Sex types	1.52	0.08	28.78	0.781
Education	2.38	0.41	14.05	0.337
Occupation	9.16	1.35	62.39	0.024
Perception toward pain	27.81	2.14	361.33	0.011
Healthcare service access	0.49	0.02	14.81	0.684
Environmental Accessibility	0.73	0.04	14.12	0.684
Family Support	0.30	0.02	5.50	0.419
PBM education	35.33	1.65	757.32	0.023
N observation	60			
-2log likelihood	22.77			
Nagelkerker R ²	82.0%			

The result of multivariate analysis by using multiple logistic regression was used to find out the association of age, sex types, level of education, occupation, perception toward low back pain, access to healthcare service, environmental accessibility, family support, and proper body mechanic education with Low Back Pain recurrence prevention.

Table 1 shows the value of Odd Ratio of age variable is 2.09 it means that respondents whose age is approaching >65 have 2.09 times bigger possibility to conduct LBP recurrence prevention than respondents whose age is below 65. The result of Wald test shows there is an association between age with LBP recurrence prevention and statistically insignificant.

The value of *Odds Ratio* of sex types variable is 1.52 it means that respondents with female sex types have 1.52 times bigger possibility to conduct LBP recurrence than respondents with male sex types. The result of Wald test shows there is an association between sex types with LBP recurrence prevention and statistically insignificant.

The value of *Odds Ratio* of education variable is 2.38 it means that respondents with secondary and high education have 2.38 times bigger possibility to conduct LBP recurrence than respondents with primary education. The result of Wald test shows there is an association between education with LBP recurrence prevention and statistically insignificant.

The value of *Odds Ratio* of occupation variable is 9.16 it means that respondents with both fulltime and part time occupation have 9.16 times bigger possibility to conduct LBP recurrence than unemployed respondents. The result of Wald test shows there is an association between occupation with LBP recurrence prevention and statistically significant.

The value of *Odds Ratio* of perception toward Low Back Pain variable is 27.81 it means that respondents with high perception toward LBP have 27.81 times bigger possibility to conduct LBP recurrence than respondents with low perception toward LBP. The result of Wald test shows there is an association between perception toward Low Back Pain with LBP recurrence prevention and statistically significant.

The value of *Odds Ratio* of access to healthcare service variable is 0.49 it means that easy access to healthcare service have 0.49 times bigger possibility to conduct LBP recurrence prevention difficult healthcare service. The result of Wald test shows there is an association between access to

healthcare service with LBP recurrence prevention and statistically insignificant.

The value of *Odds Ratio* of environmental accessibility variable is 0.73 it means that accessible environment has 0.73 times bigger possibility to conduct LBP recurrence prevention than inaccessible environment. The result of Wald test shows there is an association between environmental accessibility with LBP recurrence prevention and statistically insignificant.

The value of *Odds Ratio* of family support variable is 0.30 it means that strong family support has 0.30 times bigger possibility to conduct LBP recurrence prevention than feeble family support. The result of Wald test shows there is an association between family with LBP recurrence prevention and statistically insignificant.

The value of *Odds Ratio* of proper body mechanics education variable is 35.33 it means that respondents who have received proper body mechanics education have 35.33 times bigger possibility to conduct LBP recurrence than respondents who have never received proper body mechanics education. The result of Wald test shows there is an association between proper body mechanics education with LBP recurrence prevention and statistically significant.

The value of *Nagelkerke R²* is 82% it means that all the nine independent variables (age, sex types, level of education, occupation, perception toward low back pain, access to healthcare service, environmental accessibility, family support, and proper body mechanic education) are able to explain LBP recurrence prevention as much as 82.0% and the remain which is 18.0% is explained by other factors outside the study model.

DISCUSSION

The result of the study showed that the more the respondents approaching 65 year old and older, statistically ensured conducting Low Back Pain recurrence prevention, it is in accordance with the study result of Collins and O'Sullivan (2009) that was conducted to 200 women and 132 men in Ireland with age range between 18-66 years old. It obtained ailment on spine, shoulders and neck part were experienced more by younger respondents than the older ones.

Female respondents were more able to do Low Back Pain recurrence prevention than male respondents. The result is supported by Michael (2001) that women have strong association in the emergence and women possess two times higher risk. Having the risk leads women to take care of their body more by doing *Low Back Pain* recurrence prevention.

The higher education is, the easier it takes to receive information on Low Back Pain and getting more able to do Low Back Pain recurrence prevention. The result of the study is supported by the study by Azizah et al., (2014) which states that the significant association between maternal education and the incidence of pneumonia on toddlers. The higher maternal education level is, the better prevention of pneumonia incidence and also vice versa.

Respondents who work full time will have higher risk for suffering from Low Back Pain so that they conduct the more Low Back Pain recurrence prevention. The study is supported by the study conducted by Umami et al., (2014) that most people who experience low back pain are those who have been working for >10 years and the most of them experience moderate pain ailment. Tenure is significantly associated with low back pain ailment ($p=0,001$).

The higher one's perception toward low back pain is, the more low back pain

recurrence prevention will be conducted in order not to suffer from severe illness. It is supported by a study conducted in Trelawny, Jamaica by Bessler et al., (2015) which also states that 81% of the respondents declare that cervical cancer is a very serious illness and conduct cervical cancer early detection. Meanwhile those who have low seriousness will not conduct cervical cancer early detection.

