Perspectives on the biopsychosocial model - part 1: Some issues that need to be accepted?

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Published: In Touch, The Journal of the Organisation of Chartered Physiotherapists in Private Practice. Autumn Issue 2001 No 97. Pages: 3-9

Introduction.

'Biopsychosocial' is one of the latest physiotherapy buzz words. Along with 'EBM'('evidence based practice), it is being perceived as threatening to our established and much loved methods and practices. This is unfortunate, because change and challenges in practice are some of the things that makes physiotherapy so exciting. Therapists and therapies need to evolve in parallel with new knowledge and rapidly changing values and culture. The position held here is that integrating the biopsychosocial model into our practice will actually empower some of our practices and methods if we interpret it and use it in the right way.

Good reasoning and good science examines the issues in detail, weighs up the pros and cons and then makes a well informed decision. As we all know, strong opinions are frequently voiced but are often based on inadequate facts laced with strong emotion – we are all guilty here. Interestingly, I am yet to meet anyone, who I would consider has listened to and understood the full facts about pain and the psychological and social impact and consequences of it – who does not feel comfortable with adopting the biopsychosocial model in their day to day practice. Indeed, most who do feel comfortable with it go out of their way to say that it is empowering but that they have a long way to go, have a great deal to learn and are very excited by it.

For the future of physiotherapy, I would plead with those of you who feel ambivalent or resistant to this model to withhold judgement. It is my opinion that physiotherapists working with patients in pain are best disposed out of all the professions supplementary to and complimentary to medicine to take this on, and that by doing so will be streets ahead of those whom we may see as competing for our clients. Rehabilitation is special to physiotherapy and perhaps needs to be restored its pride of place.

The 'Biopsychosocial model' is being recommended because of the now overwhelming evidence that shows that psychosocial factors, much more than physical factors, are most predictive of chronic disability and poor outcome. In his book 'The Back Pain Revolution', Gordon Waddell (Waddell 1998) openly declares that chronic pain related disability is an unnecessary 'health care related disaster', that it is very costly, and that preventing it is a major goal - *which is achievable*. At the present time we can only do this if we pay adequate attention to important psychosocial factors in our patients' presentations.

These findings and recommendations are not a good excuse to point the finger at the patient as being at fault. The issues are highly complex and very circular. For instance, the way a patient deals with their problem is one thing, but the way health care providers do, is another, and all are part of a complex equation. The beauty of the model is that it is multidimensional and not blinkered or focused to a single issue. A pain and any accompanying disability/incapacity are far more than labels like 'disc', 'mal-tracking', 'instability' ,'transversus abdominus' ,'pain' 'ANT', 'compensationitis' ,'work shy' or 'hypochondria'.

The 'biopsychosocial model' encompasses (reviewed in Gifford 2000):

- 'Bio' – biomedicine. This is traditional reasoning that requires patient examination to think in terms of a physical diagnosis and the value of prompt medical attention. This focuses on those patients with serious disease who require further investigation and medical management – it spans anything from tumours, through rheumatalogical disorders to serious physical injuries. Psychosocial factors are still important even in these patients. The flaws of the biomedical approach must be appreciated, especially with regard the conditions that fall outside those above – i.e. the majority of the conditions treated by physiotherapy. The biopsychosocial model is not telling us to stop 'diagnosing' but is saying, be very careful to see that what you diagnose is very much a hypothesis rather than a fact. The majority of physiotherapy diagnoses are not proven and

many powerfully drive the management approach and style - this is an area that requires great caution and is overdue for unbiased review and deeper questioning.

- 'Psycho' – All pain has some psychological impact. How a patient feels and thinks in response to their pain, injury or disease has been shown to have a powerful impact on how they deal with the situation and how they respond to it. Known psychological factors that help tell us that a patient has the potential for poor outcome includes (Watson 1999):
    - Fear of pain and re-injury and consequent avoidance of activity (fear avoidance beliefs). Fear avoidance is a natural response to pain, but if it goes on too long it can become a major barrier to physical recovery (see Gifford 1998, Vlaeyen & Linton 2000).
    - Negative or passive coping – patient doing little to help themselves, expecting treatment to fix the problem, keen to rest and avoid activity or exercise.
    - Preoccupation with bodily symptoms – somatic anxiety.
    - High report of stress or anxiety and misunderstandings about the nature of the condition.
    - Depressed mood.

