

Outcome Measures in Pain Medicine



Editorial Board's Message:

Outcome measures in pain medicine will be discussed in this newsletter from a perspective of Pain specialist and Occupational Therapist. The inadequate resource in managing pain patients, especially chronic pain patients are multifactorial. One of reasons is the difficulty to quantify the improvement after treatments. The improvement can be physical and functional which the latter usually being assessed in quality. Besides, the socio-economic impact of disability due to pain is often neglected and difficult to transfer into data to compete the limited medical expense. In this newsletter, various outcome measures will be introduced to guide our management in pain patients.

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References: 1. Finnerup NB, et al. Lancet Neurol 2015;162-73. 2. Attal N, et al. Eur J Neurol 2010;13(11)1113-1123. 3. Bril V, et al. Neurology 2011;76:1758-1765. 4. NICE. Neuropathic pain in adults: pharmacological management in non-specialist settings. 20 Nov 2013. Available at: www.nice.org.uk/guidance/cg173. 5. Dworkin RH, et al. Neurology 2003;60:1274-1283. 6. Lyrica (pregabalin) Prescribing Information. Pfizer Corporation Hong Kong Limited: version Jan 2015. 7. Saldana MT, et al. Rheumatol Int. 2010;30(8):1005-1015.

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Outcome Measures in Pain Medicine

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As defined by the International Association for the Study of Pain (IASP), pain is 'an unpleasant sensory or emotional experience associated with actual or potential tissue damage, or described in terms of such damage' Hence, pain is inherently a difficult outcome to measure due to its subjective and complex nature.

Why measure Pain outcome?

In the era of evidence based medicine, we need tools to evaluate and guide decisions in the best course of treatment for our pain patients.

This article aims to briefly discuss the common methods of outcome measures. Readers may refer to the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) for detailed recommendation on a core set of outcome measures. Outcome measures are grouped as univariable or multidimensional.

UNIVARIABLE MEASURES

Uni-dimensional scales measure pain as a single quality and a single outcome score. These methods are simple to use in the clinical setting.

Verbal Rating Scale

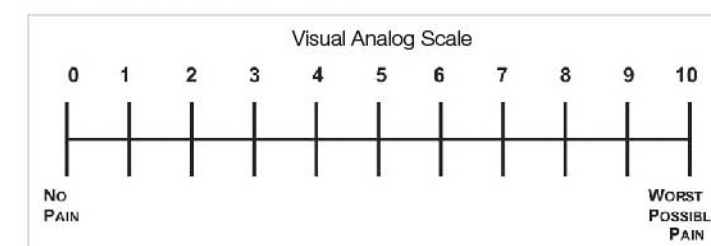
The Verbal Rating Scale (VRS) is a series of descriptors of pain of increasing intensity: none, mild, moderate and severe. It is easy to use, particularly in elderly who has difficulty describing pain as a number. However, the scale is categorical data.

Numerical Rating Scale

The Numerical Rating Scale (NRS) is most frequently used and can be administered verbally. It consists of a scale from 0 to 10 with 0 representing no pain and 10 worst pain. The NRS is recommended by IMMPACT as a core domain measure for chronic pain trials.

Visual Analog Scale

The Visual Analog Scale (VAS) is a 10-cm line with one end labelled as no pain and the other end worst pain. The patient can point to the line to indicate their pain level and the length of the line in millimeters represent the pain score. It has shown good evidence for responsiveness, validity, test-retest reliability and the resulting score is ratio data.



Patient Global Impression of Change

With the Patient Global Impression of Change (PGIC), patient is asked to rate their current status compared from a previous time point: 1. very much improved, 2. much improved, 3. minimally improved, 4. same, 5. minimally worse, 6. much worse and 7. very much worse. The scale is applicable to different treatments but lacks sensitivity. It is recommended by IMMPACT as a core domain measure for clinically important changes.

MULTIDIMENSIONAL MEASURES

Chronic pain often requires a comprehensive assessment which includes different dimensions of pain (quality, intensity, location), disability, emotional effect, and quality of life. These dimensions may better reflect the impact of pain on patient.

Brief Pain Inventory

The Brief Pain Inventory (BPI) was developed by the Pain Research Group of the World Health Organisation (WHO) collaborating Centre for Symptom Evaluation in Cancer Care to measure the sensory intensity of pain and the degree to which pain interferes with areas of life. The BPI consists of 17-item scale and typically takes under 15 min to complete. It also includes pain location, use of pain medication and response to treatments. It has been validated and shows good sensitivity to pharmacologic treatment effects. The interference scale has been validated as a measure of physical functioning and is recommended by IMMPACT as a core HRQoL measure.

McGill Pain Questionnaire

The McGill Pain Questionnaire (MPQ) was developed to specify the qualities of pain. Pain is scaled in three dimensions (sensory, affective and evaluative) and the questionnaire consists of 20 sets of words for each dimension, each dimension has two to six descriptors with varying intensity. It takes about 15 min to complete.

