Biopsychosocial perspective on low back pain: patient provider communications

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Abstract. The term "biopsychosocial" has become quite fashionable in the low back pain industry. Nonetheless, many, if not most, spine care practitioners who employ the term do not appreciate the scope and limitations of the concepts involved, how they were evolved, or the responsibility they place on providers to change behaviors.

Key Words. biopsychosocial, low back pain, patient provider communication

The term "biopsychosocial" is often employed erroneously by spinal care practitioners, as an aspersion for "victim blaming" when therapeutic interventions go awry. This is a perversion of the heuristic intent of the biopsychosocial model, to improve provider-patient communications. The communication goal of the model places responsibility on providers and patients alike. First and foremost, the biopsychosocial model places the burden of behavioral change on the provider as the key to change the behavior of the patient. The provider is not intended to be a passive observer, sitting in judgment of patients. It is odd, then that patients are labeled "biopsychosocial" as a mechanism for providers to exculpate themselves when things do not turn out as well as they should.

The term "biopsychosocial" has, sadly, been used to explain away poor outcomes by finding deficits within the patient, when in fact, the problem lies with the failure of providers to change, i.e. providers behaving in the same old way. Biopsychosocial concepts, as originally developed for health care in general and subsequently evolved for the low back in particular, are a clarion call for providers to think, behave and communicate in innovative fashions to elevate, not deprecate, those for whom they care.

What follows considers the origin of the biopsychosocial model, its scope and limitations and how this has evolved in the field of modern evidence-based care for low back pain conditions.

G.L. Engel, M.D.'S Biopsychosocial Model

The term, "biopsychosocial model", coined by G.L. Engel, M.D. In a series of papers starting in 1960,[13] G.L. Engel, M.D.,[6] an internist with special interests in psychosomatic and psychosocial aspects of health care,. began writing about issues characterized as biopsychosocial issues." Engel's[5] thoughts crystallized in his writings of the late 1970's wherein he found deficiencies with the current state of medical education characterized as the "biomedical model," and suggested the "biopsychosocial model".

Engel` opined that, with all the scientific knowledge and technology medicine had developed to understand "the body and its aberrations" there was relatively little understanding of "human behavior and the psychological and social aspects of illness and patient care." In general, the biopsychosocial model was to meld these two disparate worlds. Bringing the psychosocial into the realm of science was to make the marriage possible. Engel, therefore, revisits the mind-body dilemma that has plagued philosophy and science for millennia.

Engel found fault with the education of physicians who were not exposed to the "considerable body of knowledge about human behavior which had accumulated" since the turn of the 20th century. This fact was to blame, in part, for physicians being perceived as "insensitive, callous, neglectful, arrogant and mechanical in their approaches," which, in essence, boiled down to a lack of communication skills on the part of physicians.

Engel identifies the problem as being the philosophy of dual-ism and reductionism within Western medicine, a dualism that separated mind and body, i.e. the psychological from the somatic, with-out attempting to relate or reconcile the two. Historically, the finger of blame, for reductionism and dualism, is pointed at Rene Descartes, the father of modern western philosophy.

Descartes considered mind and body to be separate "things" (dualism): their interaction was mechanistic. These separate things had separate qualities that made them distinct spheres of investigation. Descartes also advocated reductionism, i.e. complex entities could best be understood by analyzing (breaking them down) into their simplest component parts. Physics and chemistry were to be the ideal models for scientific intervention. Simple cause and-effect mechanisms were to be identified, as with the epidemiological analysis of disease involving a source and host does just that.

Engel argues it is the manner of the reductionist physician that induces anger and frustration and loss of confidence, as well as causing a "growing sense of impotence" for the patient "to do anything about the situation" (a detrimental psychosocial effect), thus resulting in such things as adverse "autonomic activity and catecholamine secretion" (the detrimental biologic effect). If physicians had improved communication skills, just the reverse could occur with improved meaning and participation for the patient with more favorable autonomic and physiologic ramifications. Compounding this philosophic groundwork was the evolution of medicine within the western Christian cultural atmosphere, wherein physicians were to deal with secular endeavors not spiritual matters— human soul, morals or mind (i.e. behavior).

Engel found the biomedical model to be disease-oriented and not patient-oriented. Engel envisioned the biomedical model was going to be "extraordinarily fruitful" as an approach to reverse the trend that had deflected "scientific interests and attention from the problems that do not readily yield" to the traditional medical approach. In order to accomplish the "caring rather than the curing," lab measurements would have to take a back seat to what physicians observed with their own senses and humanity. To best characterize this approach, Engel found the term "psychosocial" to be inadequate, inasmuch as "psychosocial problems" were usually defined as "problems with psychologic and social origins and manifestations," thus divorcing these factors from the disease-based "bio" elements for which patients seek care.