Many of these are not fixed in stone and can be dealt with and changed in a positive direction by good physiotherapy management skills, education and reactivation. Many physiotherapists respond to all this by saying, 'we've been doing all that for years..' well, yes, and no… think how you haven't been directly assessing and reassessing it, the amount of emphasis you put on it and the lack of real awareness of the important components? If you feel that you've been doing it all for years intuitively… all I can say, is that there is a hell of a lot more to this than meets the eye, please think again and be open to take more on. Sure, a great many patients respond to confident reassurance, but a great many do not and need far more analysis and understanding to really move on, especially as patients graduate into more chronic phases of their problem.

- 'Social'… Social and work factors can have a strong bearing on recovery. Included here are (for further details see Watson 1999, Watson 2000).
    - Dissatisfaction with current work
    - Worries about safety at work
    - Solicitous behaviour of family to pain.
    - Participation in medico-legal claims
    - High levels of wages replacement benefits
    - Low education level and substance abuse

I believe that before being able to incorporate the biopsychosocial model therapists need to feel comfortable with the following (the list is by no means complete):

Pain and pain treatments:

1. The mind is not a separate entity, 'but a convenient collective term for those states of brain activity involving awareness..' (Lawes 2002).
2. Pain involves complex circuits from the tissues/body into the CNS/brain and back out again (reviewed in Gifford 1998) – in all pains- from acute to chronic. All pains involve the brain and the brain is switched on all the time. Pain influences the brain, the brain influences the mind, the mind and brain combine to produce a response… Hence how an individual interprets pain, and how they react to pain, have very powerful effects on its expression and its outcome. How an individual interprets and responds to pain is also influenced by what they hear from those around them and what they read and hear from various forms of media. From our perspective it is now well established that what clinicians say and do can powerfully influence patient response – often to their detriment (see Rose 1998, Hafner 2001).
3. Pain is not an isolated reaction in the tissues that were injured or that hurt. You cant feel anything without a brain. There is a psychological reaction in everyone who feels pain. The psychological reaction is what drives subsequent behaviour. When clinicians do 'objective' testing, much of what is recorded and observed is pain behaviour. This is not meant to be derogatory – pain behaviour can be adaptive (useful) or maladaptive (of no use). Neither need be intentional, there is much evidence to show that chronic pain behaviour is learnt (see Harding 1998, Klaber-Moffett 2000). Learnt behaviour (like fearful, jerky and tense movement patterns) means that it has become a habit for the patient, and habits, especially if they have been going on for long, can be very hard to overcome.
4. Pain is very commonly **not** an accurate witness to the amount of injury or tissue damaged. The agony of some acute sciaticas is a very good example. That there may be something different about tissues that hurt is not being challenged, what is, is the amount of pain in relation to the

changes within them. Pain is often out of all proportion to the amount of tissue damage. At the opposite extreme, disc protrusions and extrusions are known to occur and exist without causing any pain whatsoever.