The Short-Form McGill Pain Questionnaire (SF-MPQ) was developed for research purposes and consists of 15 words from sensory and affective categories with a four-point scale, a VAS score pain intensity and overall pain VRS score.

West Haven-Yale Multidimensional Pain Inventory

West Haven-Yale Multidimensional Pain Inventory (WHYMPI) is a comprehensive pain outcome measure that contains 52 items and 12 subscales, including perceived interference of pain in a variety of areas, response from significant others, pain severity, perceived life control, affect and participation in various work, social and personal activities. Items are assessed on a 7-point scale. It can give useful information on pain-coping styles. It has been validated for diverse pain syndromes and is sensitive to treatment effects. It is recommended by IMMPACT as an alternative to BPI.

36-Item Short-Form Health Survey

The 36-Item Short-Form Health Survey (SF-36) measures function and quality of life. It consists of eight subscales including physical function, limitations due to physical problems, social function, pain, limitations due to emotional problems, general mental health, vitality and general health perceptions. It takes approximately 10 min to complete. The Treatment Outcome of Pain Survey (TOPS) is an extension of the SF-36 specifically designed for patients with chronic pain. TOPS actually derived many of its questions from other measures including SF-36, WHYMPI, BPI and FABQ. It consists of 120 items and there is a follow-up version that has 61 items. It addresses pain symptoms, function, perceived disability, objective disability, satisfaction with treatment, fear avoidance, coping, life control, limitations, demographics and substance abuse history. It has good validity and sensitivity to change but is limited by the length.



Objective Measures

Physiologic variables such as autonomic activity, skin conductance or heart rate have been suggested as surrogates for pain but they can also be affected by other non-pain related factors and medications. On the other hand, functional assessments such as range of motion, strength, timed 'Up and Go' test, grip strength have been used but these are also influenced by many other factors. Lastly, we must be mindful that statistical significance does not equate clinical significance. The cutoff method suggests a 30% reduction of pain as clinically significant. This corresponds to a change of 2 points on the NRS scale.

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Occupational Therapy Outcome Measures in Patients with Chronic Pain

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INTRODUCTION

Chronic pain is a complex, multi-dimensional experience that is usually associated with physical and psychosocial dysfunctions. In measuring chronic pain, it is difficult due to its multifaceted and subjective nature. Selecting appropriate pain measurement for monitoring and reviewing the effectiveness of treatment and management is critical and challenging.

Occupational Therapy Outcome Measures

Occupational therapists provide a holistic and collaborative view of the patients concerning with physical, psychosocial and environmental factors that contribute to pain, and the impact of pain on occupations/functions in daily life. In the busy clinical setting, pain measures must be simple, quick to administer and easily understood by the patients. Self-report measures provide the "gold standard" in assessing pain outcomes as they reflect the inherently subjective nature of pain, but they should be supplemented by objective measures and clinical assessment. The followings are the recommended outcome measures mostly used by occupational therapists in treating patients with chronic pain.

Physical measurement

Pain intensity is often used indicator to evaluate the efficacy of pain treatments. The commonly used pain scales are Numeric Rating Scales (NRS) and Visual Analog Scales (VAS).

Numeric Rating Scale (NRS)(Downie 1978)

NRS is consisted of scores from 0 to 10 with the far left being described as "no pain" and the far right described as "the worst pain imaginable". It can be administered in oral or written form. The NRS has been found to be valid and reliable, and to be sensitive to changes in acute, cancer and chronic pain. Another advantage of NRS is verbally administered without patient mobility requirement.

Visual Analog Scale (VAS)(Clarke & Spear 1964)

VAS is relied on a visual cue (a ten-centimeter line with "no pain" and "worst possible pain" on two ends) to evaluate pain intensity. The line can be displaced in horizontal and vertical presentations. Patients are asked to bisect the line at the point matching their "current", "usual", "best" or "worst" level of pain. VAS is found to be a valid and sensitive measure of pain intensity in patients with acute, cancer and chronic pain (Ogon et al 1996, Breivik et al 2000). There is some evidence indicates that a horizontal orientation may improve sensitivity of the measure (Ogon et al 1996, Breivik 1998, Jensen 1999).

By comparing these two scales, the advantage of the NRS is easier administration and scoring while the VAS is the greatest measurement precision.

Functional measurement

Life Functioning Assessment Inventory (L-FAI) (Leung 2013) (Hui et al 2013)

Life Functioning Assessment Inventory is a therapist-rated functioning measure originally designed for psychiatric patients, where it assesses four life domains including leisure, social relationship, home-making and work. The scale focuses on assessing the actual performance of individual across four life domains. The 10-level grade score (1-10) reflects a specific performance level of the patients. Good reliability and validity are found in research report (Hui et al 2013). Comparing with other pain measurement, L-FAI demonstrates a more objective and comprehensive manner in monitoring patients' functional performance.

