

Does professional context influence the assessment of pain - do physicians, physiotherapists, and patients agree?

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Mismatches in pain assessments of patients and their health care providers are well documented. The correct assessment of pain is the basis for adequate therapy. Hence, the concordance regarding pain intensity, duration of pain, localization of pain, and pain characteristics between low back pain patients ($N = 28$) and their health care providers (physician and physiotherapist) was investigated. Patients, physicians, and physiotherapists agreed quite well regarding current pain, whereas physiotherapists overestimated the highest level of tolerable pain and physicians ignored the emotional component of pain. Results indicate that differentiated pain assessment including several aspects of pain is required in order to prevent mismatches between patients and their therapists.

Key words: pain, pain assessment, low back pain, health care providers

Traditionally, pain was considered an unpleasant side effect of illnesses and understood to merely indicate a physical illness or injury (Flor & Hermann, 1999). The International Association for the Study of Pain (IASP) defines pain as “unpleasant sensual and emotional experience tied in with actual or potential damage of tissue or is described in terms of such damages” (IASP, 1986; Merskey, 2007). Since this definition, pains ceased to be reduced to sensorial components and upgraded to constitute a considerable emotional component as well. In ICD 10 the diagnosis F 45.41, “Chronic pain disorder with somatic and psychological factors” affirms this re-evaluation (cf. Rief et al., 2009).

Chronic pain requires differentiation from acute pain in as much as chronic pain is pain without apparent biological value that has been persistent beyond the normal tissue heal-

ing time. Pains are considered “chronic” if they – according to a relatively problematic convention – show a minimum duration of three to six months (Turk & Okifuji, 2001). Acute pains serve a signal- or protection-function, therefore only persevering until the pain-prompting disturbance has been eliminated and thus protecting the body from extreme duress, whereas chronic pains have ceased their function as a warning signal, thus having evolved into a symptom themselves (Basler, 1999).

Modern diagnostics acknowledge a multidimensional concept of chronification, considering physical, psychological, and social markers. This approach includes the number of treatment attempts, the various psychological and social impairments, and their consequences influencing working life (cf. Basler, 1999; Raspe, 1993). However, this concept is not yet thoroughly embedded in clinical treatments.

Chronic malignant pain occurs in patients with cancer, HIV/AIDS, multiple sclerosis, end stage organ failure, advanced chronic obstructive pulmonary disease, etc. Non-malignant chronic pains are: visceral pain, neuropathic pain (post-amputation pain, diabetic neuropathy, post herpetic neuralgia etc.), and *chronic musculoskeletal pain* - spinal pain or low back pain, chronic degenerative arthritis, osteoarthritis, rheumatoid arthritis, myofascial and rheumatic pain, chronic headache, etc.

Since chronic malignant pains can cause considerable restrictions to patients, including disability and/or unemployment, the latter require the assistance of an inter-

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professional interdisciplinary network of doctors, nurses, psychologists, pharmacists, physiotherapists, socio- and psychotherapists (Frettlöh, 1999; Kröner-Herwig, 1996). This interdisciplinary treatment gains increasing importance in the face of growing numbers of patients suffering from chronic malignant pains, taking the close relation of quality of life and pain relief (Janig, Pipam, & Likar, 2000) and the importance of patient-orientation in medicine into account.

Low back pain

Low back pain is one of the most frequent health disturbances in western industrialized countries. According to the German back pain study, lifetime prevalence varies between 74% and 85%, the point-prevalence ranging from 32% and 49% (Raspe, 2012; in addition, cf. the review article by Walker, 2000). The majority of low back pain complaints are unspecific, being complained about four times as frequently as specific low back pain (associated with a concretely described illness). Most patients complaining about unspecific low back pain suffer from a complex medical problem including risks based upon a variety of sources (Raspe, 2012): loss of mobility, disturbances of social relations (Gulbrandsen, Madsen, Benth, & Laerum, 2010), function reduction, changes of mood, depression (Ahrens, Schiltewolf, & Wang, 2010), anxiety, somatization symptoms, weakness in ego functioning, poor drive satisfaction (Andersson, 1999), catastrophic imaginations, unreasonable pain-related behavior, and low quality of life (Ahrens et al., 2010).

Kröner-Herwig (1996) points to the fact that passive, protection-oriented therapies as well as the disregard of psychological and social aspects of pain origination contribute to chronification of back pains, also resulting in grave economic consequences. According to the Austrian Health Study more than a million Austrians interviewed reported to have suffered from considerable low back pains during the last twelve month period. Twenty seven percent of those complaining about pain in the area of the lumbar vertebral column during employment had been forced to take sick leave during the last 12 months. This adds up to 137,800 persons calling in sick for an average duration of 23.2 days each. Almost all (96.1%) of those reported to have suffered from these pains already longer than three months (Statistik Austria, 2007).