Engel observed that patients and providers both think within the biomedical model of disease, although patients and providers employ different criteria to measure progress. For the patients, improvement is judged by "ultimate criteria" which are psychosocial, "how one feels, how one functions, how one relates . . . the ability to love, to work, to struggle, to seek options . . . make choices." For physicians, the "real criteria" are measurements of increasing technological sophistication and that "the laboratory is right and the patient is wrong." For patients, the criteria concern communication, for the provider, communication from the patient is epiphenomenal.

The biopsychosocial model was based on General Systems Theory, a framework within which were the interrelation of systems at all levels pertinent to health and disease:

BIOSPHERE
HOMOSAPIENS
SOCIETY-NATION
CULTURE
SUBCULTURE
COMMUNITY
FAMILY
PERSON: LEVELS OF CONDUCT AND EXPERIENCE
SYSTEMS
ORGANS
TISSUES
CELLS
ORGANELLES
MOLECULES
ATOMS
SUBATOMIC PARTICLES
QUARKS

These organized systems are hierarchically arranged in order of complexity with feedback arrangements such that disturbances at any level may affect any other level, with the closest level most likely affected first. Linear cause-and-effect is replaced with reciprocal relationships. There is an intersystemic harmony, and perturbations may be contained at one level or result in reverberations at other levels within the system with variable degrees of disruptions and accommodations.

Contrary to this perspective, the biomedical model focuses on "the disease as an entity which can be understood and treated independently of the person afflicted," not to mention the family. community, etc. Engel distinguishes between the "familiar and personal language of the reductionist physician" versus the approach of the "systematist physician," for whom "the person must be the primary frame of reference" within "the dimensions of time and space."

For Engel, suffering is "seen by the biomedical physician as separate from the disease process," and, as such, is not "seen" at all. On the other hand, the biopsychosocial physician has the "conceptual tools ... to include in thinking and planning the implications ... for the patient ... family ... community, and even for the health care providers as well as. . . all legitimate . . . concerns ...."

Freedman' AM expanded on Engel's denunciation of the limitations of the biomedical model noting it as "medicine's adherence to a 17th century paradigm predicated on the mechanism, reductionism, determinism and dualism of Newton and Descartes" which "automatically excludes what is distinctly human from the realm of science and the scientific. Since the 17th century paradigm was developed as an approach to nature as it surrounds man, it provides no means to accommodate human processes and never was intended to do so. In medicine, this has become entrenched in the biomedical view that what is human about medicine and its practice constitutes but an art," contrary to which physicians operate "'scientifically' in medicine ... only when dealing with bodily processes, not when dealing with patients as people." Freedman quotes Marie Curie who exemplified this attitude when stating, "Science deals with things, not people." Freedman reminds the reader the physician "cannot be detached from the patient," and this is "not a matter of choice" because the physician is "part of the system."

McLaren," who is quite critical of Engel's "model," nonetheless also recognizes the deficiencies of the biomedical model, within health care in general as well as within psychology in particular, where, historically similar motivations occurred to devoid the science of patients' minds to communicate with. "As early as 1913, the psychologist J.B. Watson declared that: `The time seems to have come when psychology must discard all reference to consciousness; when it need no longer delude itself into thinking that it is making mental states the object of observation.' " He announced that he wanted his students to know as much about the mind-body problem as students of physics and chemistry, namely nothing at all.

Engel quite clearly exposes the deficiencies of biomedicine. Biomedicine had evolved from a time where all there was not much more than "caring" to a time when there was "curing" with the former being lost to the detriment of the latter. Engel perceived a loss of the caring and the communication skills that was an integral part of it that limited the success of the technological curing.

Engel's original writings concerning the biopsychosocial model have been considered above. His later writings moved away from the grand designs of systems theory, without acknowledging the limitations of his original lofty design. In the next section, critiques of Engel's original conceptions are considered from various authors. Engel himself, in his later writings quietly drifted away from the importance of levels to the importance of language (i.e. communication), perhaps the greatest critique on his original formulations.

Scope and Limits of Engel's Model

Schwartz and Wiggins" recognized the obvious difficulty of reconciling the different levels of Engel's model of patients consisting of and "participating in" multiple systems. They depicted Engel's perspective wherein "central issues of health and illness reside precisely in the labyrinth theme interconnections among those different systems. While patients certainly are wholes, they are extremely complex wholes." This complexity as formulated by Engel, reached too far and explained too little.

