

# The role of psychosocial variables in physician judgement of pain-related disability

Walker SP<sup>1</sup>, Odendaal CL<sup>2</sup> and Esterbuyse KGF<sup>3</sup>

1. Unit for Professional Training and Service in the Behavioural Sciences, University of the Free State, Bloemfontein
2. Pain Control Unit, Universitas Hospital, Bloemfontein
3. Department of Psychology, University of the Free State, Bloemfontein

Correspondence to: Dr SP Walker, e-mail: walkersp.hum@mail.uovs.ac.za

SAJAA 2007; 13(5): 17-21

## ABSTRACT

**Objective:** The current study aimed to determine the extent to which physicians take psychosocial factors into account when making pain-related judgements of disability.

**Subjects and Method:** 228 chronic pain patients completed the West Haven-Yale Multidimensional Pain Inventory (WHYMPI), while 69 completed both this instrument and the Addiction Potential, Anxiety, Health Concerns and Depression supplementary subscales of the Minnesota Multiphasic Personality Inventory – 2 (MMPI-2). Physicians were required to provide diagnoses, as well as ratings of functional ability for each patient. Hierarchical regression analyses were conducted in order to determine the degree to which psychosocial variables predicted physician ratings of patient functional ability.

**Results:** Psychosocial variables were found to predict physician assessments of patients' level of occupational functioning, general satisfaction with life and physician perceptions of the role that psychosocial their risk of analgesic dependence. Depression and anxiety symptoms predicted factors played in patients' pain experiences. Health concerns were predictive of physician assessments of analgesic dependence amongst patients.

**Conclusion:** While certain psychosocial factors appear to be considered by physicians during pain-related disability assessment, psychiatric symptoms and physical pathology seem to weigh heavier in the process.

**Key Words:** Disability, functional ability, chronic pain, psychosocial, psychopathology, health concerns, WHYMPI, MMPI-2

## Introduction

Pain and more specifically pain-related disability are not only asserted to limit the functioning of the afflicted individuals, but also to negatively impact upon the broader economy.<sup>1-2</sup> Consequently, reliable and valid physician judgments of pain-related incapacity should be seen to serve an important function within both the individual, as well as the broader societal context. However, the degree to which a physician is successful at providing an accurate estimation of a patient's future impairment or disability could be argued to be contingent upon the physician's conceptualization of pain. Current conventional opinion appears to hold that pain is a multidimensional and highly individual experience.<sup>3-5</sup> Pain is considered to be multidimensional in that psychological and social factors are judged to be as influential as physiological variables in the pain experience. The preceding assumption would imply that an individual's idiosyncratic psychological composition and specific psychosocial circumstances significantly influence that individual's experience of pain. Thus each individual's subjective experience of their pain is the reality with which the treating physician is faced and upon which accurate disability projections should be based. Nonetheless, the degree to which factors other than the chronicity and severity of nociception are taken into account by physicians when estimating the future impairment or

disability likely to result from a patient's chronic pain remains unclear.

Numerous psychosocial factors are now commonly viewed as influencing an individual patient's chronic pain experience.<sup>3-4</sup> Foremost amongst these are comorbid psychiatric illness, subclinical psychiatric symptomology, beliefs and expectations related to the experience of pain, as well as the role of stress and coping in chronic pain.<sup>6-14</sup> Coping behaviours employed by the individual, as well as their idiosyncratic cognitive appraisals of their pain and/or disability are reported to play a significant role in chronicity of the pain.<sup>13-14</sup> Moreover, these adjustment mechanisms have also been reported to have implications regarding the degree of pain-related disability with which patients present.<sup>2,11-12</sup>

It has been claimed that disability or impairment related to chronic pain is still all too often viewed exclusively in physical terms.<sup>8,15</sup> In recent years it has become more apparent that chronic pain may also have significant implications for an individual's psychosocial functioning. Mental health, emotional well-being and satisfaction with life have all been shown to be negatively impacted by chronic pain. Furthermore, these particular consequences of pain appear to be a worthwhile avenue of

study, as “non-physical” aspects of the greater pain experience appear to be equally valid, if not better predictors of pain-related disability.<sup>5,10</sup>