Diagnostics of pain

The most important basis for clinical therapy is the self-evaluation of intensity and quality of pain by the patients themselves. Additional sources of information to be analyzed in clinical-psychological diagnostics are the patterns and manner of appearance, affective reactions, pain

related behavior, and pain induced impediments. Since the treating doctor, nurse, or psychologist is generally forced to rely upon the self-evaluation by the patient, the mutual confidence in the "validity" of those estimates obtains special importance. Studies, though, confirm the frequent lack of trust in patients' self-evaluations as well as lack of scientific knowledge and erroneous notions about pain management on the part of the professional medical staff (Kada, Likar, Pipam, Miklautz, & Janig, 2007).

The pain intensity as experienced by the patient, usually is established by means of three methods, either the verbal rating scale (VRS), the numeric rating scale (NRS), or the visual analogue scale (VAS). They are used to enable the patient to grade the intensity of the pain experienced by him or her and this rating forms the basis for medication based pain therapy as recommended by the WHO (cf. Cleary, 2000). In addition, a variety of rating scales are available to aid in properly estimating the intensity of pain by patients complaining of low-back pain – but there is no acknowledged and common procedure concerning pain diagnostics that equally considers the patient's as well as medical perspectives, which is reliable, valid, and simply applicable in clinical therapy (Longo, Loppini, Denaro, Maffulli, & Denaro, 2010; Mannion, Balagué, Pellisé, & Cedraschi, 2007).

The example of pain intensity permits to demonstrate the differences between self-evaluation by the patient and external evaluation by the treating doctors and nurses. Since pain is a subjective experience, it has to be communicated to others. These varied evaluations can result in severe consequences if they are not thoroughly examined and clarified by trustful communication between patients and the medical staff involved. Generally only low or moderate agreement between patients and health care providers is reported: In most cases physicians underestimate the pain intensity experienced by their patients (Cleeland et al., 1994; Forrest, Hermann, & Andersen, 1999). Suarez-Almazor, Conner-Spady, Kendall, Russell, and Skeith (2001) have found a correlation of $r = .42$ between the pain evaluation by doctors and patients. A similar mild to moderate agreement and correlation is reported between patients' estimation of pain intensity and the estimation by nurses (Melotti et al. 2009). An almost identical lack of agreement exists between patients and physiotherapists (cf. Perreault & Dionne, 2005).

Marquié, Duarte, Mariné, Laque, and Sorum (2008) measured the pain experienced by patients upon entrance to and discharge from the emergency department: Doctors estimated headaches as well as abdominal pain and low back pain lower than their patients. Guru and Dubinsky (2000) also found that acute pain complained about by patients in an emergency department was evaluated at a remarkably lower level by physicians and nurses than by the patients themselves.

Chibnall and Tait (2004) found that health care providers rated pains less accurate, the more intense the pains were

from the patients' point of view (cf. Hovi and Lauri, 1999). In the study conducted by Nekolaichuk et al. (1999), physicians rated pain intensity experienced by cancer patients in advanced states lower than the patients themselves, whereas nurses rather agreed with the patients' evaluations. Extreme pains, reported by female patients, were diagnosed more exactly by physicians than those reported by male patients (Bertakis, Azari, & Callahan, 2004). Laugsand et al. (2010) reported that health care providers tend to underestimate pain intensity experienced by cancer patients, whereas best agreement was found with medium levels of pain.

A series of factors seemingly influences the evaluations of pain intensity by treating physicians and other therapists: With outpatients there is more agreement between physician and patient than is the case with inpatients. Patients' age, too, is of not-to-be-disregarded importance in the evaluation of pain intensity by nurses: the older the patient, the lower the compatibility of the nurses' vs. the patients' judgment (Bergh & Sjöström, 1999). Experienced physicians evaluate pains at a lower level than younger ones, orthopaedic surgeons evaluate differently from general practitioners; in addition, the gender of physicians and patients influences the rating of pain intensity as well as the obvious cause of the pain. Additional factors are cultural differences in experienced and reported pains (Bogefeldt, Grunnesjö, Svärdsudd, & Blomberg, 2007; Marquié et al., 2003; Raspe, Matthis, Croft, O'Neill, & European Vertebral Osteoporosis Study Group, 2004). The quality of pain evaluation by physicians is also closely related to their practice style: A practice style emphasizing technical practice behaviors (including asking family information, performing physical examination, planning treatment...) or health behavior discussions (e.g., compliance with medical regimen, health education, nutrition) enables visibly improved pain diagnosis (Bertakis et al., 2004).

Whereas most studies report pain intensity to be underestimated by health care providers, contrary results can also be found. According to McMillan and Moody (2003), caregivers overestimate pain intensity in cancer patients. Though Duignan and Dunn (2008) found that nurses in general underestimated the severity of pain among patients cared for by them, they also found indications that they correctly evaluated or even over evaluated the pain suffered by their patients.

While pain intensity is obviously frequently judged too low to the disadvantage of the patient, pain therapy's success is often overrated. A study of estimates regarding pain therapy after treatment by acupuncture of patients with low back pain showed that 81% of the treating physicians gave false positive ratings, i.e., "just every fifth patient without pain relief was correctly classified by his physician" (Lungenhausen et al., 2005; cf. also Cedraschi et al., 1996; Choinière, Melzack, Girard, Rondeau, & Paquin, 1990). Pain evaluations are obviously influenced by a variety of factors. For an effective pain therapy though, a correct evaluation of

pain intensity and acceptance of the patients' self-evaluation are absolute requirements.

