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THE ARGUMENTS ABOUT RSI: AN EXAMINATION

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Abstract

The occupational health problem which, in Australia, is commonly referred to as repetition strain injuries (RSI) has long been the subject of debate. A large increase in the number of reported cases was seen in Australia in the 1980s and was accompanied by a flood of articles and letters to medical journals. This has given an unprecedented opportunity for analysis of the debate over this occupational health problem. We outline the standard view that there are work-related injuries and four principal contrary views: that people with RSI are malingerers, that they suffer from compensation neurosis, that they have a conversion disorder or that they have normal fatigue. We examine the types of arguments and evidence used to back up these views, with particular emphasis on the alternative explanations. We show that the standard view has weaknesses, but that the alternative explanations have even more problems if they are examined with the same rigour that their advocates demand of the standard view.

Introduction

In Australia in the 1980s, there has been a dramatic increase in the number of reported cases of repetition strain injuries or RSI. This has become responsible for a large fraction of payouts for workers' compensation. In the view of many practitioners in the area, the pain and disability associated with RSI are caused by physical damage and are related to activities at work. There is also a strong opposition view which denies any organic basis for the problem except in a minority of cases. This debate is not new nor is it restricted to Australia;[1-7] what is new is the volume which has been written about this disorder, which for the first time allows an in depth analysis of the debate to be made.

The continuing debate over RSI is understandable in terms of the social construction of medical knowledge. According to this view, reality is not an unproblematical mirror of nature.[8] Instead, perceptions and interpretations of nature depend on processes of social negotiation.[9] This analysis has been well developed for the natural sciences[10-12] and can readily be applied to medical knowledge.[13-15] Thus what is called an illness is not given solely by nature but is also tied up with current medical practices, prevalent theoretical frameworks, the social system, prevailing imagery about health and disease and so forth. In most cases, members of the medical profession largely agree on their understandings of illness and this is interpreted as reflecting an unproblematical underlying reality. But in other cases such as the current RSI debate there is open disagreement and so the processes of social struggle over knowledge are highlighted.

It is important to realise that arguments about RSI have been raised in an intensely politicised context. Whether or not the incidence of physical problems changed in the 1980s — which is one of the disputed points in the debate — there was an increase in reported cases. This increase was associated with actions by workers' health and women's groups, numerous reports in trade journals and the mass media, and legal actions to obtain workers' compensation. From a sociological point of view, what might once have been a little recognised social condition became a significant social problem because of organised efforts in making various sorts of social claims.[16-18] In a similar vein, RSI could be said to be a social movement or social process:[19/20] the recognition of RSI as a social problem is inseparable from the organised action of those who promote it as a significant issue.

The medical supporters of what we call the standard view have helped to legitimate the activities of those who generated concern about RSI, while the arguments by medical critics help to legitimate resistance to the RSI 'movement'. Thus the medical evaluation of the issue is inseparable from wider political developments.

In this paper we do not attempt to develop a fully-fledged sociology of medical knowledge about RSI (though we plan to deal with this in later work). Our aim here is the prior important task of systematically examining the arguments made in the

debate, at the level of medical knowledge. We begin by outlining the standard view that there is physical damage which is work-related, and then consider four principal contrary views and the types of arguments and evidence used to back them up. Finally, we turn to some of the problems associated with the alternative explanations. These problems are considerable, and show that these explanations do not satisfy the stringent requirements their advocates demand of the standard view. We concentrate on the arguments against the standard view here because they have not been critically examined in a systematic way, while they themselves are critical examinations of the standard view. We examined papers published up to the end of January 1988.

The Standard View

This view is that there are a large number of people who suffer injuries to the neck, shoulders and/or upper limbs caused by certain activities, which are often work-related. In practice the injuries are thought to be caused by a number of factors, but the three main ones are: rapid repetitive movements, less frequent more forceful movements, and static load.[21] The main people involved in formulating the standard view have been Browne and co-workers, Ferguson, Fry, McPhee and Stone, although they do not agree on all points.[21–30] Fry's published work has mainly involved studies of musicians, while the others have studied people in a variety of blue- and white-collar occupations.