5. Most injuries affect multiple structures, e.g. back strains. The idea of a single tissue culprit may be untenable.
6. Injury and disease processes obviously change tissues. If pain is a feature, it usually **starts** as a result of mechanical and chemical influences in the tissues activating nociceptors (nociceptors are sensory fibres dedicated to intense or threatening stimuli in the normal state). For example, an acutely twisted ankle or an early arthritic flare. Stopping the activity of the nociceptors subserving the area, at a time near the onset of pain will completely obliterate the pain. This can be done using local anaesthetic for example. Stopping or curtailing inflammation may dull nociceptive activity enough to take out a proportion of the pain too.
7. Injury or irritation of peripheral nerves and nerve roots can also be a **starting point** for pain, e.g. acute sciatica or brachialgia. Removing or altering a disc may not stop an irritated nerve from causing pain, even though the disc may have initiated the process. Even if it does stop the symptoms, the removal of the material may still not be relevant – see point 11 below.
8. **The source of a patient's pain changes over time.** This is fundamental to enhancing the general understanding and confidence about pain and its meaning. For the long term pain sufferer it is a great help to start to appreciate that hurt does not equate with harm, and that there is such a thing as maladaptive pain.
   The longer pain goes on the more widespread and diffuse become its sources – hence the problems with therapy approaches that over-focus on finding a specific 'source' of pain, this is fine for fixing a car but not for fixing complex human pain states. In many chronic pains, the original tissue injury that **started** the pain has long since healed (see healing section below). Physiotherapists need to be aware that within seconds to minutes after the onset of injury-induced-nociceptive-activity there are long lasting and quite dramatic changes in relevant cells and pathways in the central nervous system. Thus all patients, whether acute or chronic come with a 'central' nervous system component to their pain. The difference between typical acute or typical recovery pains and chronic disabling pain is that the central changes in the former are more likely to be relatively adaptive (but see Gifford 2002), while in the latter they are maladaptive – of little use to the tissues or the sufferer at all. Preventing excessive heightened sensitivity that carries on long after adequate tissue healing is probably the biggest challenge facing pain medicine, pain treatment and pain management. If good early therapy and good management can be shown to prevent chronic pain and incapacity the inference is that these very interventions indirectly prevent such maladaptive and persistent reactions. While the biology is incredibly complex and subtle, the key issues needed in management to bring this about are really quite straight forward (see part 2). The following two points reinforce some of the issues discussed.
9. **As time goes on the original cause of the pain may become irrelevant.** For example a disc/intervertebral ligament/etc injury may precipitate a back pain or a sciatica, but as time goes on their state may be far less relevant to the pain.
10. The source of much long lasting pain is likely to be in the CNS. The tissues that hurt may only play a small part in the pain, if any. This makes continued therapeutic focus on the tissues that hurt, at best, only moderately effective and possibly ineffective or detrimental.
11. It is incorrect to reason that if a therapy directed at a particular structure is successful in alleviating the pain – that the structure targeted has to be responsible for the pain. For example, if you mobilise unilaterally on C5-6 for a 'tennis elbow' and the pain improves – typical manual therapy reasoning establishes the C5-6 as a likely or potential 'source' of the pain. Pressure on the foot or an ear lobe could just as easily have achieved the same thing and sometimes does if the therapy can be 'set-up' to be acceptable in the patients eyes. In the same way, surgical removal of disc material with the alleviation of pain does not necessarily mean that the disc material was the source of the pain. The placebo literature is rife with examples where exploration alone, or sham surgery works in the relief of pain (discussed in Gifford 2002). For example, surgical lumbar exploration alone has been shown to be effective in relieving back and leg pain. Thus, anaesthetise a patient, cut them open, dig around a bit, have a good look, find nothing of interest, sew them back up again – and about 40% will be 'completely relieved' of their symptoms (see Spangfort 1972). Many established practices are based on the 'if pain relieved then tissue treated is responsible' type of reasoning. Try reading the fibromyalgia case history written up by Ali (2001) with a critical eye, especially the conclusion at the top of p144 and the treatments and reasoning on page 142, to see my point. It is important to state that the problem is with the interpretation of the mechanism of the therapy, not with the effect of it – pain relief is a very

laudable goal and a great achievement. However, the tragedy of this case history presentation, is that the main stated aim p 141-142 was to relieve pain and the whole thrust of the management was pain orientated with passive treatments to relieve it – rather than, or in combination with, an approach that **primarily** focuses on improved function and fitness, patient education and giving more control and understanding to the patient. For the majority of patients with a 5 ½ year history of 'fibromyaliga' – (i.e. chronic pain), this type of approach does not work and in the majority is likely to be more detrimental than helpful. Readers are urged to compare this case history with one soon to be published by Lorraine Moores (2002).

12. If pain changes quickly with treatment, the most responsible explanation for the mechanism of the effect is that it is down to changes in the processing of information in the CNS. The best term to apply here is simply 'gating', where changes have the potential to be temporary or long lasting. Sensory information can be rapidly channelled to different areas of the brain and processed in different contexts. Thus…, if you set the 'CNS/brain up to accept what you are about to do with a treatment……. it can then reprocess incoming sensory information, and even downshift its importance. Successful pain relief is very much about changing gating and changing its context for the patient. Thus….

13. It seems that **Pain can really be treated from anywhere**. From the nervous system's point of view, nearly all pain therapies that we use distil down to 'somatosensory stimulation' (see Melzack 1994). Witness the claimed effects of visceral mobilisation – stimulation of guts?, Reiki therapy – stimulation of fresh air?, reflexology - stimulation of feet?, or neural mobilisation - stimulation of remote parts of nerves?, or is it all down to chancing our luck with information processing? This is meant to be light hearted, but at a deeper level, if these techniques do actually work then they have to be taken seriously and therefore must have some physiological effect (see Gifford 2000).

