BIOMEDICAL BIAS OF THE AMERICAN PSYCHIATRIC ASSOCIATION

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Abstract

Modern psychiatric practice postulates brain pathology as the cause of mental illness. This may mean that its neurobiological tenets are propounded more on the basis of faith than scientific facts. This bias is examined in a recent statement from the American Psychiatric Association on the diagnosis and treatment of mental disorders.

Introduction

On the 16 August 2003, six "psychiatric survivors" with a history of mental health treatment began a hunger strike to challenge the American Psychiatric Association (APA) (Mind Freedom Online, 2004). They asked for evidence to support common claims that major mental illnesses are "proven biological diseases of the brain" and that emotional distress results from "chemical imbalances" in the brain.

The initial response from the medical director of the APA advised that answers were widely available in the literature. In his view there had been substantial progress in understanding the neuroscientific basis of many mental illnesses.

Following the abandonment of the fast after 21 days, the APA issued a statement on the diagnosis and treatment of mental disorder (American Psychiatric Association, 2003). It said it was unfortunate that a small number of people persisted in questioning the reality and clinical legitimacy of disorders that affect the mind, brain, and behaviour. It contended that the hunger strikers had said that the lack of a diagnostic laboratory test for mental disorders constituted evidence that such disorders are not medically valid conditions.

This is a serious debate and it is important that the protagonists understand each other. Obviously the hungers strikers are incorrect if they are suggesting there are diagnostic tests for all medical conditions. However, the APA is also wrong to think that questioning the biological basis of mental disorder necessarily amounts to denial of the reality of mental illness or invalidation of the practice of psychiatry.

Overall, the APA says defiantly that it will not be distracted by those who would deny that serious mental illnesses are real medical conditions that can be accurately diagnosed and treated effectively. What I want to do in this commentary is to attempt to see through the APA's obviously transparent defensiveness to the foundations of psychiatric practice.

In its favour, the APA admits that brain science has not advanced to the point where scientists or clinicians can point to discernible pathological lesions or genetic abnormalities that in or of themselves serve as reliable or predictive markers of mental disorder. It goes further, however, to speculate that although mental disorders may not be the result of any gross anatomical lesion they will eventually be proven to represent disorders of

intercellular communication or disrupted neural circuitry.

Acting without proof as though these speculations are true may be common psychiatric practice. However, this state of affairs may also demonstrate the bias of the APA and be indicative of its poor professional leadership on this issue.

Critique of the biomedical model in psychiatry

The APA appears to be defending various vested interests. It seems concerned about the potential undermining of research and development, but despite saying that there have been improved treatments over the last 5 years it does not make any effort to explain what these improvements have been.

The central issue seems to be the meaning of the assertion that "mental disorders affect or are mediated by the brain". The critique of the APA statement is not that mental disorders are incorporeal or "spiritual" in the sense of not having a material basis in the brain. Of course, mental disorders, including schizophrenia, have their origins in the brain, as does our "normal" behaviour.

Rather, the problem with the claim that mental disorders are biological diseases is that it creates the reductionist tendency to treat people as brains that need their lesions or disrupted neural circuitry cured. Psychosocial factors in aetiology tend to be avoided. If biological and genetic factors determine psychopathology, the implication may be that personal and social efforts to improve one's state of mind may be pointless. Treating the biological abnormality and not the person, therefore, has ethical implications.

This critique is not meant to imply that bodily factors can be ignored. Emotional problems clearly have physical effects. For example, stress can produce effects on the body and people are aware of the physiological effects of adrenaline in the flight or fight response. In fact, the psychological origins of physical complaints are generally under-recognised.

The APA position on the neurobiology of mental disorder

The APA persists in its view that schizophrenia and other mental disorders are serious neurobiological disorders. What it means by this remark may be inferred from its claims that (a) research has shown reproducible abnormalities of brain structure and function, (b) evidence for a strong genetic component is compelling, and (c) the mechanisms of action of effective medications have been elucidated.

Each of these claims will be considered in turn:-

(a) Research has shown reproducible abnormalities of brain structure and function

Taken at face value, it appears inconsistent to state that research has shown reproducible abnormalities of brain structure and function but then say that it has not progressed far enough to point to discernible pathological lesions. Either the APA is confused or the subtlety of this point needs further elucidation.

The only definite example of brain abnormality given in the statement is ventricular enlargement in the brains of people diagnosed as schizophrenic. This is the most consistent finding from research (Harrison, 1999). Data suggesting other abnormalities have not always been reproducible.