Goal of this study

In this study we examined to which extent the judgments concerning pain intensity by patients with unspecific low back pain compare to those voiced by their physicians and physiotherapists – considering that a lack of accordance in pain evaluation influences treatment quality negatively. To achieve this, the three groups' evaluations were assessed with respect to localization of pain, duration of pain, quality of pain as well as actual intensity of pain, average intensity of pain during the last four weeks, maximum intensity of pain during the last four weeks, and highest just endurable pain intensity during therapy and the estimates' agreement was calculated.

METHOD

In this study, back-pain patients were interviewed using the German Pain Questionnaire (Deutsche Schmerzgesellschaft, 2012; Nagel, Pflingsten, Lindena, & Nilges, 2012). Patients had to indicate on a body map scheme the area where they experience the most intense pains. The present, the average, the highest pain intensity of the last four weeks, and the highest just endurable pain intensity during therapy were indicated by a NRS (1-10). The quality of typical pains for recent periods was assessed by means of an especially created adjective list, on which the intensity of characteristics could be indicated on a three-point scale. The overall duration of pain was indicated by months and years. Similarly, using an identical instrument, the treating physician ($n = 1$) and physiotherapist ($n = 1$) were interviewed with respect to the various aspects of intensity, locations, and qualities of pain in their patients. Hence, for each patient we obtained pain self-assessment, pain assessment by his/her physician and pain assessment by the physiotherapist (i.e., dependent data sets). Therefore, ratings of patients, physicians, and physiotherapists were compared using repeated measurement ANOVAs and the Friedman test. Post hoc comparisons between groups were conducted applying paired t -tests (using a nominal significance level of $0.05 / 3 = 0.017$ to adjust for multiple comparisons). Levels of agreements were calculated using Pearson's correlation coefficient.

Patients interviewed for this study ($N = 28$) averaged 49.2 years of age ($SD = 12.1$), men were 47 and women 50.4 years old ($SD = 11.6$ and 12.6 , respectively). Females constituted 64% of the sample, 75% of patients were married, the others divorced, widowed, or single. Two thirds of the patients had two children, four of them had three children, the others one or no child.

RESULTS

On average, patients located their pains at 3.04 ($SD = 2.05$) locations on their body, the physician at 2.68 ($SD = 1.19$) locations, and physiotherapists at 2.41 ($SD = 1.42$) locations (see Figure 1). In approximately a quarter of the patients, the locations of pain were assessed concordantly with the patient's answer. The differences in pain locations by the physician, the physiotherapist, and the patients were not significant. The number of body regions affected by pains was underestimated by the physiotherapist in half of the cases, i.e., it was underestimated twice as often as it was overestimated. The physician overestimated the number of body regions affected by pain equally often as he underestimated them.

The duration of pain attacks as estimated by patients' self-reports and the estimates of the physiotherapist and the physicians do not differ significantly (Friedman $\chi^2(2) = 0.41$, $p = .814$), even though there was a tendency for the physiotherapist to estimate a shorter duration of pain attacks.

Patients estimated the current intensity of pain at an average of 5.33 ($SD = 2.27$) on the 10-point NRS, whereas the physiotherapists and the physician rated the average intensity at 5.59 and 5.04 respectively ($SD = 1.86$ and 1.75). No significant differences were observed for the current intensity of pain (see Figure 2, left panel). According to Pearson's correlation coefficient the estimates posted by the physiotherapist and physician correlated with those by patients at $r(24) = .64$, $p < .01$ and $r(25) = .63$, $p < .01$, respectively. The physiotherapist overestimated in about half of the cases and

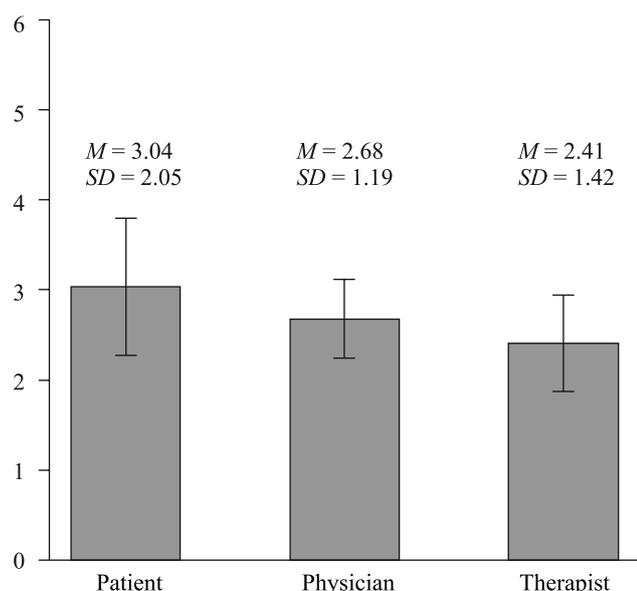


Figure 1. Number of low back pain localizations (+/- 95% CI) estimated by patients ($N = 28$), their physician and therapist.

underestimated in about one fourth of the cases, whereas the physician overestimated in about one third of the cases and in more than half of the cases underestimated the actual pain intensity experienced by the patient.