Engel's formulations are complex pipe dreams without the clear cut science promised to relate the different system levels, in particular to overcome the hurdles between molecules and organelles or between organ systems and "person." Engel's model appears to be a reminder to be more human and mindful of the multidimensions of a person but does not appear to have been developed, by Engel, into the science that it was envisioned to become. In an attempt to put some mind into the model, Schwartz and Wiggins[16] invoked the work of German sociologist Niklas Luhnann for whom "meanings" are what reduce the "overly complex" internal and external environment. Meaning is therefore a "supra-biological structure" or in Engel's terms, a biopsychosocial structure.

Curiously, Engel never specifically referred to "meanings," being lost in more grandiose "levels." While appreciating the place of a person within the macro constructs of family, community, etc. appears to have merit, the micro direction of human components (towards quarks) appears to be an irreconcilable return to the bio-medical Engel was attempting to escape from. As Engel noted, medical technology (the "bio") had become quite developed and it was the psychosocial component that was to be added, i.e. incorporating the more macro levels. "Going micro" just to provide theoretical symmetry may provide a cosmic "ah ha" experience but did not ultimately serve the biopsychosocial model.

Nonetheless, improving communication skills between practitioner and patient would permit the practitioner to appreciate how the patient perceived or assigned meanings to internal (lower hierarchal) or external (higher hierarchal) phenomena and would, no doubt, permit more satisfactory care.

Schwartz and Wiggins' also invoke the German psychiatrist Karl Jaspers who delineated principles regarding "scientific understanding in medicine," one category of which elucidates the limitations of Engel's theory that "understanding is inconclusive." Engel's model appears to exclude this limitation, a limitation of the model, which fantasizes complete understanding, which can only result in complete failure.

Even with our best efforts, "understanding the meaning of another person's experiences and actions remain an open-ended process"."' As such, any and all the elements/goals of Engel's biopsychosocial model are, ultimately, quite unlikely to be realized.

Schwartz and Wiggins," in summarizing Jasper and critiquing Engel at the same time, note that psychosocial meanings are "dependent upon processes in other systems which are not regulated by meanings," which are "explained," but cannot be fully understood in terms of biological systems that are governed by causal laws, not the rules of meanings. In other words, "human meanings frequently arise from systems that cannot themselves be understood" in terms of "meaning." They also notes that even though Engel advocated "systems are interdependent" and "boundaries between meaning-structures and causal-structures remain permeable and penetrable," there is a limit to which this permeability will occur. The membrane between these systems is only semi-permeable at best. Lastly, Schwartz and Wiggins" note there is an element of human freedom that results in our inability to fully predict what someone will do, i.e. there is a "residue of the nonunderstandable."

Engel,[7] in his later writings, in an attempt to consider his biopsychosocial model as "being scientific in the human domain," wrote about the "importance of the medical interview not only as a human encounter but also as a rigorous instrument to better understand the patient and to help explain the data that the patient presents." At this point there is no mention of systems theory, but more of an emphasis on meaning and communication to determine meaning. Things such as sadness, grief and fear are not to be considered as "soft signs but essential elements of a patient history." Curiously, quarks are not being considered in these later, more sober writings.

Engel notes "medicine owes its origin to three distinctly human attributes." The first one is awareness of the inevitability of death and the realization that feeling and/or looking bad is a portent of this eventuality. Second, we "suffer when our interpersonal bonds are sundered" and we feel "solace when they are reestablished." "Third, we are capable of examining our own real life and experience and of communicating such to others via a spoken and written language." Communication as the crux of a biopsychosocial model emerges here, apparently leaving his more grandiose untenable formulations behind. It is the connection between the communications of people and their perceptions, not levels within an individual that is of paramount importance.

Engel goes on to write that critical to the three distinctly human attributes are "words to communicate both what is being observed in the outer world and what is being experienced in the inner world" and that we must be "careful to define science in such a way as to be able to include verbal reporting as legitimate data." Engel opines that "looking inward and contributing information otherwise not available should be a great scientific advantage," contrary to the biomedical model's conception that these phenomena are "neither subject to systematic inquiry nor possible to teach."

Engel appears to be aware of the role of the physician in all this when noting it is fallacious to believe that what "scientists discover exists entirely external to and independent of themselves." Interestingly, the physician was left out of his original model. Al-though he advocates a "more systematic" way of taking histories, no true system is provided, instead making general qualitative references between interrogative reporting (which encourages defensiveness) and narration (which encourages intimacy). The patient should not be an object of study but, to the contrary, should be an active participant in his/her own story. In this regard, Engel references a study by Beckman,' wherein it was noted that 18 seconds was the main length of time before doctors interrupted a patient's first response.

