# THE RELATIONSHIP BETWEEN HEALTH BEHAVIOR AND PAIN SCALE IN PATIENTS WITH LOW BACK PAIN IN THAILAND

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**Abstract.** The purpose of the study was to evaluate the relationship between health behavior and pain scale in patients with low back pain. One hundred eighty patients with low back pain attending the Orthopedic Unit at Sapasithiprasong Hospital in Thailand participated in the study. The participants completed a questionnaire related to demographic data and preventive health behavior, illness health behavior and sick role health behavior. Statistical analysis was used to calculate means, standard deviations and percentages, multiple regression evaluated the relationship between demographic data and pain scale, and Pearson's correlation assessed the relationship between the three health behaviors and pain scale. Generally, the results showed most participants had a lower quality of health behavior. The most common causes of low back pain were lifting heavy loads, incorrect positioning and everyday activity (43.9, 17.8 and 10.6%, respectively). The level of participant's income was found to be statistically relevant to pain scale ($p<0.05$). There was also a statistically significant association between the three health behaviors and pain scale ($p=0.0001$, 0.005, 0.0001, respectively). The findings of this study illustrate the crucial role that Thai health care professionals play in changing the health behavior of patients with low back pain in order to improve the patient's quality of life.

## INTRODUCTION

Low back pain is one of the most common symptoms experienced by people throughout the world (Kerssens ***et al***, 1999). It is estimated that 70 to 80% of the world's population has at least one episode of back pain in their lifetime (Mohammad, 2002). This condition may cause a decrease in the quality of life of individuals, as well as a deterioration in physical activity. Generally, incidents of back pain occur between ages 25 and 50 (Jackson ***et al***, 1998). In Thailand, a report of cases from 1991 to 1992 found that 43.1% of the population reported back pain symptoms and 35.6% had variable chronic low back pain (Health System Research Institute, 1996). The causes of these symptoms included both congenital disorders and lifestyle (Gerr and Mani, 1999). Earlier studies showed the presence of external factors related to back pain, such as heavy physical work, actions involving lifting, bending and twisting, static work posture and a lack of self-care management (Bernard, 1997; Matsui ***et al***, 1997; Levangie, 1999; Hoogendoorn ***et al***, 1999, 2000; Lee ***et al***, 2001). Psychogenic causes, such as stress, depression and anxiety, were also recognized as risk factors for low back pain (Hiebert and Skovron, 2005).

Previous research suggested 3 categories of health behavior in the management of

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back pain: preventive, illness, and sick role, (Horgan, 1987; Twaddle, 1981; Valat *et al*, 1997). A correct understanding of these categories allows people to modify and lead more satisfying lives. However, due to unidentified causes, this does not appear to be the case in Thailand, especially in regard to lower income population. In the case of assessment, a currently available assessing tool, the Pain Scale, used for various conditions, allows patients to rank the levels of pain from 1 to 10 (least to most painful) (Charoenpanich N, personal communication). However, each person classifies their pain levels differently, depending on variables, such as pain threshold, demographic data and the site of the pain.

Since 1997, Sapasithiprasong Hospital, Thailand, has reported a substantial number of patients with low back pain due to unidentified physical causes (Sapasithiprasong Hospital, 2001). In response to these reports, the authors surveyed the health behaviors of 180 patients who attended the Orthopedic Unit at the hospital and assessed the relationship between these behaviors and the pain scale. The findings of this survey and assessment may help health professionals establish care plans and preventive activities for patients and guide future decisions concerning low back pain management related to health behavior.

## MATERIALS AND METHODS

The authors reviewed the histories of patients with lower back pain attending the Orthopedic Unit at Sapasithiprasong Hospital, Thailand via out-patient department cards and selected the participants for the study via the Accidental Sampling method (Kerlinger, 1986). One hundred eighty patients were chosen. The study was conducted from June to August 2003. The authors met with the patients, explained the study procedure, assured them of confidentiality and received their approval to be included in the research.

A questionnaire was used to collect the data. It consisted of two sections: A) a survey of personal details, including gender, age, marital status, educational level, salary, cause of low back pain and level of pain; B) a survey of health behavior, including preventive health behavior (9 items), illness behavior (5 items) and sick role behavior (5 items).

In section B, participants were able to give a range of answers, ranking each item as "routinely performed" (4), "often performed" (3), "seldom performed" (2) or "never performed" (1). The totals of the participants' responses to each health behavior item were calculated.

Content validation of the questionnaire was established by the use of a panel of experts consisting of a medical doctor, a public health officer, a pharmacist and two physiotherapists. Changes were made based on the panel's recommendations before its administration. A pilot study involving thirty volunteers was conducted to measure the reliability of the questionnaire items using Chronbach's alpha coefficient ($\alpha$). A statistically acceptable average value of 0.7 was achieved.