Patients ($M = 6.41$, $SD = 2.14$) reported higher average intensities of pain during the last four weeks than the physician ($M = 4.96$, $SD = 1.76$) and physiotherapist (5.00 , $SD = 1.58$; $F(2, 52) = 13.75$, $p < .001$, partial $\eta^2 = .346$; see Figure 2, right panel). Post hoc comparisons showed significant differences between patients and physicians ($t(27) = 5.41$, $p < .001$, Cohen's $d = 1.02$) and between patients and physiotherapists ($t(26) = 4.07$, $p < .001$, Cohen's $d = 0.78$). No significant differences were observed between physicians and physiotherapists. In more than two thirds of the cases, the physiotherapist underrated and in more than three quarters of the cases the physician underrated the average pain intensity the patients experienced for the last four weeks. The physician's judgments correlated with the one by the patients at Pearson's $r(26) = .71$, $p < .01$, and the judgments of the physiotherapist with that of the patients at $r(25) = .57$, $p < .01$.

Similar results were found for the evaluation of the highest pain intensities experienced by the patient during the last four weeks: More than two thirds of health care providers clearly underrated them. Patients reported higher pain ratings ($M = 7.93$, $SD = 1.82$) than the physician ($M = 6.76$, $SD = 1.38$) and physiotherapist ($M = 6.54$, $SD = 1.93$; $F(2, 52) = 9.92$, $p < .001$, partial $\eta^2 = .276$). Post hoc paired t -tests showed significant differences between patients and physicians ($t(27) = 3.72$, $p = .001$, Cohen's $d = 0.70$) and between patients and physiotherapists ($t(26) = 3.51$, $p = .002$, Cohen's $d = 0.68$). Again, no significant differences were observed between physicians and physiotherapists. The Pearson correlation between the evaluations by physician and physiotherapist with the patient regarding intensity of pain during the last four weeks is low at only $r(26) = .48$, $p = .01$, and $r(25) = .40$, $p < .05$, respectively.

Equally low was the Pearson correlation between patient and health care providers regarding the tolerable intensity of pain within therapy, amounting to $r(25) = .57$, $p < .01$, for the physician and $r(24) = .54$, $p < .01$, for the physiotherapist. On average, patients reported that the highest pain intensity which they could endure treatment would be 3.17 ($SD = 2.01$) on the 10-point NRS, physicians were close at 3.13 ($SD = 1.53$), and therapists' average was 3.76 ($SD = 1.58$). No significant differences were observed for patients', physician's, and physiotherapist's ratings on tolerable pain judgements. From the physicians' viewpoint, the highest endurable intensity of pain during therapy was underrated more frequently than by physiotherapists.

The characterization of the quality of pain is interesting: Physicians, physiotherapists, and patients agreed that pain is experienced as stabbing and dragging. Patients as well as physician and therapist equally rated pain only margin-

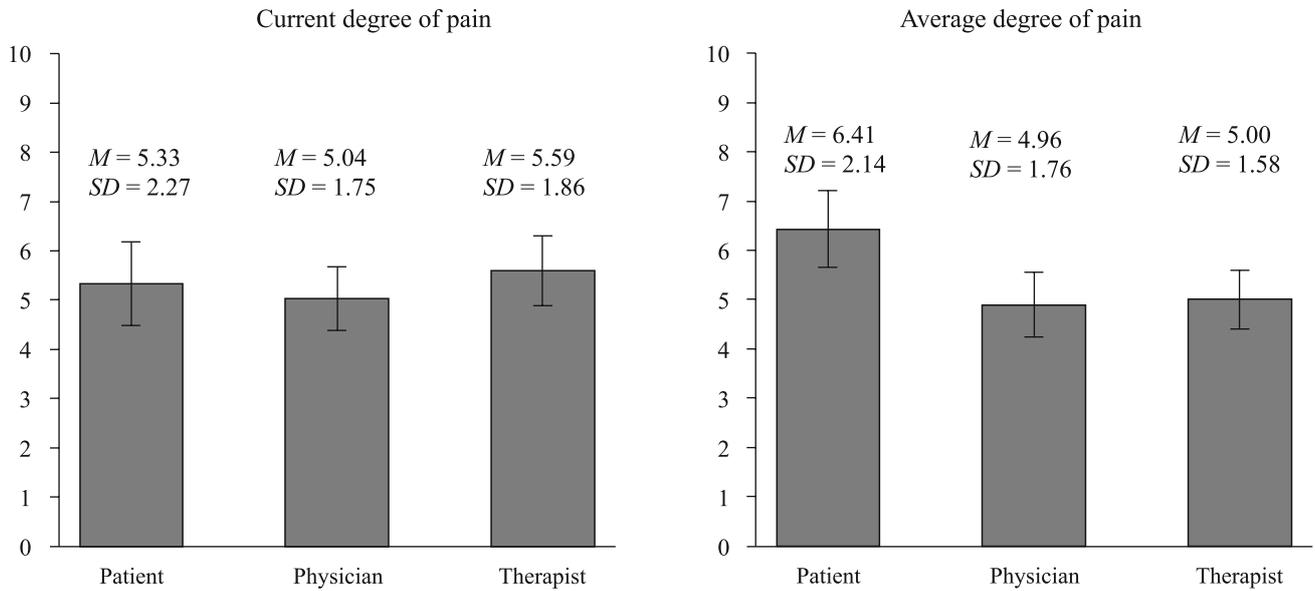


Figure 2. Current and average degree of low back pain (+/- 95% CI) estimated by patients (N = 28), their physician and therapist.