As repetition is not the only factor thought to cause these injuries, and as static load can be the most important factor in many cases, most proponents of the standard view prefer the term overuse injuries or syndromes rather than RSI.[21/26/29] The standard view has emphasised work-related injuries as being the most common,[21] but also recognises that injuries can be caused or exacerbated by recreational activities.[22/23]

The symptoms of RSI are said to include pain, tenderness, fatigue, sudden and unexpected loss of grip, loss of strength and stamina, incoordination and loss of agility.[24/26/30] Depression is also common.[24/25] The symptoms may arise from multiple sites including musculotendinous junctions, fibrous and synovial tendon sheaths, tendon attachments to the bone, points of entrapment of the ulnar or median nerve and the muscles themselves.[22]

Ferguson has suggested that the majority of cases of RSI are diffuse muscle disorders.[23] They are often diagnosed as myositis, myalgia, fibrositis, fibromyositis, muscular rheumatism, or myofascial syndrome. He argues that these disorders may be confused with occupational cramps, which are a major variant of RSI. Fry suggests that the disorders he has studied in musicians are the same as those which have previously been called occupational cramps and that they predominantly involve muscles and joint capsules.[26/28]

Browne and co-workers and Stone suggest that a number of other conditions are also common, including tenosynovitis of the extensor muscles of the wrist and thumb, lateral or medial epicondylitis, rotator cuff or bicipital tendinitis, thoracic outlet syndrome or reflex sympathetic dystrophy syndrome.[21/22/30] A recent study detailed the anatomical sites involved in 100 consecutive cases and showed that all involved muscles plus at least one other site.[31]

The accepted diagnostic procedure involves taking a careful clinical and occupational history, physical examination and the exclusion of non-occupational rheumatic diseases.[22] The occupational history should include an appraisal of job design, posture and the biomechanics of performing daily tasks, as well as any changes in work pattern which may have occurred at the time of onset of symptoms. An increase in the rate of production or a change of machine or component is said often to be related to the appearance of symptoms.[21/22]

The physical examination involves looking for local tenderness, pain on movement of a joint or on resisted contraction of muscles and the reproduction of parasthesia or numbness by evocative manoeuvres.[22/31] Fry emphasises the importance of local tenderness and its registration by the unmistakable body language of the patient.[24/27] Stone maintains that by precisely detailing all affected areas and by repeated examinations, people without genuine problems can be picked out, because their symptoms are inconsistent. He adds a caveat that for people suffering from static strain injuries, tenderness may not be able to be precisely localised.[21] Ferguson also points out that problems may shift in site and nature, as affected workers try to compensate or as the work changes. He also says that problems in diagnosis can arise because repetitive tasks often have more than one component requiring the action of several muscle groups, so that two or more structures may be overloaded resulting in multiple syndromes.[23]

There is general agreement that features such as heat, swelling and crepitus are unusual and that special investigations such as X-rays, electromyography and nerve conduction may only be positive in a few cases.[21/22]

While the pathology underlying some of the forms of RSI, such as bicipital tendinitis, epicondylitis and carpal tunnel syndrome, is well-accepted,[32] the muscle disorders have not been clearly linked to an underlying pathology. Browne and coworkers have suggested a possible mechanism

for such pathology in that "short-term studies of isometric loading have demonstrated capillary bed occlusion leading to muscle ischaemia, heat accumulation, and delayed clearance of metabolites".[22]