The questionnaire was read by the authors and answered by the participants, a process taking approximately 15 minutes per person.

All responses were evaluated statistically. Frequencies and percentages were calculated for the demographic data and the relationship between the demographic data and pain scale was statistically measured using multiple regression and the stepwise method. The relationship between each health behavior and the pain scale was statistically evaluated via Pearson's product moment correlation coefficient.

## RESULTS

One hundred and eighty participants were involved in the study. Ninety-nine (55%) were

females, 81 were males. The age range was from 10 years to over 60, the largest group being 41-50 years (n=62, 34.4%). Junior and senior high school graduates constituted 52.2% (n=94) and 26.1% (n=47), respectively, of the participants. The most common occupation was farming (n=68, 37.8%). Fifty-three (29.4%) and 56 (31.1%) of the participants earned an income below 1,000 baht and 1,001-5,000 baht/month, respectively (Table 1). Respondents indicated the causes of their lower back pain were lifting loads, wrong positioning and everyday activities (43.9, 17.8, and 10.6%, respectively). The participants estimated their pain levels at five to eight (14% -24%), moderate pain.

The results of the questionnaire regarding the 3 health behaviors were "slightly satisfactory" (2 health behaviors were "slightly satisfactory" and 1 "slightly unsatisfactory") (Table 2). However, examination of the individual health behaviors revealed a different situation. The responses to the questions showed the preventive health behavior was "unsatisfactory" or "slightly unsatisfactory" (5 items and 4 items, respectively) (Table 3). Regarding illness health behavior, the responses showed a mix of "satisfactory", "slightly satisfactory" and "unsatisfactory" (1, 2, and 2, respectively) (Table 4). Answers to questions related to sick role health behaviors indicated a mix of "satisfactory", "slightly satisfactory", "unsatisfactory" and "slightly unsatisfactory" (2, 1, 1, and 1, respectively) (Table 5).

Multiple regression analysis showed no significant relevance in the relationship between the demographic data and pain scale ($p>0.05$). However, using stepwise analysis, a statistically significant relationhip was seen between income and pain scale ($p<0.05$) (Table 6).

Table 7 shows a relationship between the three different types of health behavior and the pain scale.

Table 1
Demographic data of participants (n=180).

| Variable | Frequency | Percentage |
|---|---|---|
| Gender | | |
| Male | 81 | 45 |
| Female | 99 | 55 |
| Age (years) | | |
| 10-20 | 2 | 1.1 |
| 21-30 | 20 | 11.1 |
| 31-40 | 54 | 30.0 |
| 41-50 | 62 | 34.4 |
| 51-60 | 30 | 16.7 |
| > 60 | 12 | 6.7 |
| Marital status | | |
| Single | 19 | 10.6 |
| Married | 54 | 85.6 |
| Divorcee/widow/widower | 7 | 3.9 |
| Educational level | | |
| Junior highschool graduate | 94 | 52.2 |
| Senior highschool graduate | 47 | 26.1 |
| Diploma | 13 | 7.2 |
| Bachelor degree | 26 | 14.4 |
| Occupation | | |
| Farmer | 68 | 37.8 |
| Cashier | 37 | 20.6 |
| Student | 2 | 1.1 |
| Housewife | 13 | 7.2 |
| Merchant | 18 | 10.0 |
| Governmental officer | 40 | 22.2 |
| Miscellaneous | 2 | 1.1 |
| Income per month (baht) | | |
| <1,000 | 53 | 29.4 |
| 1,001-5,000 | 56 | 31.1 |
| 5,001-10,000 | 31 | 17.2 |
| 10,001-15,000 | 21 | 11.7 |
| 15,001- 20,000 | 10 | 5.6 |
| > 20,000 | 9 | 5.0 |

Analysis showed the overall relationship between health behavior and the pain scale was significant (Table 8).

## DISCUSSION

The preventive and illness health behaviors were mainly in the areas of "unsatisfac-

Table 2
Overall health behavior (n=180).

| Variable | X | SD | Quality of health behavior |
|---|---|---|---|
| 1. Preventive health behavior[a] | 15.51 | 3.99 | Slightly unsatisfactory |
| 2. Illness health behavior[b] | 11.38 | 2.21 | Slightly satisfactory |
| 3. Sick role health behavior[c] | 14.14 | 2.06 | Slightly satisfactory |
| Overall | 41.03 | 6.19 | Slightly satisfactory |