Pain Self-Efficacy Questionnaire - Chinese version (PSEQ-HK) (Nicholas 1980) (Lim et al 2007)

Pain Self-Efficacy Questionnaire is a 10-item self-report measure to assess the self-efficacy beliefs and confidence to accomplish a range of activities (household chores, socializing, work and coping with pain without medication) despite chronic pain. It is applicable to all persisting pain presentations. A 7-point Likert scale ranging from 0 (not at all confident) to 6 (completely confident) is adopted with a higher total score indicating stronger self-efficacy beliefs. A Chinese (Hong Kong) version has been validated in patients with chronic pain. Good reliability and validity are reported (Lim et al, 2007).

Brief Pain Inventory - Chinese version (BPI-C) (Cleeland 1984) (Wang et al 1996)

Brief Pain Inventory is a self-administered questionnaire to assess how pain interferes with the patients' ability to function. Originally, it was designed for patients in cancer pain. Now it has been translated and validated in different languages; and adopted for clinical pain management. The BPI measures both the intensity of pain and the interference of pain in the patient's life. Using 0-10 numeric scales, patients rate their pain from 0 (no pain) to 10 (pain as bad as you can imagine) in four conditions - at the time of responding to the questionnaire, at worst, least and average over the previous week. These ratings can be combined to give a composite index of pain severity. Using numeric scales, with 0 (no interference) and 10 (interferes completely), the BPI assesses how pain interferes with general activity, mood, walking, work / housework, relations with others, sleep and enjoyment of life.

Psychosocial measurement

World Health Organization Five Well-Being Index (WHO-5) (Hong Kong Cantonese version) (Staehr Johansen 1998) (Kong 2016)

World Health Organization Five Well-Being Index has been developed to measure psychological well-being. It is a short and quick self-administrated tool on 5 questions, using a 6-point Likert scale graded from 0 (at no time) to 5 (all of the time) with a higher score indicating an increased sense of psychological well-being. High reliability, validity and sensitivity of the WHO-5 were demonstrated in different samples. It has been widely used in different settings and translated into many languages including a Cantonese version (<http://www.who-5.org>).

Subjective Happiness Scale (SHS) – Chinese version (Lyubomirsky & Lepper 1999) (Nan et al 2014)

SHS is a four-item scale of global subjective happiness, using a 7-point rating scale. Two items ask respondents to rate happiness on an absolute scale and relative to peers. The other two items ask respondents brief descriptions of happy and unhappy individuals; and the extent to which each characterization describes them. The SHS demonstrated good reliability and validity in several studies (Lyubomirsky 2001, Mattei & Schaefer 2004, Spagnoli et al 2012, Swami 2008).

Non-standardized measurement: collections of daily activities time allocation and artwork

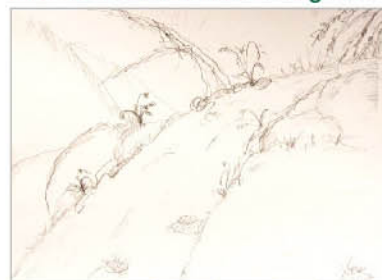
Respondents are asked to document time allocation in daily activities within 24 hours. The data can show how much the respondents allocated their time in home, work, leisure and social activities per day. How active, sedentary or balanced life they are experienced is also reflected in the daily log.

Kawa model (Iwanma 2006)

Kawa model is developed by a Japanese occupational therapist, which is based on the metaphor of nature (kawa = a river) that stands for the meanings of life. Rocks represent challenges / problems / temporary issues. Wood-drifts represent personal assets – strength & weakness while river bed represents environmental factors which affect river (life) flow. Using the Kawa model, respondents are engaged to draw their kawa diagrams i.e. to gain an understanding of respondents' metaphorical representations and their occupational circumstances, clarifying their meaning and aiming to facilitate their life flow. The respondents are asked to draw another metaphorical diagram of their river post intervention so as to identify any changes to their life flow. It is relatively easy to comprehend, remarkably simple, comprehensive and effective.

Pre-intervention Kawa diagram:

Post-intervention Kawa diagram:



CONCLUSIONS

Despite the difficulty in measuring chronic pain, there are a number of outcome measures available for clinical use i.e. from simple uni-dimensional to comprehensive multi-dimensional scales, from standardized to non-standardized pain measurements, from self-report questions to therapist-rating tools. Selecting appropriate, relevant and meaningful outcome measures in clinical trial for chronic pain can enhance treatment effectiveness and evaluation for chronic pain patients.