McLaren" critically reviewed Engel's biopsychosocial model, attacking it first and foremost as not being a model at all. McLaren defined a "model" as being a "simplified representation or description of a system or complex entity, especially one designed to facilitate calculations and predictions . . . the practical means of matching a theory to reality" and that "models are real and their material consequences can be measured." As opposed to models, "theories are ideas and can no more be measured than daydreams." McLaren opines that "at most, it could be a very general theory ... at no stage did he indicate that it was any more than conceptual."

McLaren reminds the reader that Carl Meninger also thought general systems theory was an interesting idea, which "may be able to render psychosocial issues amenable to scientific analysis" but that this "has never happened" and general systems theory "became utterly banal." It "could only line up rough analogies and try to extract broad, inductive generalizations about them" which "could never extend to a general methodology of human affairs, not the least because nobody has ever shown that the critical matter-energy transfer functions are applicable to the mind/body problem" and, finally, it is "not possible to build a model of the mind based on a theory of systems." McLaren asserted that "models of mind have to be based in theories of mind." Engel's vision to scientifically incorporate the "impact of nonbiological circumstances upon biological processes" was never realized.

McLaren also notes all Engel "offered was an emotive case for more humanity and less technology in medicine: Little more than a heartfelt plea based on a particular ontological stance ... not a theory ... not a model" but a "plea for a model, a description of where such a model would fit in medical thinking, but not the model itself." On the more positive side, McLaren argues that Engel provided a great service because he "legitimatized the concept of talking to people as people ... promised to fill a strongly felt need: That of uniting the disparate elements of human life in such a way as to legitimize a holistic approach," but, alas, "the need remains" that need being the need for a "new concept of science" and a new concept of "cognitive sciences" in particular.

Biopsychosocial Concepts Applied to Low Back Pain

As it appears that the biopsychosocial model is not a model at all, but a conceptual construct, it is perhaps more appropriate to reference it as a concept or a perspective. The failure of Engel to provide anything greater than "a very general theory ... at no stage....any more than conceptual"'" may explain the reason why the low back biopsychosocial literature curiously fails to reference Engel at all. Nonetheless, many of Engel's conceptualizations have found a place in the spine care literature and have motivated research resulting in evidence-based standards to guide the care of low back pain, especially for compensable injuries.

The biopsychosocial perspective has been gainfully employed in low back care, no doubt motivated by limitations of the bio-medical model to effectively understand and manage low-back pain, compared to other health maladies. In other words the employment of the biopsychosocial model for low-back pain has arisen out of necessity, whereas for other dimensions of health care it may have been envisioned as the humanistic icing on the technologically competent cake. With low back pain, the technology more often than not does not reveal the biomedical source and, there-fore what is more important for management is what the patient's illness behavior communicate which is profoundly influenced by what the providers' treatment behavior communicates.

While Engel generated the biopsychosocial model to humanize medical care that adequately treated disease entities but not the person, biopsychosocial concepts for back pain responded to a situation wherein back pain most often can not adequately be treated as a "thing" and has to be treated as a condition a person communicates. As Engel,' in his later writings, drifted away from the grandiose scheme of general systems theory towards the humble concerns of communication, biopsychosocial concepts about back pain concern, more than anything, how information is processed within the sufferer and between the sufferer and others (provider, family members, society, etc).

Jones et al." considered the application of biopsychosocial concepts to the practice of physical medicine in general. For physical medicine, the "systems theory" is limited to "disability and impairments as a reflection" of "underlying tissue and system pathology." While attention to ergonomics and psychosocial factors are not a new approach, Jones et. al.'" argue that a biopsychosocial perspective appreciates the effect environmental and psychosocial factors have on how patients' perceive, process and communicate information about biologic phenomena and how this translates into health behaviors.

The book, "The Mature Organism Model,[9] is an example of a biopsychosocial construct. Pain or illness experiences as well as the immediate environment are input mechanisms with all the in-formation being processed in order to mount a response via output mechanisms (somatic motor, autonomic, neural endocrine, neural immune and descending feedback/control systems). "How an individual thinks and feels about a given situation has profound effects on the physiological, psychological and behavioral output responses generated, which in turn affects how the person's health is manifest." This process can be highly individualized. "Managing patients' problems also requires the understanding of their unique pain or illness experiences (determined by making inquiries about such things as their understanding, beliefs, feelings and coping strategies in relation to their problem)." Accordingly, "dealing with cognitive and affective issues (e.g. poor understanding and unhealthful fears).... should have priority over dealing with nociception itself," realizing "attention to physical impairment provides the entry to dealing with any cognitive/affective issues" and that many patients "may have a lack of insight to the factors influencing their problem which, until addressed (through inquiry and management) can create obstacles to their improvement." Jones et al.[10] also referenced Main and Booker's biopsychosocial model of disability which accounts for "the interactions between factors such as pain and deconditioning, fear and avoidance, depression, anger and frustration, iatrogenics, family, socioeconomic and occupational factors." This model brings up an important aspect of low back pain biopsychosocial discourse. It is not pain (the "bio") itself that is of concern, but how the pain is used as a communication vehicle (the" psychosocial").