Rationality raises its hackles when claims are made about results that are not quantified and not followed up and, when claims about mechanisms of action are one-sided and/or are weak or untenable. For example, Tina Smith, a Reiki teacher, says that Reiki therapy works by channelling *non physical* Reiki healing energy from the practitioner to the patient where it gets absorbed and channelled to where the body needs it most…[see www.geocities.com/reiki4alluk/reiki_inf.htm#DOES] . No alternative or more rationale explanations are given, and they could be and should be if the wish is for more general acceptance. [I would recommend great care and wariness with those who interpret disorders with an overemphasis on the tissues they treat and/or who use anecdotal successes to verify their interpretations. There are many out there trying to sell you something based on enthusiasm and belief rather than rationality. People who find the techniques they use to be effective for them often believe it possible that everyone should be able to do what they do and that all patients should respond the way their patients appear to respond. Technique and approach salesmen and women are unique, and they form a unique therapeutic alliance (see Noon 2002) with their patients like only they can. I don't think we should feel bad when we are unable to mimic their style and their results, and I also think that they should be content to accept that only those with similar attributes and style to them are going to proceed with their methods. It's amusing to think that good scientists need to be sceptics, but good therapists need to be believers. We can only move forward with pain treatments/management if we see a bigger picture and feel comfortable with the potential positive or negative physiological effects of therapeutic interaction in all its dimensions.]

14. The impact of a pain treatment is powerfully influenced by the way in which the patient reacts to it and their beliefs about the treatment. We should have no fear of the word placebo as it has a rational and very powerful positive physiological basis which takes great skill to access (see placebo section in Gifford 2002)

15. It is a myth that 'gurus' cure everything that walks in and that there is some technique or way of doing a technique that must be achieved to get the results.

16. Stemming from this, is the necessary fact that much, perhaps nearly all chronic pain is 'incurable' in the traditional sense. Chronic pain waxes and wanes. When the waning coincides with treatment, the treatment and the therapist rather than the natural history tend to take credit. Even though pain may decrease, a great many still remain fearful of movement and hugely lacking in physical confidence – unnecessarily. A great many more patients with chronic pain and chronic pain related incapacity may lead far fitter and more fulfilled lives if better pain management approaches were adopted. This requires therapists to rebalance their management goals from pain relief dominated (e.g. Ali case history (2001)) to a much heavier emphasis on confident movement, functional restoration and reduced disability. Because so much incapacity and

disability relates to psychosocial factors rather than physical factors it is paramount that we understand the issues concerned (see case history part 2).

Diagnosis:

1) Diagnosis of a specific tissue lesion for most benign conditions is a hypothetical and intellectual exercise that, especially in relation to spinal pain, is of questionable value. As argued above the idea that a single tissue is the sole cause of a pain is questionable. There is no harm in hypothesising about tissues injured, or about sources of symptoms or mechanisms of symptoms that may be involved, but there are dangers when treatments are based on dogmatic approaches orientated around tissue specific thinking and techniques. Dogmatism like this nearly always over-emphasises the importance of the tissue 'nugget' or a particular technique, and pays lip service or even ignores the less materialistic issues that are known to be of far greater importance to better management and prevention of chronicity.
2) Mature biomedical thinking, within a biopsychosocial framework, is necessary however. This requires thinking like a Dr. and being able to answer these three questions for every patient:
    a) Is there serious disease, or the possibility of serious disease that needs further investigation? This means that you should know your 'red flags' for serious pathology. I am going to stick my foot out and say that therapists need to be experts here – and I don't believe we are half good enough. For example, in the last 4 months I have seen 3 patients who have been treated by physiotherapists and seen by Drs - who have had serious spinal disease. One had a pathological fracture, one ankylosing spondylitis and the other patient is now dead. The only red flag sign for her was 'significant and persistent loss of lumbar flexion' combined with an unusual history and presentation that only really came out after a good deal of listening and clarification. Also, a part of several case history presentations given on courses that I teach asks participants to list the red flags – most therapists struggle to supply them. I wish I could be impressed, but I am generally disheartened. Come on! If we want to shine anywhere in the eyes of our medical colleagues, it is here. We MUST be experts at screening for serious disease and for nerve competency…..
    b) Is the nervous system competent? Nerve competency is **not** related to pain on tension testing, it's to do with conduction, muscle strength, co-ordination, sensation and reflexes. A 30 degree SLR merely indicates the possibility of heightened sensitivity of neural tissue to the mechanical force imparted – it may be pathological, but it may not be.
    c) Does the problem this patient have respond to medical intervention? Clearly, some conditions can be helped along the way and it may be appropriate for specialist assessment and intervention as a **part** of the rehabilitation process.