ally as hollow, throbbing, hot, and to a medium extent as pressing. Marked differences became apparent with other pain specifics, however: The physiotherapist rated, similar to patients, but significantly higher than the physician, pains as pulsatile and even stronger as burning. The differences in evaluations of the affective components of pain are especially pronounced: Here the ratings by the physiotherapist and the patients largely agreed. In contrast, the physician denied that the components of pain could be experienced as horrible, awful, or terrible. Overall, compared to patients

(M = 0.95, SD = 0.93) and physiotherapists (M = 0.97, SD = 0.81), physicians reported lowest pain ratings for the affective components (M = 0.29, SD = 0.69, F(2, 36) = 6.19, p = .005; partial η² = .256, see Figure 3). Here, post hoc comparisons revealed significant differences between patients and physicians (t(19) = 3.82, p = .001, Cohen's d = 0.85) and between physicians and physiotherapists (t(22) = 3.05, p = .006, Cohen's d = 0.64). Generally speaking, the congruence between patients, physicians, and physiotherapists is low for all aspects of pain.

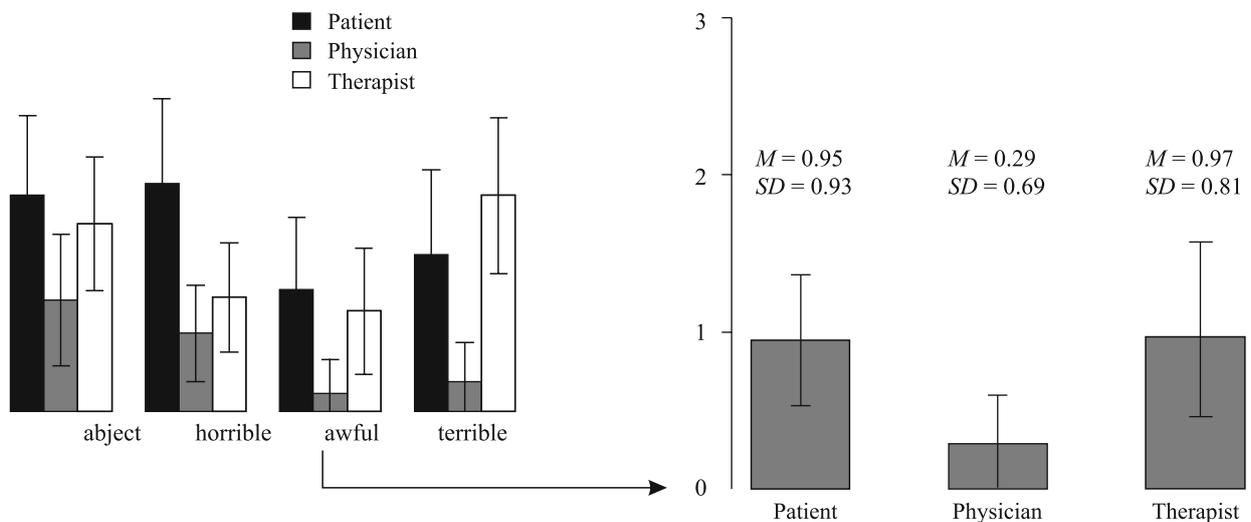


Figure 3. Affective subscale of quality of low back pain (+/- 95% CI) estimated by patients (N = 28), their physician and therapist.

DISCUSSION

As remarked in the introduction, agreement in pain evaluation by patient and therapists has a positive effect on diagnosis and treatment success of back pain problems (Cedraschi et al., 1996; Perreault & Dionne, 2005). In general, in clinical practice and scientific studies regarding the diagnosis of pain intensity, patients are questioned about their current pain status. Similar to previous studies, the present study with patients with low back pain found only minimal to medium accordance in estimates of intensity and quality of pain between patients and their health care providers. We were able to demonstrate, however, that a differentiated assessment of pain intensity – namely current pain, average and highest experienced pain during the last four weeks, but also the highest tolerable pain intensity – supplied varied results in evaluations by the physician, the physiotherapist, and the patients and therefore is of high diagnostic importance.

Whereas the evaluation of actual pain intensity showed no significant difference between patients and their health care providers, it became obvious that physiotherapists tended to overrate the pain intensity experienced by the patient, whereas the physicians showed the tendency to under-rate. The correlation of acute pain intensity as estimated by the physiotherapist and by the patients had medium size, similar to the one found by Perreault and Dionne (2005). These authors reported an intraclass correlation coefficient between physiotherapists' evaluation and patients with un-specific low back pain of $r = .55$.