Vlaeyen et al, [17] notes the enormous cost of chronic low back pain and that the pure biomedical approach often prove insufficient to its management. It is acknowledged that numerous studies have determined there is little direct relationship between pain and disability and that a "biopsychosocial approach offers the foundation for a better insight into how pain can become a persistent problem." This insight is that "pain and disability are not only influenced by organic pathology . . . but also by psychological and social factors" including pain-related fear (of activity) and its management.

Vlaeyen et al,[17] as Engel, traces the biomedical model of pain to Descartes. The Cartesian model pain was considered a "direct and unique pathway from the peripheral nervous system to the brain ....same way a bell in the church tower rings when the rope ....is pulled ....a reflex of the mind upon nociceptive stimulation of the body ....a symptom that is isomorphically related to the extent of bodily damage in the organism." According to this model, pain treatment consists of localizing the pathology and removing it. "In the absence of bodily damage, the mind was assumed to be at fault, and psychic pathology was inferred ..."

Vlaeyen et al,[17] further noted that "limitations of the biomedical model became apparent during the late 1970's," at which time it "became clear that no absolute relationship exists between the amount of tissue damage and the severity of the pain experience" (this major aspect of the biopsychosocial aspect of pain was curiously never acknowledged by Engel). A paradigm shift in the pain sciences occurred when it was realized that cortical processing was "involved in the integration of both sensory-discriminative and affective-motivational aspects of pain." In other words, "pain was not only the result of nociceptive information ascending from the periphery, but was profoundly moderated by descending path-ways that amplify or inhibit nociceptive input in the spinal cord," i.e. a "balance between sensory and central inputs determines the presence or absence of pain."

Pain behavior, i.e. observable signs of pain and suffering (and what these communicate), should be the focus of treatment. "The factors that maintain the pain problem can be different from those that have initiated it. Pain behaviors may be subject to a graded shift from structural/mechanical to environmental control." "Bio-medical findings do not eliminate the possibility that psychological or social factors contribute to the level of pain disability." "Individuals actively process information regarding internal stimuli and external events." "Thoughts and beliefs may alter behavior by their direct influence on emotional and physiological responses."

Two opposing behavioral responses to fears about pain can be considered, one of confrontation (an adaptive response) and the other being avoidance (maintenance or exacerbation of fear), which augments disability and relates to catastrophic thinking about pain. Associated with avoidance are disuse, depression and in-creased disability. Whether one confronts pain and remains active or avoids pain and becomes inactive has more to do with perceived meanings (i.e. communications) than the degree or tissue injury. Confronters vs. avoiders are individuals who are not unduly concerned about back pain vs. individuals who believe back pain is a serious problem, and this belief takes over their attention and lives.

Waddell[18] and Main and Booker[11] noted clinical studies show patients' main fears and concerns about back pain are that it may be due to serious disease (concerns about what the cause of pain may be) and the likelihood of that pain will persist. It is important for providers to communicate with patients about the nature, future course, expected consequences about low back pain and the ability to cure or control complaints. Communication is of paramount importance to find out what patients perceive and to correct misunderstandings. Patients who believed low-back pain is a serious lifetime problem and who have less expectations of returning to normal activities have poor prognostic outcomes, i.e. patients' beliefs, not tissue pathology, were the best predictors of return to work or disability. Absent adequate communication from providers these beliefs may go on unabated.

Waddell[18] and Main and Booker[11] further noted that health care can influence beliefs about back pain. A sense of permanent vulnerability can be related to the type of health care received (including verbal and nonverbal communications from providers). Advices that one is injured, could be re-injured and should avoid activities that will cause re-injury are overt messages. Other messages are subtler: uncertainty, absence of definitive diagnoses/prognoses and conflicting opinions and treatments contribute to fear-avoidance beliefs and pessimism. Being told degenerative changes indicate serious irreversible deterioration, pain is a signal you are damaging your back and to rest until it gets better are all disabling messages contrary to current evidence based information. Non-verbal messages such as therapy wherein patients are the passive receptacles of care (massage as an example) send the message that movement is to be avoided and the care giving behaviors of another are required.