The preceding discussion makes an argument for incorporating psychosocial factors associated with idiosyncratic chronic pain experience of individual patients into physician estimates of disability and incapacity. Although this approach appears to be self-evident upon surveying the recent pain literature, there is doubt as to how strongly emotional and psychosocial elements figure in physicians' everyday decisions about pain-related disability. The aim of the current study is thus threefold. First, to explore the extent to which physician assessments of chronic-pain related disability can be reconciled with the patient's assessment of his or her own functional capacity. Second, to determine to what degree physicians judge psychiatric symptoms and psychosocial factors to be significant to patients' specific pain presentations. Finally, the study aims to profile the psychosocial and psychiatric factors, if any, that feature in physicians' judgments of pain-related disability.

#### Method

Patients visiting the Pain Control Unit at the Universitas Hospital in Bloemfontein between February and November 2005 were approached to participate in the study. Informed consent was obtained from 352 individuals. The participants could choose to complete a relatively brief questionnaire consisting of biographical questions and the West Haven-Yale Multidimensional Pain Inventory (WHYMPI), or a longer questionnaire consisting of the aforementioned measures, as well as the Addiction Potential, Anxiety, Health Concerns and Depression supplementary subscales of the Minnesota Multiphasic Personality Inventory – 2 (MMPI-2).<sup>16-17</sup> This approach was followed in an attempt to reduce participant attrition. Normative data for this specific sample on these measuring instruments is reported in an earlier publication by the authors along with the descriptive statistics for the sample.<sup>18</sup> The questionnaires were translated into Afrikaans via the back-translation method.

Physicians consulting with patients at the Pain Control Unit were requested to provide a diagnosis for each patient. The physician group was composed of an anaesthesiologist with extensive experience in pain medicine, as well as numerous anaesthesiology

registrars completing pain medicine rotations. The physicians were required to indicate, on a five point Likert scale, their perceptions with regard to (i) the extent to which patients' reported pain was typical of their physical pathology, (ii) the extent to which psychosocial factors influenced patients' experiences of pain, (iii) the extent to which psychosocial factors were solely responsible for the reported pain, (iv) the patient's ability to function effectively within their occupation, (v) the patient's general satisfaction with life, and (vi) the patient's potential for becoming dependent upon pain medication.

Completed WHYMPI questionnaires, diagnostic data and physician ratings were available for 228 patients. Psychiatric symptomology data, as measured by the MMPI-2 supplementary scales previously mentioned, were available for only 69 patients. The latter was primarily due to patients being less willing to complete the longer questionnaires.

#### Results

Physician judgments served as criterion variables, while the psychosocial and psychopathological data gained from the questionnaires were viewed as predictor variables. Regression analyses were performed to determine in which domains of patient functioning physician disability ratings could be related to prominent psychosocial issues in patients' lives.

It is evident from Table 1 that when all the areas of patient functioning, as rated by physicians, are included in a prediction model only three of the criterion domains yield statistically significant results. Physicians judge psychosocial variables to play a significant role in patients' levels of occupational functionality and in their potential for developing analgesic dependence at the 5% level of significance. Furthermore, psychosocial factors are considered to be significant predictors of the patients' general level of life satisfaction at the 1% level. It would thus seem that patient-related psychosocial variables significantly impact upon physicians' judgements of disability or impairment in these three domains. However, in order to determine which specific psychosocial variables influence physician decision-making Pearson's Correlation Coefficients were calculated for all subscales of the WHYMPI with regard to occupational functioning, general life satisfaction and potential for analgesic dependence.

**Table 1:** F-test results for psychosocial variables (WHYMPI subscales) as predictors of physicians' judgements of patients' experience of pain and level of functioning (n=228)

Physician's judgment	R <sup>2</sup>	F	p
1. Extent to which patient's reported pain is typical for physical pathology	0,0543	1,03	0,4188
2. Extent to which psychosocial factors influence the patient's experience of pain	0,0772	1,51	0,1236
3. Extent to which psychosocial factors are solely responsible for the reported pain	0,0479	0,90	0,5430
4. Level of occupational functionality	0,1104	2,23*	0,0113
5. Level of general life satisfaction	0,1135	2,31**	0,0088
6. Potential for analgesic dependence	0,1040	2,09*	0,0188