The proponents of the standard view have generally graded RSI, according to the severity of symptoms and signs, into either three or five stages.[22/26,30] At the earliest stages, there is pain or tenderness during the work, which goes away overnight or on days off. Performance is not reduced and there are unlikely to be any physical signs. At the middle stage, pain continues throughout the time away from work and causes a reduction in performance. Physical signs may be present. At the severest stages, symptoms persist even during rest, sleep is disturbed, pain occurs with non-repetitive tasks and physical signs are present. A progression through these stages is said to be likely if a person persists in the overuse activity despite early warning signs and encroaching limitation of function. (More recently Faithfull and co-workers have expressed doubt about the usefulness of this staging system.[33])

Treatment depends on the stage of the RSI. The early stages are said to be reversible through work modification, rest breaks and exercises.[22/26/30] In the later stages the most important factor is thought to be rest, so that the worker avoids precipitating and aggravating factors.[21 22:26] While Browne and co-workers and Stone suggest that workers in these stages may need to consider permanent changes in their lifestyles and working capacities,[22/30] Fry maintains that substantial recovery is possible, if a regime of 'radical' rest by total avoidance of pain inducing activities is followed.[26]

Other treatments such as physiotherapy, relaxation therapy, anti-inflammatory drugs and so on may help in some cases, although it is generally agreed that their efficacy is variable.[21/22/26/30]

All proponents of the standard view emphasise the importance of identification of cases at an early stage, so that prevention of injury can occur through work reorganisation and redesign.[21-23/25/30]

Stone suggests that the epidemic nature of RSI seen in Australia in the 1980s has been caused by the convergence of a number of factors, including: heightened awareness leading to more frequent reporting and, among doctors, to more frequent diagnosis; increased production rates often coupled with overtime, incentive payments and the setting of quotas, caused by the economic recession; reduction in task variety resulting from automation, often coupled with inadequate and infrequent job rotation; less mobility because of the recession and high unemployment, so that workers find it difficult to leave jobs causing pain; and inadequate attention to ergonomic factors.[30] Ferguson, on the other hand, suggests that the epidemic has resulted from public awareness of a long-standing endemic problem.[23] (More recently his view has changed somewhat.[34])

Other studies have claimed that there is a link between RSI and psychosocial factors. These include low autonomy, low peer cohesion and a frequent need to push oneself.[35-37] It is suggested that these factors increase muscle tension and therefore the propensity for injury.[35/37]

Underlying the standard view is a view of people who have developed RSI, which generally sees them as "highly motivated"[38] and with "strong work ethics",[22] who delay reporting for a variety of reasons including "fear of dismissal or other retaliatory action by employers or supervisors; or through ignorance or loyalty to employers or fellow workers".[29] Browne suggests that "patients are often their own worst enemy, by denying the existence of symptoms and pressing on regardless, hoping they can ride over the problem".[32] More recently it has been suggested that the stigma attached to the label of 'RSI' has reduced reporting, as those so labelled fear being thought of as malingerers or as people with a psychological disorder.[33]

Four Alternative Explanations

There seem to be four main explanations proposed for RSI aside from the standard one. These are: people with RSI are malingerers; RSI are a form of compensation neurosis; RSI are a form of conversion disorder; and RSI are 'normal', a type of reversible fatigue. In practice many writers are not clear about which alternative explanation they are endorsing and some present a mix of views. In addition, most do not make it clear whether they are referring to a broad concept of RSI as defined by Browne and co-workers[22] and Stone,[21/30] which includes relatively well-defined entities such as tenosynovitis and epicondylitis, or whether they are referring only to diffuse muscle disorders. Nevertheless, the main point is that RSI are said either not to be real (i.e. not organic in origin) or not work-related, or both.