Waddell[18] also wrote that social influences on back pain occur from culture, family, nurture, learning, social contacts and social support. Different cultures do not perceive or respond to pain in the same way. The context of the pain is important. Chronic disability due to a simple backache is rare in athletes. Family background influences attitudes and reporting of symptoms, as do social peer groups. Chronic disability is not possible without social support and most chronic patients have a "partner in pain," someone "intimately involved in the pain game." "Biomedical factors are poor predictors of which patients will develop chronic, intractable problems . . . psychosocial factors have more influence on the development of chronic pain and disability." The sick role, originally conceived by Parsons[14] was also mentioned by Waddell' to involve a balance of rights (not being responsible for the original physical problem, permission to modify normal social obligations proportional to the illness) and duties (to be ill is undesirable, obligation to reduce illness/disability as much as possible, must share responsibility for health/disability) which play a role in recovery. It is only through communication with the patients the reason for the degree with which these extremes contribute to health behavior can be understood. The physical demands of work make little difference regarding the chance of getting back pain. Non-physical characteristics of work may be more important, such as job satisfaction and whether a compensation claim has been filed. Pain and disability are not the same and should be distinguished conceptually and in clinical practice.

Waddell[18] promoted a biopsychosocial model that is a "systems" theory composed of four "filters" through which the "bio" element is modified first by "psycho" and then by "social" elements. Physical dysfunction (the "bio") is "filtered," in order, as follows.

physical dysfunction ♦ beliefs and coping ♦ distress ♦ illness behavior ♦ social interaction

The progression is, in essence bio ♦ psycho ♦ social. Physical symptoms, as noted above, in Waddell's" model, are perceived through a series of filters, often from the outside in. "When we observe its final clinical presentation, we can only look directly at behavior, which we must analyze more carefully to infer underlying events." It is not that back pain starts as a physical problem with psychosocial changes develop secondarily, to the contrary there is much evidence that the involved "distress may both pre-cede and follow the physical problem." Even more important, it is "Not a question of whether physical dysfunction or altered behavior comes first or which is more important, but rather how they interact and reinforce each other."

Beliefs (about damage and disease), fear of hurt and harming, avoidance, responsibility, control and self-efficacy about treatment (active coping or passive catastrophizing) affect outcomes. Psychophysiologic links include withdrawal, catastrophizing and depression; passive coping strategies; avoidance learning; muscle imbalance, guarded movements, gait disturbance. Psychologic events may affect physiologic processes by guarded movements and disuse syndrome. Deconditioning is the end result of altered behavior.

Iatrogenic disability is caused by the promotion of fear-avoidance beliefs and reduced function. "Labeling," advice to restrict to restrict activities and sick certification contribute to this. "Formal information and advice may have some influence on patients' beliefs about back pain. Our whole management strategy may have much greater impact on their beliefs, coping strategies, illness behavior and disability. Advice to stop work and sick certification are direct adjuncts to work loss and even loss of employment and early retirement." "Instead of thinking only about how to treat their physical condition, we must also consider how our management affects their beliefs and behavior ... recognize, and try to change, mistaken beliefs and fears at an early stage to prevent chronicity .... key... may be to overcome these fears and change behavior as much as any physical conditioning ... goal and outcome . . . is not only to relieve, or ... control pain, but also to help ... patients to get on with their normal lives." Patients "need physical treatment for their physical problem ... may also need support to help cope with the pain and to restore normal activity and behavior." Waddell[18] summarizes by stating the "biopsychosocial model is simply a set of tools to better understand low-back pain and disability, and to treat patients rather than their spine."

Mattheson,[12] a clinical psychologist, has applied various concepts to the biological phenomena of back pain. The "systems" advocated is a practical stage model of rehabilitation, "one paradigm using medical, vocational, legal and industrial terminology." Rehabilitation is a process beginning with pathology, i.e. the biomedical injury or disease process. For back pain the exact tissue injured is often indefinable. Regardless, thoughts or therapies preoccupied with this first initial biomedical stage often result in case failures. Case success requires concentrating on the ultimate goal of treatment, i.e. earning capacity. In this regard, treatment procedures should have more to do with simulating work activities (psychosocial target) as opposed to addressing pathology (biomedical target), the former, in the case of back pain, being easier to define than the latter. The stages progress from pathology ("bio" medical) to earning capacity (psychosocial) elements. With each stage the biomedical aspect resolves further into the background with psychosocial elements coming forward.

The definitions of, the "questions to be asked" and the interventions for each of the 8 stages follow.

I. Pathology: Injury or disease process: Studies of soft tissue and bone.
  Questions: Extent of tissue damage or destruction? Flow to stop destruction and promote healing?
  Intervention: Prevent further disruption, start "reconstruction."
II. Impairment: Measurable consequences of pathology taken as a disruption of physical/mental integrity (anatomy, physiology, psyche).