\*\* p ≤ 0,01, \* p ≤ 0,05

**Table 2:** Pearson Correlation Coefficients for physicians' judgements of psychosocial variables involved in patients' level of occupational functionality, general life satisfaction and potential for developing analgesic dependence

Physician's judgment	WHYMPI subscales		
	Occupational functionality	General level of life satisfaction	Potential Analgesic dependence
Interference (n=235)	-0,170**	-0,176**	0,083
Support (n=235)	-0,018	-0,020	0,065
Pain Severity (n=236)	-0,059	-0,147*	0,201**
Life-Control (n=236)	0,114	0,080	-0,142*
Affective Distress (n=236)	-0,102	-0,129*	0,101
Negative Responses (n=235)	-0,076	-0,032	0,164*
Solicitous Responses (n=235)	-0,063	-0,080	0,010
Distracting Responses (n=235)	-0,098	-0,099	0,052
Household Chores (n=236)	0,164*	0,132*	-0,053
Outdoor Work (n=236)	0,188*	0,185**	-0,031
Activities Away from Home (n=236)	0,057	-0,035	-0,109
Social Activities (n=236)	0,143*	0,087	-0,114

\*\*  $p \leq 0,01$ , \*  $p \leq 0,05$

Table 2 indicates that the patients' ratings of the extent to which their pain interferes with their daily lives correlate negatively with physicians' ratings of the patients' occupational functionality, as well as physician ratings of patients' general life satisfaction. These results are significant at the 1% level. Patients' ratings of the severity of their pain correlate positively (1% level) with physicians' judgments regarding the patients' potential to become dependent upon analgesic medication. Moreover, a negative correlation, significant at the 5% level, is noted between patients' perception of pain severity and physicians' judgments of patients' general life satisfaction. Conversely, the extent to which patients report engaging in outdoor work correlates positively with physicians' impressions of how satisfied patients generally are with their lives (1% level), as well as with ratings of patients' occupational functionality (5% level). The extent to which patients engage in household chores and social activities also correlates positively (5% level) with physicians' estimations of patients' occupational functionality. Involvement in household chores was also perceived by physicians to be indicative of patients' satisfaction with life. Conversely, affective distress and life control correlate negatively, at the 5% significance level, with judgements of satisfaction with life and potential for analgesic dependence respectively. Negative responses from significant others were also perceived as a risk factor for future analgesic dependence.

The results indicate that numerous psychosocial variables are judged by physicians to be indicative of patients' occupational functioning, their general satisfaction with life and their potential for developing analgesic dependence. However, additional hierarchical regression analyses were conducted in order to determine the specific contribution of each predictor variable with regard to the three criterion variables. Consequently, the Household Chores [1,57% ( $F= 3,93$ ;  $f^2= 0,02$ )], Distracting Responses [1,82% ( $F= 4,56$ ;  $f^2= 0,02$ )], Interference [1,98% ( $F= 4,95$ ;  $f^2= 0,03$ )] and Outdoor Work [2,63% ( $F= 6,58$ ;  $f^2= 0,03$ )] subscales of the WHYMPI were found to independently account

for significant amounts of variance with respect to physicians' judgements of patients' occupational functioning at the 5% level. Furthermore, the Outdoor Work [2,43% ( $F= 5,93$ ;  $f^2= 0,03$ )], Interference [1,84% ( $F= 4,49$ ;  $f^2= 0,02$ )] and Activities Away from Home [1,8% ( $F= 4,39$ ;  $f^2= 0,02$ )] subscales of the WHYMPI independently accounted for significant (5% level) amounts of the variance with respect to physician assessments of patients' general level of life satisfaction. Finally, the Pain Intensity [2,42% ( $F= 5,90$ ;  $f^2= 0,03$ )], Negative Responses [2,27% ( $F= 5,54$ ;  $f^2= 0,03$ )] and Support [1,64% ( $F= 4,00$ ;  $f^2= 0,02$ )] subscales of the WHYMPI independently accounted for significant amounts of the variance with respect to physicians' predictions of patients' risk of developing analgesic dependence at the 5% level. It is evident from the data that only WHYMPI subscales that correlated with criterion variables at the 1% level of significance accounted for significant amounts of variance in the subsequent hierarchical regression analyses.