Different results were obtained with respect to evaluations of average pain intensity experienced by patients during the previous four weeks: the physician and the physiotherapist underestimated this considerably, whereby the correlation of physicians' evaluations with the one by the patients was considerably higher than the one between evaluations by the physiotherapist and the ones by the patients. Quite clearly, too, the physician and the physiotherapist underrated the highest experienced pain intensity by the patients during the last four weeks. Concerning the question of pain intensity, which the patients considered being able or willing to tolerate during therapy, physicians and physiotherapists on the one hand, and patients on the other, didn't vary significantly. However, the physicians' evaluations were a bit more patient friendly than the ones by the physiotherapists, who more frequently assumed a higher pain tolerance.

The analysis of the qualitative aspects of pains also yielded an interesting result: In virtually all the items describing the qualities of pain, the physicians' evaluations remained below the ones reported by the physiotherapist and by the patients, i.e., the existence of affective components in the pains experienced by the patients tended to be denied. This becomes especially obvious with aggressive-affective components: whereas patients, and the physiotherapist too, non-hesitatingly described pains as horrible, awful, and terrible, these qualities had no bearing in the physician's judgment.

There were nearly no differences with regard to the average number of hurting body areas by patients and by their physiotherapist or physician. However, the number of pain locations was estimated correctly for only a quarter of the patients, with the physiotherapist underestimating this number more frequently than the physician did. The overall duration of pain was evaluated very similarly by patients and their health care providers, too.

A correct evaluation of pains, of their intensity as well as of their qualitative aspects, is a basic requirement for successful pain therapy (Breivik et al., 2008). In accordance with the results of our study, we advocate differentiated pain diagnostics including quantitative and qualitative aspects, in order to reduce possible mismatches between patients and their health care providers. Estimates pertaining to the various categories offer the possibility for a more differentiated dialogue between health providers and patients and enable them to eliminate possible misunderstandings and establish mutual trust. In this context Allegretti, Borkan, Reis, and Griffiths (2010) proposed paired interviews, to highlight shared themes and affirmations as well as possible mismatch and significant discordance, which can subsequently be discussed. For clinical treatments the application of such interviews would be suitable to help avoid communication deficits as well as differences arising from the context of variable interests of patients and health care providers in order to ascertain that a therapy based upon common decision by all involved will be achieved.

Especially with unspecified chronic pains, judgment of health care providers can often be blurred by various influences – situation related factors, patient specifics, or such on part of the health care providers – often at the expense of adequate treatment. It seems important to avoid such judgemental errors regarding pain evaluation by establishing rational decision making (cf. Tait, Chibnall, & Kalauokalani, 2009). Such judgmental discrepancies between health care providers and patients can be reduced or avoided altogether by means of intense communication between all involved. Especially among back pain patients, it has been shown that they are in need of recognition of their situation, of open communication, and of extensive talks and that they require information about future treatment paths in order to ensure that therapy will be successful (Farin, Gramm, & Schmidt, 2012). Shared decision making and also evidence based practice guidelines will have a chance to be effective and successful, only if sufficient agreement can be achieved at the onset of the envisioned therapeutic process, namely with respect to a correct diagnosis.

REFERENCES

- Ahrens, C., Schiltenswolf, M., & Wang, H. (2010). Gesundheitsbezogene Lebensqualität (SF-36) bei chronischen Rückenschmerzen und gleichzeitiger Depression