The critics all seem to agree that 'RSI' is an inappropriate name for these disorders. They see it as a description rather than a diagnosis and particularly object to the word injuries, which they feel is inappropriate. Hadler sums up the critics' viewpoint succinctly: "The inescapable implications of this label include the following: this cluster of symptoms is a pathophysiological entity; the task is causal (inherent in the 'RS') and therefore the employer is culpable; and potential exists for damage (the 'I' of RSI)".[39]

The critics also suggest that articles outlining the standard view have contributed to the RSI epidemic, for example, Awerbuch claims that papers published in *The Medical Journal of Australia* "have energized

an epidemic with the dubious distinction of being the largest, most costly and most prolonged industrial epidemic in world history".[40]

People with RSI are malingerers

The view here is that workers do not have an injury at all, and that they are consciously faking their symptoms in order to receive workers' compensation payments, time off work or lighter duties. Such workers are called malingerers. Although private comments suggest that many people believe that malingering is a major source of complaints of RSI, and indeed of other work-related injuries,[41] this belief is not found in print very often. It has been hinted at in comments such as: "Stressful personal or leisure activities may continue unabated. Return to work duties neither tiring nor repetitive is declined or barely attempted."[42] and "They frequently have well-developed musculature in the limb despite months or years of alleged non-use. We also often see ingrained dirt on the palms of these 'functionless' limbs."[43]

Ireland suggests that malingering is encouraged by the general climate and attitudes in present day society: "When Australia has a political system that encourages honesty and integrity and society accepts the necessity of a 'work ethic', a reduction of 'susceptible patients' would save Australian taxpayers millions of dollars".[44]

Malingering is also often confused with the next view, namely that RSI are a form of compensation neurosis.

RSI are a form of compensation neurosis

Compensation neurosis has not been clearly defined, but is often inferred when people are thought to have disproportionate disability and delayed recovery from a genuine injury.[45–47] This is generally attributed to an unconscious desire for secondary gain, usually, but not necessarily, financial. Other gains can include invalid status, attention from others and freedom from unwelcome work. The financial gain is thought to arise because the workers' compensation system is seen as providing an opportunity for workers either to receive an income without working (through weekly payments) or to obtain large windfalls of money (through lump sum settlements, either in lieu of weekly payments or as a result of a successful common law damages suit against the employer). The explanation also maintains that once the financial gain has been obtained immediate recovery and usually return to work follows, whereas other treatments are ineffective.

With regard to people with RSI, Rush has written: "In my experience the condition is almost invariably seen in workers who are making a workers' compensation claim. If seen in other groups, for example sportsmen and musicians, it always gets better with rest".[48] Another surgeon, Bloch, has written: "Resolution has followed on satisfactory court awards. The epidemic is further fuelled, and recurrences and re-awards increase".[42]

RSI are a form of conversion disorder

This explanation is closely related to the compensation neurosis explanation, except there is no injury to begin with. Instead the pain results from unresolved psychological conflict or emotional disturbance. Put another way, the conflict is converted into imaginary pain, which in turn allows an escape from the conflict. Detailed expositions of the conversion disorder explanation have been presented by Lucire,[49/50] who has written: "Post-Freudian views allow that the repressive forces of the society in question are internalized and block the expression of unacceptable sexuality, of anger, of wishes to be cared for, of fears for security, of wishes for self-fulfilment, and of other needs that are in conflict with the demands of the self or of the environment. So the powerless and dependent, and those who cannot otherwise express their righteous rage at their supervisors, employers and spouses, resort to the use of their exquisitely symbolic pain and incapacity as a mode of communication of their distress."[49]

The symptoms are said to be pain and occupational impairment and suggest the involvement of both motor and sensory modalities, but cannot be explained by known pathophysiological mechanisms.[49] There are few signs beyond occasional swelling and blotches.[50] Cleland argues that the problem is primarily the result of a disturbance of sensory perception, although this does not result from an injury. The increased sensory awareness means that sensations which arise from use of the limbs, of which the person is now inappropriately aware, are interpreted as pain. A process of "social iatrogenesis" transforms this disturbed sensory perception into a "protracted, painful, disabling condition which precludes effective work and degrades the quality of life."[51]