A regression analysis was conducted in order to determine in which domains of patient functioning physician disability/impairment ratings could be related to psychopathological symptomatology, as reported by patients.

Table 3 indicates that when all the areas of patient functioning, as rated by physicians, are included in a prediction model only two of the criterion domains yield statistically significant results with regard to psychopathology symptoms. Physicians consider symptoms of psychopathology to indicate the degree to which psychosocial factors influence pain experiences at the 1% level of significance. Signs of psychopathology are also considered to be risk factors for the development of analgesic dependence at the 5% level of significance. However, in order to determine which specific psychopathological syndromes or symptom clusters influence physician decision-making, Pearson's Correlation Coefficients were calculated for all four MMPI-2 supplementary scales with regard to the extent to which psychosocial factors

**Table 3:** F-test results for co-morbid psychopathology (MMPI supplementary scales) as predictor of physicians' judgments of patients' experience of pain and level of functioning (n= 69)

Physician's judgment	R <sup>2</sup>	F	P
1. Extent to which patient's reported pain is typical for physical pathology	0,0838	1,12	0,3578
2. Extent to which psychosocial factors influence the patient's experience of pain	0,2555	4,20**	0,0053
3. Extent to which psychosocial factors are solely responsible for the reported pain	0,1144	1,58	0,1937
4. Level of occupational functionality	0,0885	1,19	0,3273
5. Level of general life satisfaction	0,1091	1,50	0,2169
6. Potential for analgesic dependence	0,2274	3,61*	0,0118

\*\*  $p \leq 0,01$ , \*  $p \leq 0,05$

influence patients' experience of pain and their potential for analgesic dependence.

It is evident from Table 4 that depression symptoms and health concerns correlate positively (1% level of significance) with physicians' estimations of the extent to which psychosocial factors influence patients' experience of pain. Health concerns also correlate positively (5% level of significance) with physicians' judgments regarding patients' risk of becoming dependent upon analgesics. Anxiety symptoms correlate positively (5% level of significance) with physicians' estimations of the extent to which psychosocial factors influence patients' experience of pain. It should be noted, however, that patient responses to items comprising the Addiction Potential supplementary scale of the MMPI-2 did not significantly correlate with physician judgments regarding patients' analgesic dependence potential.

The results indicate that symptoms of depression and anxiety, as well as health concerns are judged by physicians to be indicative of the role that psychosocial factors play in patients' experiences of pain. Furthermore, it is apparent that physicians view the presence of health concerns as a risk factor for the development of analgesic dependence. However, additional hierarchical regression analyses were conducted in order to determine the specific contribution of each predictor variable with regard to the two criterion variables. Consequently, symptoms of depression [19,81% (F= 12,38;  $f^2= 0,26$ )] and anxiety [12,82% (F= 8,01;  $f^2= 0,17$ )] were found to independently account for significant amounts of variance with respect to physicians' judgements of patients' potential for becoming dependent upon analgesics at the 1% level. Health concerns [6,91% (F= 4,32;  $f^2= 0,09$ )] were found to independently account for a significant

**Table 4:** Pearson Correlation Coefficients for physicians' judgements of comorbid psychopathology involved in the role psychosocial factors play in patients' experience of pain and in estimations of risk for developing analgesic dependence

MMPI supplementary scales	Physician's judgment	
	Psychosocial factors in pain experience	Risk of analgesic dependence
Depression (n=64)	0,340**	0,194
Anxiety (n=65)	0,313*	0,1122
Health Concerns (n=69)	0,396**	0,025*
Addiction Potential (n=62)	0,054	0,165

\*\*  $p \leq 0,01$ , \*  $p \leq 0,05$

amount of the variance in this regard at the 5% level of significance. Depression [13,26% (F= 8,61;  $f^2= 0,18$ )] was the only predictor variable found to significantly (1% level) account for any of the variance with regard to physicians' assessments as to the role that psychosocial factors played in patients' pain experience.