[a]Score ranking: 1.00-9.75 (Unsatisfactory); 9.76-18.50 (Slightly unsatisfactory); 18.51-27.25 (Slightly satisfactory); 27.26-36.00 (Satisfactory)
[b]Score ranking: 1.00-5.75 (Unsatisfactory); 5.76-10.50 (Slightly unsatisfactory); 10.51-15.25 (Slightly satisfactory); 1.26-20.00 (Satisfactory)
[c]Score ranking: 1.00-19.75 (Unsatisfactory); 19.76-38.50 (Slightly unsatisfactory); 38.51-57.25 (Slightly satisfactory); 57.26-76.00 (Satisfactory)

Table 3
Quality of preventive health behavior (n=180).

| Variable | X | SD | Quality of health behavior[a] |
|---|---|---|---|
| 1. Keeping up on health news | 1.58 | 0.68 | Unsatisfactory |
| 2. Exercise | 1.67 | 0.78 | Unsatisfactory |
| 3. Postural changing | 2.02 | 0.80 | Slightly unsatisfactory |
| 4. Proper sitting | 2.01 | 0.76 | Slightly unsatisfactory |
| 5. Improper sitting | 1.97 | 0.78 | Slightly unsatisfactory |
| 6. Proper lifting | 1.45 | 0.69 | Unsatisfactory |
| 7. Improper lifting | 1.42 | 0.69 | Unsatisfactory |
| 8. Proper sleep position | 1.48 | 0.73 | Unsatisfactory |
| 9. Improper sleep position | 1.88 | 0.80 | Slightly unsatisfactory |

[a] Score ranking 1.00-1.75 (Unsatisfactory); 1.76-2.50 (Slightly unsatisfactory); 2.51-3.25 (Slightly satisfactory); 3.26-4.00 (Satisfactory)

Table 4
Quality of illness health behaviors (n= 180).

| Variable | X | SD | Quality of health behavior[a] |
|---|---|---|---|
| 11. Drug seeking behavior | 3.30 | 0.70 | Satisfactory |
| 12. Traditional massage by uncertified doctor | 3.17 | 0.73 | Slightly satisfactory |
| 13. Seeking medical attention when needed | 1.57 | 0.87 | Unsatisfactory |
| 14. Everyday activity while still in pain | 1.32 | 0.68 | Unsatisfactory |
| 15. Resting when pain gets worse | 2.01 | 0.69 | Slightly unsatisfactory |

[a] Score ranking: 1.00-1.75 (Unsatisfactory); 1.76-2.50 (Slightly unsatisfactory); 2.51-3.25 (Slightly satisfactory); 3.26-4.00 (Satisfactory)

Table 5
Quality of sick role health behaviors (n=180).

| Variable | X | SD | Quality of health behavior[a] |
|---|---|---|---|
| 15. Patient drug compliance | 3.80 | 0.43 | Satisfactory |
| 16. Patient follow-up | 3.75 | 0.48 | Satisfactory |
| 17. Self-monitoring | 2.81 | 0.76 | Slightly satisfactory |
| 18. Working when pain relieved | 1.73 | 0.89 | Unsatisfactory |
| 19. Avoiding all causes of pain | 2.04 | 0.59 | Slightly unsatisfactory |

[a]Score ranking: 1.00-1.75 (Unsatisfactory); 1.76-2.50 (Slightly unsatisfactory); 2.51-3.25 (Slightly satisfactory); 3.26-4.00 (Satisfactory)

Table 6
Relationship between demographic data and pain scale (n=180).

| Variables | Standard coefficient (β) | t | p-value (< 0.05) |
|---|---|---|---|
| 1. Gender | 0.05 | 6.059 | <0.001 |
| 2. Age | -0.06 | 0.624 | 0.534 |
| 3. Marital status | -0.049 | -0.619 | 0.537 |
| 4. Junior high | 0.040 | 0.227 | 0.821 |
| 5. Senior high | -0.004 | -0.028 | 0.978 |
| 6. Income | -0.181 | -1.424 | 0.156 |
| Stepwise method | -0.220 | -2.993 | 0.003[a] |
| 7. Occupation | | | |
| 1) Farmer | 0.095 | 0.786 | 0.433 |
| 2) Cashier | 0.026 | 0.262 | 0.764 |
| 3) Governmental officer | 0.0836 | 0.666 | 0.506 |
| 4) Merchant | -0.112 | -1.417 | 0.158 |

[a]Stepwise method was implemented to investigate possible statistically significant relevance

tory" and"“slightly unsatisfactory." This may have been a result of the majority of participants having low education levels (52.2% were junior high school graduates), from generally unskilled occupations (37.8% were farmers, 20.6% were cashiers and 7.2% were housewives) and in low income brackets (29.4% earned less than 1,000 baht, and 31.1% between 1,001 and 5,000 baht per month). Such factors as education, occupation and income indicate most of the participants' primary daily concerns were with working and raising their families, not with health issues, unless seriously ill. Seeking medical attention often involves spending money and time, factors difficult for people from low income brackets to comfortably consider. As a result, they frequently tolerate and/or ignore their health condition, eventually leading to a deterioration in their daily lives (Rundall and Wheeler, 1979). A possible solution to this situation is to make the population realize the importance of good health and its effects on daily living. Using messages from media, family, friends and health professionals may assist sufferers of low back pain in understanding and improving their