The person is also said to show a complete acceptance of a level of disability which would be catastrophic if it were organic, suggesting that the focus is on the secondary gain.[49,52]

Diagnosis is by psychiatric evaluation, and the ruling out of organic disorders.[50/52]

Guidelines for treatment are not clear, although Lucire suggests that psychiatric treatment is not needed. She also suggests that treatment is not possible for people who do not believe that they have a psychogenic disorder, if litigation is in train or if the insurance company is monitoring the treatment.[50] The theory underpinning treatment is

"a basic belief in the personal integrity and power of the individual, treatment based on her empowerment, on the belief that she can, if she so decides, learn enough to take control of her pain and to do what she wants".[50]

Ireland, who also supports this viewpoint, suggests that "psychiatric therapy" is needed and should be disguised as "relaxation therapy with a 'non-threatening' occupational therapist" progressing on to techniques for active control of muscle tension. He says that psychiatric counselling is rarely necessary if patients undergo this therapy.[44]

Lucire argues that the epidemic of RSI is a form of mass hysteria, an epidemic of "predominantly manual astasia — abasia", resulting from inappropriate diagnosis and treatment, and rewarded and reinforced by the workers' compensation system.[49/50] "Early reporting of now alarming symptoms reduces the pain threshold and influences others unconsciously to claim the same primary and secondary gains as those who were affected".[49] Keyboards, movements and trauma are said to have become symbols of physical danger or economic insecurity to which the vulnerable react neurotically. The epidemic can only be controlled by the complete withdrawal of the injury theory.[49] Cleland's description of social iatrogenesis is similar.[51]

Lucire describes people with RSI as "egg-shell personalities", usually compulsive or dependent people, who see themselves as "victims" and who need to "get a grip" on themselves.[50] According to her this is a clinical description. "To say that someone is converting beliefs and emotions into symptoms is not a pejorative remark".[50]

RSI are normal fatigue

Nearly everyone suffers from aches and pains at some stage as part of everyday life. In many cases this discomfort is merely a form of fatigue and Hadler argues that this applies to most cases of RSI, excluding relatively well-defined disorders such as carpal tunnel syndrome.[39] The discomfort may be associated with work; people "are more likely to experience such discomfort if they are unaccustomed to the particular task; if the task is performed in an awkward arm or body posture; and if they can not regulate the pace and interval of performance to some degree".[39] There is no underlying injury or pathology and the discomfort is relieved by rest, although not necessarily promptly. The problem can be solved by "ergonomic task modification".[39]

The reason the epidemic of RSI has arisen is that in "the charged climate of occupational medicine that is current in Australia, no individual could or should attempt to ignore such discomfort",[39] in other words what we are seeing is an epidemic of reporting of discomfort, which would normally have been accepted in silence. This is also the view of Spillane and Deves and Brooks.[53/54] The latter has written: "We seem now to live at a time when we must have no stress and no pain in our lives. In fact, if there was a little more pain around (fatigue), one might feel more confident about the economic future of our country".[54]

Evidence and Arguments

In outlining the main alternative explanations for RSI, we have only touched on some of the criticisms of the standard view. Here we categorise the main types of arguments and evidence used by the critics.

RSI have no objective signs

The most common criticism of the standard view is that there are no objective signs on which diagnosis can be made.[39/42/44/48/54/55–60] The critics maintain that the diagnosis relies entirely on subjective symptoms, in other words on statements by the patients concerning pain and reduced function. Each alternative explanation is defended using this evidence.

There is no underlying pathology in people with RSI and, in any case, overuse is impossible

Many of the critics maintain that no pathological changes can be found in people with RSI.[39/44/48/49/51/54/57/58/61–63] Awerbuch[55/64] and Bloch[42] cite evidence that it is impossible to "cause permanent injury to striated muscle, either isometrically or dynamically". This supports all alternative explanations.