Many of us may refer patients back to Drs inappropriately – this may be because the pain is not resolving or the patient is getting frustrated, or we do not have anything else to offer. This is a very difficult area and an understandable one. Many of us who have been working with pain patients for a number of years are just as frustrated with difficult problems as anyone else. Even so, we need to be aware that it has been shown that inappropriate medicalising of musculoskeletal problems may be a potent factor in creating long term disability (Linton 1998, Linton 1999). Inappropriate referral to, or back to, Drs or on to surgical or medical specialists is perhaps the result of inadequate understanding of pain and resolution times of common conditions, the focus on treatments that the patient perceives are geared to relieving their pain; the lack of useful education about the resolution of their problem and the responsibility they hold in the recovery process and lastly, but most importantly, inadequate screening for psychosocial 'yellow flag' risk factors. Perhaps one of the most significant contributions that have resulted from the adoption of the biopsychosocial model is the development of the yellow flag screening tool for low back pain (Kendall & Watson 2000, Watson & Kendall 2000). It is these above all else that tell us that a patient is likely to require a much modified approach from the start. If we do not adopt this modified approach the likelihood of our efforts and our frustrations actually promoting the patients problem increase manifold.

Healing and pain:

1. Musculoskeletal tissues are collagenous and as such heal by scar tissue formation. Healing by scar formation is termed '**repair'**. This means that the tissues never heal perfectly – as they would if they were to **regenerate**. Injured collagenous tissues are therefore never the same again once they have been injured. The general public and many therapists either do not realise this or haven't really considered it in relation to the effects of treatments. Remember, most people who suffer an

injury and seek help are likely to be seeking a 'fix' or 'cure' of some kind – unfortunately, for the tissues injured this is unrealistic. Medical science is yet to produce a therapy that causes injured collagenous tissues to regenerate – to heal perfectly. This is a hugely under-researched area. The treatment expectations of the public and the reality of what medicine and allied therapies have to offer the public are incongruent. A great deal of public education is required to correct misunderstandings and improve general 'acceptance' and personal responsibility for outcomes. The best thing would be to find out more about the conditions required for most efficient tissue healing.

2. It seems biologically reasonable that 'repaired' tissues should maintain a degree of protective sensitivity. This makes some ongoing mechanically patterned pains useful – ie. they are positive pains that demand a little caution with some activities and movements, or demand a 'warm-up' period. The idea that injury pain and pain responses during recovery might be useful (adaptive) has received little attention, or, acceptance.
3. Even though regeneration is not possible, adequate healing by repair can still be good enough for recovery of normal function. Most therapists and patients are content to stop treatment or stop exercising when the pain goes. Unless the patient continues to exercise and improve fitness, adequate healing, adequate strength and adequate extensibility are unlikely to be achieved. In the past, when people were generally more active than they are today, resumption of normal activities once pain had lessened or gone may have been sufficient, today however, normal activities are woefully modest and if really scrutinised probably amount to continued resting!
4. Pain disappearing with a treatment does not mean that the tissues have been cured. More likely, the sensory input from them, or the central nervous system 'representation' of the pain has been processed differently.
5. Most people's musculoskeletal tissues heal to be strong enough for normal or near normal activities in a matter of days or weeks. Pain and fear of pain and fear of re-injury by patients (and frequently reinforced by therapists and Drs who promote 'stop it or rest it' rather than 'modify it or pace it' when it hurts), often prevents adequate activity early on. Tissue healing processes go on for many months after symptoms abate. Think of skin (a very obvious collagenous tissue), soreness and discomfort from a simple cut soon disappears, we often move the tissue a great deal when it is still raw and weeping, yet it continues to heal and the pain quickly subsides.
6. Restoration of unconscious goal orientated activity at the appropriate time not only helps healing and adequate strengthening of repair tissue, it also helps to reduce pain.
7. Many pain conditions, like back pain, naturally come and go. They are a normal part of life.

The second part of this series will reason through a common patient example taking many of the issues raised into consideration.

Recommended reading:
[All books available from the bookstore on: www.achesandpainsonline.com]

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