- [Health-related quality of life (SF-36) in chronic low back pain and comorbid depression]. *Schmerz*, 24(3), 251-256.
- Allegretti, A., Borkan, J., Reis, S., & Griffiths, F. (2010). Paired interviews of shared experiences around chronic low back pain: Classic mismatch between patients and their doctors. *Family Practice*, 27, 676-683.
- Andersson, G. B. (1999). Epidemiological features of chronic low-back pain. *Lancet*, 14(354), 581-585.
- Basler, H. D. (1999). Chronischer Rückenschmerz. Vorbeugung und Behandlung durch psychologische Methoden [Chronic low back pain. Prevention and treatment by psychological methods]. In Hoefert, H.-W. & Kröner-Herwig, B. (Eds.), *Schmerzbehandlung. Psychologische und medikamentöse Interventionen*. [Pain management. Psychological and medical interventions] (pp. 62-75). München-Basel: Ernst Reinhardt.
- Bergh, I., & Sjöström, B. (1999). A comparative study of nurses' and elderly patients' ratings of pain and pain tolerance. *Journal of Gerontological Nursing*, 25(5), 30-36.
- Bertakis, K. D., Azari, R., & Callahan, E. J. (2004). Patient pain in primary care: Factors that influence physicians' diagnosis. *Annals of Family Medicine*, 2(3), 224-230.
- Bogefeldt, J., Grunnesjö, M., Svärdsudd, K., & Blomberg, S. (2007). Diagnostic differences between general practitioners and orthopaedic surgeons in low back pain patients. *Upsala Journal of Medical Sciences*, 112(2), 199-212.
- Breivik, H., Borchgrevink, P. C., Allen, S. M., Rosseland, L. A., Romundstad, L., Hals, E. K., Kvarstein, G., & Stubhaug, A. (2008). Assessment of pain. *British Journal of Anaesthesia*, 101(1), 17-24.
- Cedraschi, C., Robert, J., Perrin, E., Fischer, W., Goerg, D., & Vischer, T. L. (1996). The role of congruence between patient and therapist in chronic low back pain patients. *Journal of Manipulative Physiology Therapy*, 19(4), 244-249.
- Chibnall, J. T., & Tait, R. C. (2004). Comment on Marquie L. et al. *Pain*, 107(1-2), 192-193.
- Choinière, M., Melzack, R., Girard, N., Rondeau, J., & Paquin, M. J. (1990). Comparisons between patients' and nurses' assessment of pain and medication efficacy in severe burn injuries. *Pain*, 40(2), 143-152.
- Cleeland, C. S., Gonin, R., Hatfield, A. K., Edmondson, J. H., Blum, R. H., Stewart, J. A., & Pandya, K. J. (1994). Pain and its treatment in outpatients with metastatic cancer. *New England Journal of Medicine*, 3(330), 592-596.
- Cleary, J. (2000). Cancer Pain Management. *Cancer Control*, 7(2), 120-131.
- Deutsche Schmerzgesellschaft (2012). *Deutscher Schmerz-Fragebogen* [German Pain Questionnaire]. Retrieved from http://www.dgss.org/fileadmin/pdf/12_DSf_Anamnese_Muster_2012.2.pdf
- Duignan, M., & Dunn, V. (2008). Congruence of pain assessment between nurses and emergency department patients: A replication. *International Emergency Nursing*, 16(1), 23-28.
- Farin, E., Gramm, L., & Schmidt, E. (2012). Taking into account patients' communication preferences: Instrument development and results in chronic back pain patients. *Patient Education and Counseling*, 86(1), 41-48.
- Flor, H., & Hermann, C. (1999). Schmerz [Pain]. In Flor, H., Birbaumer, N., & Hahlweg, K. (Eds.), *Enzyklopädie der Psychologie, Band D, 3: Grundlagen der Verhaltensmedizin* [Encyclopaedia of Psychology, Volume D, 3: Basics of behavioral health] (pp. 249-330). Göttingen: Hogrefe.
- Forrest, M., Hermann, G., & Andersen, B. (1989). Assessment of pain: A comparison between patients and doctors. *Acta Anaesthesiologica Scandinavica*, 33, 255-256.
- Frettlöh, J. (1999). Psychologische Interventionen bei chronischem Schmerz – ein Fallbericht [Psychological interventions for chronic pain - A case report]. In Hoefert, H.-W. & Kröner-Herwig, B. (Eds.), *Schmerzbehandlung. Psychologische und medikamentöse Interventionen*. [Pain management. Psychological and medicinal interventions] (pp. 192-202). München-Basel: Ernst Reinhardt.
- Gulbrandsen, P., Madsen, H. B., Benth, J. S., & Laerum, E. (2010). Health care providers communicate less well with patients with chronic low back pain - a study of encounters at a back pain clinic in Denmark. *Pain*, 150(3), 458-461.
- Guru, V., & Dubinsky, I. (2000). The patient vs. caregiver perception of acute pain in the emergency department. *Journal of Emergency Medicine*, 18(1), 7-12.
- Herrmann, C., & Flor, H. (2008). Schmerzmessung und klinisch-psychologische Schmerzdiagnostik [Pain measurement and clinical psychological pain diagnosis]. In Röhrle, B., Caspar, F., & Schlottke, P. (Eds.), *Lehrbuch der klinisch-psychologischen Diagnostik* [Textbook of clinical-psychological diagnostics] (pp. 634-652). Stuttgart: Kohlhammer.
- Hovi, S. L., & Lauri, S. (1999). Patients' and nurses' assessment of cancer pain. *European Journal of Cancer Care*, 8, 213-219.
- International Association for the Study of Pain (1986). Classification of chronic pain. Descriptions of chronic pain syndromes and definitions of pain terms. Prepared by the Subcommittee on Taxonomy (Merskey, H.). *Pain Supplement*, 3, S1-226.
- Janig, H., Pipam, W., & Likar, R. (2000). Quality of life in cancer patients. *Review of Psychology*, 7(1-2), 37-44.