Questions: Pathology arrested, eliminated? Symptoms under control medically? Level of performance of the injured part? Location and degree of loss?

Intervention: Physical exam-obtain baseline measure. Taper off pathology interventions. Introduce conditioning - measure progress. Begin education to improve awareness, compliance, self-responsibility and future function.

III. Functional limitations: Symptoms and limitations - Inability to perform in terms of general tasks.

Questions: Level of performance as a whole person? Limitations as per Dictionary of Occupational Titles physical demand characteristics? Performance components and work tolerances?

Intervention: Continue conditioning, activity, education. Functional assessment, introduce simulated work activities for selective work tolerance gains

IV. Occupational Disability: The social consequences of the patient's functional limitations. "It is not possible for a physician, using medical information alone, to make reliable predictions about the ability of an individual to perform tasks or meet functional demands."

Questions: What are the critical physical demands of individual job? Potential to return to usual and customary? Is return to work an appropriate goal?

Intervention: Determine critical demands of job and improve potential to meet them.

V. Vocational feasibility: for competitive employment acceptability of the patient as an employee in the general sense (work behavior - transitional stage).

Questions: Abnormal illness behavior? Non-feasibility road block? Ready to transfer patient to worker role?

Intervention: Promote transition to worker role. Education and counseling methods

VI. Employability: within particular labor market.

Questions: Physical capacity for goal of occupation.

Intervention: Introduce realistic work simulation

VII. Vocational handicap: Ability to become employed in particular occupation (job)

Questions: Perform tasks in actual work environment? Work environment biomechanically appropriate?

Intervention: Job site evaluation to measure requirements. Ergonomic modifications

VIII. Earning capacity: Work generated income over lifetime Mattheson points out that concentrating on the first stage (pathology) prevents reaching the last stage (earning capacity). Instead of concentrating on biomedical treatments geared toward pathology (typically rest and passive therapy), treatment geared toward activity therapies to promote a graded mastery of work-related tasks not only serve as a powerful message to the worker (psychosocial communication) but place functional demands on physiological processes ("bio") to remedy them. Treating the mind and body as if they are injured as long as discomfort exists is inappropriate.

Mattheson[12] also developed the concept of symptom magnification, which considers three different barriers to progression through the stages of rehabilitation. These are three syndromes of unconscious ways patient misuse symptoms as vehicles to communicate difficult life situations. These conditions become apparent if and when a communicative rapport is established with patients. The syndromes are addressed through appropriate verbal and non-verbal communications from the provider. The three symptom magnification syndromes are as follows:

1. The Refugee: Symptoms provide an escape from an apparently irresolvable conflict or life situation
2. Game Player: Grand scheme opportunities for positive gain, symptoms are means to the end,
3. Identified Patient: The patient role is relished and eclipses all others. Patient is searching for a cure.

Symptom magnification is unconscious and reinforced by the environment. Verbal and nonverbal communications from providers and other stakeholders can serve as positive or negative reinforces. Inappropriate treatment (passive therapy, colluding with patients out of legal motivation, etc.) can perpetuate these syndromes.

A recent text concerning the Biopsychosocial approach for low back pain by Derebery and Anderson[4] note that "inherent in this model is viewing patients within the context of their environment, including their personal life and work, which can significantly influence both illness and recovery ..." Derebery and Anderson[4] further observe that "patients and physicians have been conditioned to correlate the degree of the stress with the severity of disease rather than the degree of the individual's emotional response due to the distress ...." Emotions are judgment responses, to be considered apart from the disease itself. Derebery and Anderson[4] are more specific than Engel regarding goals of the patient inter-view. The first goal is to establish a therapeutic alliance/rapport. Communication skills are most important and are considered to have non-verbal and verbal components. Nonverbal communication skills are more important than verbal ones.' The acronym for promoting appropriate non-verbal communication is **SOFTEN,** rep-resenting Smile, Open posture (no crossing arms, legs or hands), Forward lean, Touch, Eye contact (4 inches around the orbit, not directly into the pupils) and Nod (occasional, while patient is speaking). Smile and eye contact are the most important. Verbal means of communication should pay attention to voice tone (calming and reassuring), which is more important than verbal vontent (validating statements), which, curiously, are the least influential.

Derebery and Anderson[4] remind us that understanding the patients' interpretation of symptoms, their fears and their perceptions of the seriousness of their condition leads to better outcomes and improved patient satisfaction.