The symptoms of RSI do not make clinical sense

The critics also commonly argue that the "signs and symptoms do not make normal medical sense".[60] For example, it is argued that there is no distinctive pattern of symptoms,[57] that the symptoms are not localised,[54/59] that the pattern of pain does not fit any sensible clinico-pathological entity,[43/44] that the nature of the pain differs from that usually experienced as a result of damage to defined anatomical structures,[51] that objective signs are incompatible with subjective complaints,[43] that the pattern of pain is inconsistent between patients,[44] that the complaint bears no physical or temporal relationship to the original injury[42] and that the symptoms may spread to the other arm.[43/49/62] This evidence is used to support explanations of malingering, compensation neurosis and conversion disorder.

RSI are not responsive to orthodox treatments, in particular rest

Various critics maintain that RSI do not respond to orthodox treatments,[42/48/49/50/54/57/60/62] that they get worse with time[43/62] and that they may continue indefinitely[42/54/60] and that, therefore, it cannot have an organic basis. Many of these critics maintain that the lack of response to rest, in particular, means that RSI are not a physical problem.[48/59/62] This evidence is used to support explanations of malingering, compensation neurosis and conversion disorder.

RSI are an Australian disease

This argument is mentioned by only a minority of critics, but it is probably the most widely heard among the general public. Both Awerbuch[65] and Bell[57] suggest that RSI is unknown or rare outside Australia, while others contend that while the problems are known, there is no epidemic of RSI outside Australia.[54/62/63] This supports all alternative explanations.

There is no consistent relationship between RSI and work

Some critics maintain that there is no sound causal basis for RSI in the work that people with RSI do. It has been argued that there is no relation with a clear precipitating or traumatic event,[39] no obvious demonstrable physical cause,[66] no constant relation to stress, overwork or repetition[44/49-51/53/57] and no constant temporal relationship between work and the onset of symptoms.[62] In addition, it has been argued that prevalence can increase in industries where manual tasks have remained unchanged for decades[39] and that there are regional differences or differences between private and public employees in prevalence although people are doing the same work.[57/62] With regard to the high prevalence among VDU operators, some critics maintain that the new keyboards are so well designed that it is highly unlikely that their users would experience problems.[63] These arguments are used to support all alternative explanations.

Prevention strategies do not work

Some critics maintain that prevention strategies based on the tenets of the standard view do not work and therefore that the standard view is not correct.[39/42/57] This can support all alternative explanations.

Epidemics are usually caused by a virus or by psychogenic factors

Brooks suggests that there are very few causes of epidemics, the most common being viruses or psychogenic diseases. Evidence that RSI are caused by a virus is scant, suggesting that they might be psychogenic.[58] In addition, other critics[49/57/62] suggest that the RSI epidemic is analogous to previous epidemics which are thought to have a psychogenic basis, particularly the 1830s epidemic of writer's cramp in the British Civil Service and the epidemic of telegraphist's cramp which occurred among Post Office workers in Britain and Ireland at the turn of the century.

Comments on the critics' arguments

As outlined above, the critics have strongly attacked the apparently weak points of the standard view, and have collectively presented an array of alternative explanations, each of which is claimed to be consistent with the available evidence.

In response, the proponents of the standard view have typically reasserted their own arguments and evidence, and have ignored the alternative explanations almost entirely.

As a result of this asymmetry in the debate, there has been no systematic scrutiny of the critics' arguments and evidence. We examine these from three viewpoints: (i) the empirical data on which they are based, (ii) their consistency with the available evidence, and (iii) their ability to predict outcomes for prevention and treatment strategies.

The empirical foundations

The outstanding feature of the debate about RSI is the lack of empirical evidence to support many of the assertions made by both the proponents and the critics of the standard view. This is most clearly illustrated in the debate about whether or not RSI can be diagnosed using objective signs. Until recently neither side made their diagnostic criteria public and therefore open to independent scrutiny. Some of the proponents of the standard view have now published some information about their diagnostic criteria.[31] As the assertion that there are no objective signs is the most important of the arguments made by the critics of the standard view and as it is fundamental to all the alternative explanations for RSI, it is essential that the critics of the standard view make the diagnostic criteria and other methods by which they reach this conclusion public and open to independent analysis.