Table 7
Relationship between 3 different types of health behavior and pain scale (n=180).

| Variables | Pearson's correlation | Pain Scale Sig (2-tailed) | Relevance |
|---|---|---|---|
| Preventive health behaviors | | | |
| 1. Keeping up on health news | -1.020 | 0.173 | irrelevant |
| 2. Exercise | -0.183[a] | 0.014 | relevant |
| 3. Changing posture | -0.219[a] | 0.003 | relevant |
| 4. Proper sitting | -0.369[a] | 0.0001 | relevant |
| 5. Improper sitting | -0.235[a] | 0.002 | relevant |
| 6. Proper lifting | -0.073 | 0.331 | irrelevant |
| 7. Improper lifting | -0.072 | 0.338 | irrelevant |
| 8. Proper sleep position | -0.178[a] | 0.017 | relevant |
| 9. Improper sleep position | -0.120 | 0.245 | irrelevant |
| Illness health behaviors | | | |
| 10. Patient compliance (drug seeking behavior) | -0.087 | 0.245 | irrelevant |
| 11. Traditional massage by an uncertified doctor | -0.151[a] | 0.044 | relevant |
| 12. Seeking medical attention when needed | -0.147[a] | 0.048 | relevant |
| 13. Everyday activity while still in pain | -0.074 | 0.324 | irrelevant |
| 14. Resting when pain worsen | -0.160[a] | 0.032 | relevant |
| Sick role health behaviors | | | |
| 15. Patient drug compliance | -0.179[a] | 0.016 | relevant |
| 16. Patient follow-up | -0.251[a] | 0.001 | relevant |
| 17. Self-monitoring | -0.211[a] | 0.005 | relevant |
| 18. Working when pain relieved | -0.108 | 0.150 | irrelevant |
| 19. Avoiding all causes of pain | -0.204 | 0.006 | irrelevant |

[a]Statistically significant with $p<0.05$ (2-tailed)

Table 8
Overall relationship between health behavior and pain scale (n=180).

| Variables | Pain Scale | | |
|---|---|---|---|
| | Pearson's correlation | Sig (2-tailed) | Relevance |
| 1. Preventive health behavior | -0.297[a] | 0.0001 | relevant |
| 2. Illness health behavior | -0.209[a] | 0.005 | relevant |
| 3. Sick role heath behavior | -0.280[a] | 0.0001 | relevant |
| 4. Overall | -0.359[a] | 0.0001 | relevant |

[a]Statistically significant with $p<0.05$ (2-tailed)

health condition (Pender, 1987).

Sick role health behavior tended more to "satisfactory" and "slightly satisfactory" areas. This may be due to the fact that, once participants had made the decision to seek medical attention, they made a commitment to addressing their health problems. This commitment shows a desire to change their health

behavior to improve their health and indicates a respect of human values (Stuifbergen and Becker, 1994).

Regarding the relationship between demographic data and pain scale, only low income was statistically significant to pain scale (p=0.003). This indicates that health campaigns directed at sufferers of low back pain need to be focussed on specific groups in the community, specifically those from low income brackets.

Considered overall, preventive, illness, and sick role health behaviors were statistically relevant to the incidence of low back pain, implying that increased attention to such health behavior by the community may reduce the incidence of the condition. There were a number of limitations of the study. The responses to the questionnaire may have been distorted by the participant's reluctance to answer the author's direct questions. A solution to this may be to allow respondents to express their opinions regarding open-ended questions instead of replying to direct questions. If such a questionnaire is used, then the items must be clearly understandable. The study involved only one hospital. Similar studies need to be repeated in different hospitals in various locations to provide more extensive results. The study involved 180 participants. The number of participants needs to be increased drawing on a wider cross-section of the community. Demographic data and health behavior of people not suffering from low back pain need to be included in further studies to increase the breadth of the sample and to make comparisons to sufferers of low back pain.

In conclusion, the findings of this study have relevance for health policies in Thailand. Current policy aims to focus closely on health promotion in the community as a means of solving and/or alleviating health problems and on providing effective access to health care for all people, especially those in low income brackets and from remote areas. To achieve these aims, Thai health services must educate the general population to promote awareness of the values of good health and increase knowledge and skill regarding self-management in all sectors of the community.

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