The easier access to healthcare service will improve the effort to conduct Low Back Pain recurrence prevention. The result of the study is supported by a study from Sari, et al., (2013) which states that travel distance to healthcare service is one of the important factor in utilizing healthcare service facilities. People are likely to utilize facilities which are close to their living place.

The more accessible the environment in respondents' surrounding is, the more capable to improve *Low Back Pain* recurrence preventive. The result of the study is supported by Pramayu (2013) who conveys that the ease of access to reach in the surrounding may affect toward one's convenience. If it is difficult to reach out things, it will gradually lead to discomfort and generate sore on the arms. Some ailments are symptoms to health problems since the effect of the factors, one of them is back pain.

The stronger support from the family to Low Back Pain patients through material, information, and emotional support will increase Low Back Pain recurrence prevention. The result of the study is supported by the study by Handayani et al., (2009) with its result that there is significant association between family support with the recurrence of moderate level of gastritis patients. The more frequent patients are exposed to proper body mechanics education then the more prevention efforts

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are conducted to reduce Low Back Pain recurrence. The result of the study is supported by a study from Nuranto (2010) that there is a significant difference in society's behavior between before and after the education about dengue fever prevention effort.

The result of multivariate analysis showed that the most dominant variable that is related to Low Back Pain recurrence prevention is perception toward Low Back Pain variable ($p=0.011$). It is in accordance with the Health Belief Model theory in which danger or pain that is suffered (*perceived severity*) is related to the individual belief or faith about the severity or acuteness of the disease. Perception on the acuteness is often based on medical information or knowledge, also can be perceived from one's belief that he will get difficulties as the result of the disease and will generate to or affect on his life in general (Priyoto, 2014).

The study concluded that the most dominant variable in the prevention of Low Back Pain recurrence is the perception toward Low Back Pain variable which means the utilization of Health Belief Model theory is suitable to describe Low Back Pain recurrence prevention behavior.

REFERENCE

- Azizah M, Fahrurazi, Qoriaty NI (2014). Tingkat Pengetahuan dan Pendidikan Ibu Balita dengan kejadian Penyakit Pneumonia pada Balita di kelurahan Keraton Kecamatan Martapura Kabupaten Banjar. *An-Nadaa* 1 (1).
- Bessler P, Ncube B, Bey A, Knight J, Jolly PE (2015). Factors Associated with the of Cervical Cancer Screening Among Women in Portland, Jamaica. *NCBI* 7 (3).
- Collin MM, Bradley CP, O'Sullivan T, Perry IJ (2009). Self-care coping strategies in people with diabetes: a qualitative exploratory study. *NCBI* 9 (6).
- Departemen Kesehatan RI, Direktorat Bina Kesehatan Kerja (2007). Seri Pedoman Tatalaksana Penyakit Akibat Kerja Bagi Petugas Kesehatan. Penyakit Otot Rangka Akibat Kerja. Jakarta: Depkes RI.
- Devo R, Weinstein JN (2001). Low Back Pain. *England Journal Med* 334: 363-370.
- Handayani SD, Kosasih CE, Priambodo AP (2012). Hubungan Dukungan Keluarga dengan Kekambuhan Pasien Gastritis di Puskesmas Jatnagor. Bandung: Fakultas Ilmu Keperawatan Universitas Padjadjaran.
- Meliala L, Pinzo R (2004). Patofisiologi dan Penatalaksanaan Nyeri Pinggang Bawah. Yogyakarta: Pain Symposium Towards Mechanism Based Treatment
- Michael R (2001). Physical, Psychosocial and Work Organization Factors on Injury/illness Absences. Diakses dari : <http://www.ergoweb.com/news/detail.cfm?id=340>.
- Murti B (2013). Desain dan Ukuran Sampel untuk Penelitian Kuantitatif dan Kualitatif di Bidang Kesehatan. Yogyakarta: Gadjah Mada University Press.
- Pogalad M (2008). Faktor yang Berhubungan dengan Kekambuhan Penyakit Reumatik di Wilayah Puskesmas Anggrek Kabupaten Gorontalo Utara. Universitas Gorontalo.
- Pramayu AR (2013). Office Ergonomic. Retrieved January 30, 2015, dari <http://www.premysisconsulting.com/2013/11/14/office-ergonomic/>
- Priyoto (2014). Teori Sikap dan Perilaku dalam Kesehatan. Yogyakarta: Nuha Medika.

Sadeli HA, Tjahyono B (2001). Nyeri punggung bawah. Dalam: Nyeri, Neuropatik, patofisiologi dan pelaksanaan. Jakarta: Perdossi.

Sari RM, Ambarita LP, Sitorus H (2013). Akses Pelayanan Kesehatan dan Kejadian Malaria di Provinsi Bengkulu. Media Litbangkes 23 (4).

Sianturi R (2014). Analisis Faktor yang Berhubungan dengan Kekambuhan TB

Paru. Unnes Journal of Public Health 3(1).

Strong J (1996). Chronic Pain the Occupational Therapist's Perspective. Churchill Livingstone: Medical Division of Pearson Professional Limited.

Tana L, Delima (2013). Gambaran Nyeri Pinggang Bawah Pada Paramedis di Beberapa Rumah Sakit di Jakarta. Media Litbangkes 23(1).