- Kada, O., Likar, R., Pipam, W., Miklautz, M., & Janig, H. (2007). Tumorschmerz aus Sicht der Pflege – Befunde aus Österreich [Cancer pain from the nurses' perspective - findings from Austria]. *Pflegezeitschrift*, 60(11), 626-630.
- Kröner-Herwig, B. (1996). Die Behandlung chronischer Schmerzsyndrome: Plädoyer für einen integrativen Therapieansatz [Treatment of chronic pain syndroms: Plea for an integrative therapeutic approach]. In Basler, H.-D. et al. (Eds.), *Psychologische Schmerztherapie: Grundlagen, Krankheitsbilder, Behandlung* [Psychological pain therapy: Basics, diseases, treatment] (pp. 519-532). Berlin: Springer.
- Laugsand, E., Sprangers, M. A. G., Bjordal, K., Skorpén, F., Kaasa, S., & Klepstad, P. (2010). Health care providers underestimate symptom intensities of cancer patients: A multicenter European study. *Health and Quality of Life Outcomes*, 8, 104.
- Longo, U. G., Loppini, M., Denaro, L., Maffulli, N., & Denaro, V. (2010). Rating scales for low back pain. *British Medical Bulletin*, 94(1), 81-144.
- Lungenhausen, M., Endres, H. G., Kukuk, P., Schaub, C., Maier, C., & Zenz, M. (2005). Überschätzen Ärzte die Effekte der Akupunkturbehandlung? [Do physicians overestimate effects of acupuncture treatment?]. *Schmerz*, 19(6), 506-512.
- Mannion, A. F., Balagué, F., Pellisé, F., & Cedraschi, C. (2007). Pain measurement in patients with low back pain. *Nature Clinical Practice Rheumatology*, 3(11), 610-618.
- Marquié, L., Duarte, L. R., Mariné, C., Laque, D., & Sorum, P. C. (2008). How patients and physicians rate patients' pain in a French emergency department using a verbally administered rating scale and a visual analog scale. *Acute Pain*, 10(1), 31-37.
- Marquié, L., Raufaste, E., Laque, D., Mariné, C., Ecoiffier, M., & Sorum, P. (2003). Pain rating by patients and physicians: Evidence of systematic pain miscalibration. *Pain*, 102(3), 289-296.
- McMillan, S. C., & Moody, L. E. (2003). Hospice patient and caregiver. Congruence in reporting patients' symptom intensity. *Cancer Nursing*, 26(2), 113-118.
- Melotti, R. M., Dekel, B. G. S., Carosi, F., Ricchi, E., Chiari, P., D'Andrea, R., & Di Nino, G.-F. (2009). Categories of congruence between inpatient self-reported pain and nurses evaluation. *European Journal of Pain*, 13, 992-1000.
- Merskey, H. (2007). The taxonomy of pain. *Medical Clinics of North America*, 91(1), 13-20.
- Nagel, B., Pflingsten, M., Lindena, G., & Nilges, P. (2012). *Deutscher Schmerz-Fragebogen - Handbuch* [German Pain Questionnaire - Manual]. Retrieved from http://www.dgss.org/fileadmin/pdf/12_DSF_Manual_2012.2.pdf
- Nekolaichuk, C. L., Bruera, E., Spachynski, K., MacEachern, T., Hanson, J., & Maguire, T. O. (1999). A comparison of patient and proxy symptom assessments in advanced cancer patients. *Palliative Medicine*, 13(4), 311-323.
- Perreault, K., & Dionne, C. E. (2005). Patient-physiotherapist agreement in low back pain. *The Journal of Pain*, 6(12), 817-828.
- Raspe, H. (1993). Deskriptive Schmerzepidemiologie [Descriptive epidemiology of pain]. In Egle, U. T. & Hofmann, S. O. (Eds.), *Der Schmerzranke* [The pain patients] (pp. 69-77). Stuttgart: Enke.
- Raspe, H. (2012). *Rückenschmerzen. Gesundheitsberichterstattung des Bundes* [Low back pain. Federal health report]. Heft 53. Berlin: Robert Koch-Institut.
- Raspe, H., Matthis, C., Croft, P., O'Neill, T., & European vertebral Osteoporosis Study Group (2004). Variation in back pain between countries: The example of Britain and Germany. *Spine*, 29(9), 1017-1021.
- Rief, W., Treede, R.-D., Schweiger, U., Henningsen, P., Rüdell, H., & Nilges, P. (2009). Neue Schmerzdiagnose in der deutschen ICD-10-Version [New pain diagnosis in the German version of ICD 10]. *Der Nervenarzt*, 80, 340-342.
- Statistik Austria (2007). *Österreichische Gesundheitsbefragung 2006/07* [Austrian Health Survey]. Wien: Author.
- Suarez-Almazor, M. E., Conner-Spady, B., Kendall, C. J., Russell, A. S., & Skeith, K. (2001). Lack of congruence in the ratings of patients' health status by patients and their physicians. *Medical Decision Making*, 21(2), 113-121.
- Tait, R. C., Chibnall, J. T., & Kalauokalani, D. (2009). Provider judgments of patients in pain: Seeking symptom certainty. *Pain Medicine*, 10(1), 11-34.
- Turk, D. C., & Okifuji, A. (2001). Pain terms and taxonomies. In Loeser, J. D., Butler, S. H., Chapman, C. R., & Turk, D. C., (Eds.), *Bonica's management of pain* (3 ed., pp. 18-25). Philadelphia: Lippincott Williams & Wilkins.
- Walker, B. F. (2000). The prevalence of low back pain: A systematic review of the literature from 1966 to 1998. *Journal of Spinal Disorders*, 13(3), 205-217.