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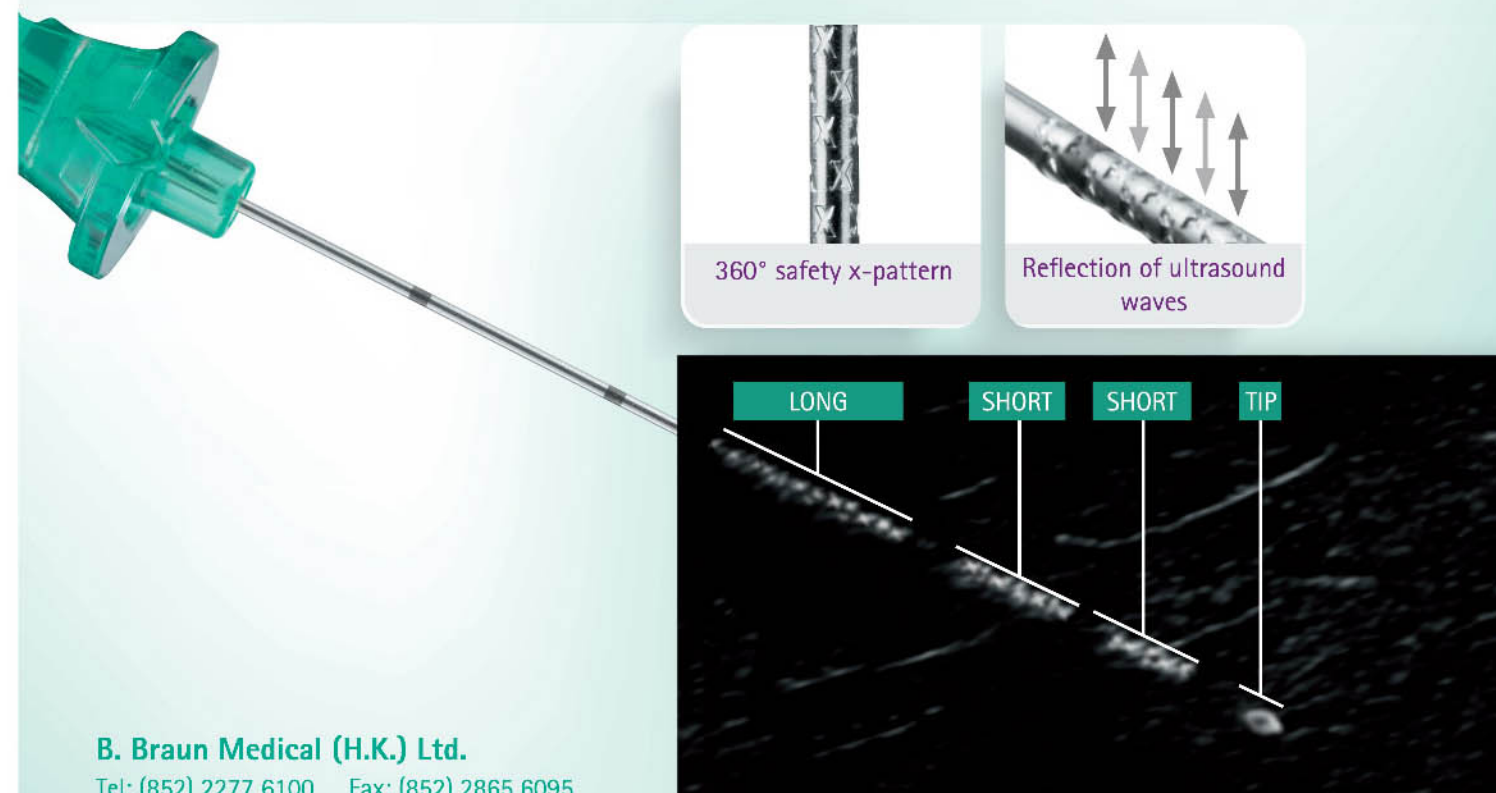
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Welcome of new member:

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2. Research Grant Invitation has been launched with the application deadline of 31 October 2018.

<http://www.hkpainsociety.org/forms/Research%20Grant%20Invitation%202018.pdf>



Events for reporting:

IASP Pain Congress 2018

Dr. Grace Hui



It is my honor to be able to represent Hong Kong Pain Society to attend the 17th World Congress on Pain at Boston (with pre and post conference workshops and symposiums spanning from 10-17 Sept 2018) The World Congress of Pain is the preeminent global meeting where multidisciplinary health professionals can share latest edge cutting pain scientific researches, and latest development in pain management and education. Although hurricane Florence was approaching US at that time, but it has not deterred the enthusiasm of thousands of delegates from more than 100 countries across multiple specialties gathering to have fruitful academic discussions in IASP Chapter Meetings, interactive workshops, refresher courses and Special Interest Group Meetings, etc. The event well received by all participants with devotion to improve pain management worldwide.