The arguments surrounding the diagnostic criteria are clouded by a further issue which is that of the care with which diagnoses are made. Each side accuses some doctors on the other side of superficial examinations.[55/67/68] This highlights the need for clear and public diagnostic procedures.

It is also important that the critics detail the criteria, objective or subjective, by which to assess malingering, compensation neurosis or conversion disorders. (It is certainly not enough to suggest, as Lucire has done,[50] that people with RSI have unresolved psychological conflicts, because most, if not all, people have these.) These diagnoses seem to

rest on ill-defined assessments by the examining doctors; this is a major weakness of these alternative explanations.

The critics have highlighted other weaknesses in the empirical foundations of the standard view. One is that there is no evidence of underlying pathology for the diffuse muscle disorders. It is not clear if this simply reflects a lack of research, for the critics have not given any evidence of research which has set out to find pathological changes but has not been successful; if this is the case, it weakens the critics' argument.

The critics have also argued that the symptoms reported by people with RSI do not make clinical sense. Neither side has presented much evidence on this point.

As indicated earlier, the proponents of the standard view tend to see people with RSI as hard-working individuals who attempt to ignore their problems. On the other hand, some critics of the standard view see people with RSI as reluctant to work and as blowing minor fatigue up into a major problem. Neither side has attempted to explain this disparity of views. Either they are seeing very different samples of people or else different practitioners are putting very different interpretations on the motivations and activities of people with RSI. Again neither viewpoint appears to rest on a systematically collected body of evidence.

Some critics also argue that the high incidence of RSI currently seen in Australia is analogous to previous epidemics of mass hysteria. There is no good empirical evidence that these previous epidemics were psychogenic in origin, nor that the analogy with them is a sound one. In addition, the suggestion that epidemics are either viral or psychogenic in origin, and that RSI are therefore likely to be psychogenic,[58] relies on an unnecessarily restrictive definition of the current use of the word 'epidemic'.[69]

Consistency with the available evidence

While it is common for people to ignore evidence which runs counter to their arguments, it is particularly evident that the critics of the standard view have failed to refute or even cite much of the evidence used to support the standard view. This will not be dealt with in detail here, except to say that there is evidence that RSI exist outside Australia[70–73] and that epidemics have also occurred outside Australia, that preventive strategies do work,[71/73–75] that pathological changes and overuse may occur,[76/77] and that work-related factors are often clearly associated with RSI.[70/71/73/78–83]

The alternative explanations also need to be examined for their consistency with the available evidence. Both the conversion disorder and compensation neurosis explanations assume that people with RSI have an underlying vulnerability for neurotic disorder. The only empirical evidence of which we are aware does not support this suggestion. This study showed that people with RSI did not differ from a control group on a test for neuroticism, which is widely accepted as an index of vulnerability to neurotic disorder.[35]

Predictability

The various explanations for RSI have different implications for how the problems can be prevented and treated. Their success in predicting effective prevention and treatment strategies can help assess their validity.

We have already pointed out that the suggestion by some critics, that prevention based on the tenets of the standard view does not work, ignores contradictory evidence. Nevertheless it must be pointed out that there have been very few rigorous assessments of the success of various prevention strategies, so that this is still of relatively little use in differentiating between the various explanations. Certainly there is no sound evidence that prevention strategies based on the tenets of the alternative explanations work.

Similar points apply to the debate about treatment for RSI. In addition, at least three factors confound the gathering of evidence about the efficacy of treatments. These are that people with different signs and symptoms may require different treatments, that combinations of treatments are often suggested or undertaken, and that people with RSI may not adhere to the prescribed treatment.