### Discussion

Physicians do appear to take cognisance of psychosocial variables when making estimations with regard to pain patients' functional abilities and quality of life. However, the results suggest that such consideration of extra-physiological or extra-mechanical factors is limited with regard to the domains of functioning they are perceived to affect, as well as with regard to the variety of psychosocial variables judged to be pertinent in making projections on patient functionality and quality of life. More specifically, the current study suggests that psychosocial variables most strongly influence physician decision-making with regard to patients' estimated satisfaction with life, with a significant but weaker influence on judgments regarding their level of occupational functioning and their projected risk for becoming dependent upon analgesic medication. These findings are not surprising in that, with the exception of risk for analgesic dependence, physicians could have been strongly guided by patient reports of their subjective emotional states in making such predictions. Moreover, it could be speculated that patients who were more inclined to create the impression of being emotionally distraught about their pain would be more likely to be viewed as engaging in substance dependence or other escapist coping strategies.

Physicians appear to have identified patients reporting higher levels of daily activity and favourable support networks as being functionally less disabled. Here greater involvement in household and gardening chores, along with lower levels of pain-related interference and higher levels of familial support significantly predicted positive assessments of occupational functionality. This would appear to be logical in that higher levels of domestic activity could have been taken to be indicative of patients' increased occupational capabilities. Moreover, the less inclined patients would be to report significant pain-related limitation in various areas, the more inclined physicians may have been to consider the

specific patient capable of competing effectively on the labour market.

Higher levels of general activity both domestically and away from home were predictive of judgements of greater satisfaction with life. Lower levels of pain-related interference in the patients' lives also predicted higher physician ratings with regard to patients' satisfaction with life. The extent to which physicians estimated patients to be at risk of becoming dependent upon analgesic medication also appears to have been largely predicted by reported elevations in pain intensity, increased frequency of negative reactions from significant others with regard to the patient's pain and lower levels of perceived social support on the part of the patient. Once again the relationship between subjectively reported psychosocial experiences and judgments of disability, addiction potential and satisfaction with life appear to be logical. However, it should be noted that objective evidence of physical activity, such as activities around the home or free movement in the community, and low levels of limitation in daily activity appear to be the best predictors of physician judgements of satisfaction with life. Conversely, more subjective experiences with regard to pain intensity and interpersonal relationships account more for predictions of ineffective coping via substance dependence. This tends to suggest that reports of high levels of physical activity positively influence physician assessments of occupational functionality, while more subjective experiences tend to be predictive of poor adjustment and disability. This could be due to a diagnostic/predictive bias with regard to physical versus emotional difficulties.

Findings with regard to psychopathology suggest that elevated levels of depression, anxiety and increased health concerns were predictive of physicians' assessments of increased risk for analgesic dependence. However, only patient reports of elevated depression were predictive of physicians being of the opinion that psychosocial factors significantly influenced the patients' experience of pain. This appears contradictory to the available literature which rates anxiety as likely to influence a patient's pain experience as depression.<sup>4,6</sup> The tendency for subjective psychological factors to be more predictive of negative outcomes is also once again apparent.

It would appear that patient reported psychosocial variables are not particularly strong predictors of physician judgements with regard to patient functionality. This tends to contradict studies that suggest that psychosocial variables could be considered to be at least equal to physical or mechanical variables in determining future adjustment amongst chronic pain patients.<sup>4,8,12</sup> In cases where these variables do seem to predict functional estimates, they are limited to relatively obviously verifiable indications of physical activity. Moreover, lower rates of pain-related interference, poor social support and higher pain intensity appear to be predictive of negative physician judgments with regard to functional ability. The presence of psychopathology seems to predict poor pain-related adjustment and functioning. It should be noted that psychosocial variables commonly thought to facilitate adjustment such as good social support and low affective

distress are not predictive of positive functional judgements. This suggests a pathology-focussed approach to assessing patient functionality and an apparent disregard for effective psychosocial functioning as a positive prognostic indicator. This is further supported by the fact that perceptions of psychiatric illness appear to be better predictors of physician judgements of poor functionality than psychosocial variables per se.