Low Back Patient-Provider Communications

Many of the authors who advocate the biopsychosocial model for spinal complaints argue that the physical cause of common spinal complaints cannot be fully appreciated and discourse as if this will always be the case. The undeniable importance of recent evidence that psychosocial factors can predict who will experience future spinal complaints, who will be disabled from spinal complaints (and to what degree) has had a nihilistic effect of abandoning, in the minds of some, the ability to entertain the notion that any further information can be obtained regarding the "bio" element of their model. The pendulum has, in a sense, swung too far in the other direction.

Another perversion of the model is that is has been used for "victim blaming." Providers not well versed in the theory or practice of biopsychosocial communication skills continue to employ the trappings of the biomedical model and, when it fails, employ the term "biopsychosocial" as a means to blame the patient for therapeutic failures when, in fact, it is the provider that has failed to meet the communication mandates of "biopsychosocialism." The fault lies with these providers in not establishing a communicative rapport in order to receive the psychosocial messages encoded into the symptomatic broadcasts and to modulate those transmissions with verbal and nonverbal message feedbacks of their own.

Biopsychosocial concepts, although published in the literature for almost three decades now, have not adequately changed the way physicians behave. Not only are there pecuniary reasons not to communicate with or educate patients, there is the problem of the simple inertia of habit as well. The literature is clear that patient attitudes and beliefs, particularly fear-avoidance beliefs and passive coping strategies, play an important role in disability related to back problems and that biopsychosocial management is important. Although it is known that staying active and continuing or resuming ordinary activities is more effective than rest and that referral to specialists is unwarranted in most cases, few physicians give this advice.

Buchbinder et al.[2] acknowledged these facts and conducted a media campaign about back pain beliefs that successfully influenced the beliefs of the population and general practitioners in Australian based on biopsychosocial principles of reassurance, minimizing pathology ideation, promoting activity in spite of discomfort, etc. These efforts had a significant impact on "improving beliefs of the general population" and reducing the number and costs of low back workers' compensation claims compared to a control group. The campaign drew on information summarized in the Back Book by Roland, [15] an educational device that has proven as effective as therapy. The book contains the following messages, which deemphasize biomedical catastrophizing, employing psychosocial reassurances instead: "there are two types of sufferers, one who avoids activity and one who copes." "The avoider get frightened by the pain and worries about the future....the they have more time off work and they can become disabled........ Copers suffer less at the time, and they are healthier in the long run."

The "do"s and "don't"s and "things to remember," to be a coper are as follows.

Do:

1. "Live life as normally as possible. This is much better than staying in bed."
2. "Keep up daily activities— they will not cause damage. Just avoid really heavy things."
3. "Try to stay fit-walking, cycling or swimming will exercise your back and should make you feel better. Continue even after your back feels better."
4. "Start gradually and do more each day so you can see the progress you are making."
5. "Either stay at work or go back to work as soon as possible. If necessary, ask if you can get lighter duties for a week or two."
6. "Be patient. It is normal to get aches and twinges for a time."

Don't:

I. "Don't just rely on painkillers. Stay positive and take control of the pain yourself.
2. "Don't stay at home and give up the things you enjoy."
3. "Don't worry. It does not mean you are going to become an invalid."
4. "Don't listen to other people's horror stories they're usual
5. "Don't get gloomy on down days."

Remember:

I. "Back pain is common but it is rarely due to any serious disease."
2. "Even when it is very painful that usually does not mean there is any serious damage to your back.
3. "Mostly it gets better with little or no medical treatment."
4. "Bed rest for more than a day or two is usually bad for your back."
5. "Staying active will help you get better faster and prevent more back trouble."
6. "The sooner you get going, the sooner you will get better."
7. "Regular exercise and staying fit helps your general health and your back."
8. "You have to run your own life and do the things you want to do. Don't let your back take over."

Media campaigns may be required to accelerate the appropriate dispensing of information between providers and patients, as there appears to be a significant lag of incorporating literature, evidence-based information into general practice. The communication may, in fact, have to be initiated by patients demanding evidenced based behaviors are expected of providers, i.e. that science should be concerned with people and not just the things they are made of. I

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COMMENTS

The communication goal of the biopsychosocial model places responsibility on providers and patients alike. Behavioral changes by the provider are the key to changes in behavior by the patient. The provider is not intended to be a passive observer, sitting in judgment of patients and labeling them when things do not turn out as well as they should. Biopsychosocial concepts, as originally developed for health care in general and subsequently evolved for the low back in particular. are a clarion call for providers to think, behave and communicate in innovative fashions to elevate, not deprecate, those for whom they care. The article considers the origin of the biopsychosocial model, its scope and limitations. and the evolution in the field of modern evidence-based care for low back pain conditions.

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