While rest is generally assumed to be the best treatment for all types of RSI, there is some evidence that exercise may be best for some types, such as epicondylitis.[84/85] This evidence suggests that different types of RSI will respond to different treatments, but this still needs to be rigorously investigated.

Many people with RSI undertake a combination of treatments[72–86] which makes it difficult to assess the efficacy of any one treatment. It is also possible that some combinations may be counterproductive, for example, analgesic drugs may be counterproductive to treatment by rest, because by deadening pain they may encourage activity which may exacerbate damage.

In addition, doctors rarely determine how closely people adhere to prescribed courses of treatment for RSI. An important example here is adherence to the treatment of rest. As has already been pointed out, some critics argue that because RSI do not improve with rest, they have no organic base. For women with home and family responsibilities, rest may simply not be an option. It

is not clear how important a factor this is in the alleged failure of rest as a treatment. There is some evidence that 'radical' rest, where the person refrains from all pain-inducing activity (including, if necessary, cleaning teeth and cutting food) has had some success.[26/68/87/88] This warrants further examination.

On the other hand, there are as yet no studies or even testimonials that treatments based on the alternative explanations have had any success. There is not even good objective evidence that people with RSI benefit from their disabilities. Such evidence might include large, prompt and ungrudging compensation payments and reliable and widespread support for people with RSI.

Conclusions

The standard view of RSI is far from watertight, and some of the criticisms which have been made of it strike effectively at its weaknesses. What we have shown is that the alternative explanations seem to have even more problems than the standard view if they are examined with the same rigour that the critics demand of the standard view.

Some critics have implied that the standard view of RSI is discredited, because illness, most notably RSI, can be seen as a social construct, relying on groups of people agreeing on the meaning of observations, reports and theoretical interpretations.[49/53] The discrediting does not follow logically. The fact that a social construction perspective may be useful in understanding illness and showing that illness is inseparable from what can be called social movements, does not automatically either legitimate or discredit the illness.

The existence of a social movement, or of organised activities to define illness as a social problem, means that clinical debates become political debates in another forum. Arguably, in the debate over RSI this has influenced both the proponents and critics of the standard view.

The proponents, by declining to confront the critics systematically, have thereby avoided giving them the credibility implicit in taking an opponent seriously, but have also avoided a closer scrutiny of their own weak points. The opponents, in their multifaceted attack on the standard view, have failed to develop their own alternatives in a comprehensive fashion.

What seems to have happened is a polarisation of views between the proponents and opponents of the standard view. As is common in controversies over scientific theories, each side interprets the evidence in a way that supports its own presuppositions.[89] Some of these presuppositions are evident in the views that the proponents of each side have expressed about people with RSI, which have been outlined earlier. The views of the opposing sides can have profound medical and legal consequences for people with RSI.

As we have shown, the polarisation of views does not encourage a critical examination of *all* of the evidence about RSI by either side. A major difficulty is that both the proponents and the critics have tended to generalise about RSI. There has been little recognition that there are likely to be various subgroups determined by the type of symptoms, chronicity, type of onset and so on. It is likely that each of the explanations for RSI outlined in this paper will be useful for some subgroups, while none of them is likely to explain all RSI. Indeed the complexity of the issues surrounding RSI is downplayed, especially by the critics of the standard view, who highlight one or two facets of the problem, thus providing a simple and often simplistic explanation of what is occurring.

Interestingly, neither the proponents nor the critics of the standard view among the medical profession have taken up issues of gender, race and class, although these are crucial facets of RSI *vis-a-vis* the medical profession and employers.[90/91]

While simple cause and effect explanations are useful in understanding many medical conditions, there is also growing awareness that the course of these conditions may be affected by a variety of factors which often interact in complex ways.[92] We need to develop and expand upon frameworks of thinking in which the inherent complexity of natural systems can be accommodated.[93/94] RSI may well provide a necessary stimulus.

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