A limitation of the current study is that the sample was drawn from a specific clinic, as were the physician ratings. Consequently, these findings cannot be confidently generalised beyond their specific context. Furthermore, physicians were required to express their opinions only with regard to patient adjustment and functionality. This may have restricted the physicians' range of assessment. Moreover, this methodology may not have provided insight into the full range of "non-medical" variables that predict physician assessments of functionality and life satisfaction. It may be beneficial for future research on this topic to be focussed on the process of physician decision-making independent of such restrictive methodology.

## Conclusion

Psychosocial variables appear to have limited predictive value with regard to physician judgements of patient functionality. Where psychosocial variables are predictive of physician assessments, they tend to be related to daily physical functioning, satisfaction with life and the potential for analgesic dependence.

## Acknowledgement

The authors would like to thank the nursing staff of the Universitas Hospital Pain Control Unit, particularly Sr. Van den Berg, as well as the Anaesthesiology registrars, for their assistance in collecting the data for this study.

SAJAA

## References

- Picavet HS, Schouten JS. Musculoskeletal pain in the Netherlands: prevalences, consequences and risk groups, the DMC(3)-study. *Pain* 2003; 102(1-2): 167-178.
- Gheldof ELM, Vinck J, Vlaeyen JWS, Hidding A, Crombez G. The differential role of pain, work characteristics and pain-related fear in explaining back pain and sick leave in occupational settings. *Pain* 2005; 113:71-81.
- Turk DC, Okifuji A. Psychosocial factors in chronic pain: Evolution and revolution. *Journal of Consulting and Clinical Psychology* 2002; 70(3):678-690.
- Turk DC. Biopsychosocial perspectives on chronic pain. In: Gatchel RJ, Turk DC, eds, *Psychological approaches to pain management: A practitioner's handbook*. New York: Guilford Press; 1996:3-32.
- Gatchel RJ, Polatin PB, Mayer TG. The dominant role of psychosocial risk factors in the development of chronic low back pain disability. *Spine* 1995; 20(24):2702-2709.
- McWilliams LA, Goodwin RD, Cox BJ. Mood and anxiety disorders associated with chronic pain: an examination of a nationally representative sample. *Pain* 2003; 106:127-133.
- Banks SM, Kerns RD. Explaining high rates of depression in chronic pain: A diathesis-stress framework. *Psychological Bulletin* 1996; 199(1):95-110.
- Lewandowski W. Psychological factors in chronic pain: A worthwhile undertaking for nursing? *Archives of Psychiatric Nursing* 2004; 18(3): 97-105.
- Robinson ME, Riley JL. The role of emotion in pain. In: Gatchel RJ, Turk DC, eds, *Psychosocial factors in pain: Critical perspectives*. New York: Guilford Press; 1999:5673.
- Sullivan MJL, Lynch ME, Clark AJ. Dimensions of catastrophic thinking associated with pain experience and disability with neuropathic pain conditions. *Pain* 2005; 113(3):310-315.
- Fritz J, George S, Delitto A. The role of fear-avoidance beliefs in acute low back pain: relationships with current and future disability and work status. *Pain* 2001; 94:7-15.
- Peters ML, Vlaeyen JWS, Weber EJW. The joint contribution of physical pathology, pain-related fear and catastrophizing to chronic back pain disability. *Pain* 2005; 113:45-50.
- Dysvik E, Natvig GK, Eikeland O-J, Linstrom TC. Coping with chronic pain. *International Journal of Nursing Studies* 2005; 42:297-305.
- Haythornwaite JA, Clark MR, Pappagallo M, Raja, SN. Pain coping strategies play a role in persistence of pain in post-herpetic neuralgia. *Pain* 2003; 106:453-460.
- Gatchel RJ. Perspectives on pain: A historical overview. In: Gatchel RJ, Turk DC, eds, *Psychosocial factors in pain: Critical perspectives*. New York: Guilford Press; 1999:3-17.
- Kerns RD, Turk DC, Rudy TE. The West Haven-Yale Multidimensional Pain Inventory (WHYMPI). *Pain* 1985; 23:345-356.
- Greene RL. The MMPI-2: An interpretive manual. Needham Heights: Allyn & Bacon; 2003.
- Walker SP, Odendaal CL, Esterhuysen KGF. Biographical, pain and psychosocial data for a South African sample of chronic pain patients. *Southern African Journal of Anaesthesia & Analgesia* 2006; 12(2):62-66.