However, the difference of ventricular size between schizophrenic cases and controls is modest and there is a large overlap with the normal population (Chua and McKenna, 1995). The result is also non-specific in that it is found in other psychiatric conditions, such as bipolar disorder (manic-depressive illness). It is also likely to be a concomitant of confounding variables, such as nutrition and hydration. These non-specific factors can be

affected in psychiatric patients and create ventricular enlargement on brain scans

The abnormality of ventricular enlargement may, therefore, not be an indication of the origins of schizophrenia at all. As with any statistical association, a causal connection is not necessarily implied. This may be what the apparent confusion in the APA statement means; it may be saying that reproducible abnormalities such as ventricular enlargement have been shown, but these may not be an indication of schizophrenic pathology as such. If so, the statement needs to be clarified, because as it stands the significance of ventricular enlargement seems to imply that schizophrenia is a neurobiological disorder. If ventricular enlargement is an extraneous variable, this conclusion is unjustified.

If there has been any advance in neuroscience because of neuroimaging over recent years, it has been to encourage a dynamic view of the brain (Eisenberg, 1995). Notions of anatomical fixity, such as static ventricular size and enlargement, should be abandoned. Brain cytoarchitecture itself is fashioned by input from the social environment. In a sense, the brain is socially constructed, which may make it meaningless to expect precise localisation of schizophrenic abnormalities.

The APA has, therefore, not supported its contention that schizophrenia is a neurobiological disorder because of structural abnormalities in the brain. The challenge of the hunger strikers still stands. It is the APA's responsibility to produce the evidence to support its claim.

(b) Evidence for a strong genetic component is compelling

Taken at face value, it may be misleading for the APA to state that evidence for a strong genetic component in schizophrenia, bipolar disorder, and autism is compelling but then not comment further when it admits that research has not progressed far enough to point to genetic abnormalities. If there is a genetic component, what may be surprising is that despite the advance in molecular genetics and the mapping of the human genome, substantial endeavour to find risk genes for major mental illness has been unsuccessful (Moldin, 1997).

The APA does not indicate the nature of the genetic evidence it finds compelling. It will be referring to (i) family, (ii) twin and (iii) adoption studies. The evidence is in fact open to interpretation:-

> (i) Pooled data from *family studies* in schizophrenia has produced an increased average risk ratio among first degree relatives (Gottesman, 1991), but not all studies that have used control groups and blind diagnoses based on structured interviews have found significant differences (Pope, Jonas, Cohen and Lipinski, 1982). Anyway, as behaviour can be learnt, it is of course a mistake to implicate genetic transmission merely because mental illness runs in families.
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> (ii) In *twin studies*, the higher concordance rate for schizophrenia in identical twins compared to same-sex fraternal twins is assumed to be due to the greater genetic similarity of identical twins (100%) compared to fraternal twins (50%), giving heritability estimates of about 80% (Sullivan , Kendler and Neale, 2003). However, this conclusion is based on the "equal environments assumption", which may be invalid as greater environmental similarity, reflected for example in dressing the same, among identical twins compared to fraternal twins could plausibly explain the greater concordance (Lewontin , Rose and Kamin, 1984). Consistent with this view, same-sex fraternal twins have a higher concordance rate for schizophrenia than opposite-sex fraternal twins (Joseph, 2003). This difference is not expected on a hereditary basis. Moreover, methodological problems, such as biased diagnosis and sampling methods, and the influence of one twin on the other through association and identification, particularly when they become isolated together, will favour higher concordance amongst identical twins. Obviously also, identical twin concordance of less than 100% proves that environmental factors

exist.

(iii) *Adoption studies* at least potentially allow examination of genetic relatedness in separate environments created by the process of adoption. A higher degree of "schizophrenic spectrum disorder" amongst biological relatives has been found (Gottesman, 1991). However, adoption agencies do not place children randomly and selective placement of adoptees could be a sufficient explanation of the findings (Lewontin, Rose and Kamin, 1984, Joseph, 2003). Also, expanding of the diagnosis of schizophrenia to so-called schizophrenic spectrum disorder to obtain statistical significance and other adjustments in counting and diagnoses must be suspect (Lidz and Blatt, 1983).

Claims for a genetic basis to mental illness should not be accepted uncritically. The problem is that what the APA finds compelling evidence may be prejudice. It is disingenuous to mention the so-called evidence for genetic factors, without at least mentioning the controversial nature of this evidence.

The ever-widening searches for multiple genes in recent genetic linkage studies has led to opposing conclusions. These range from the view that research will likely lead to the identification of causal genes within a decade (Sawa and Snyder, 2002) to no autosomal genes are implicated at all (Crow, 2003). Despite the APA's enthusiasm, accurate prediction may never be possible because of the complexity of the genetics of common disorders, such as schizophrenia (Holtzman and Marteau, 2000).

The APA has therefore not supported the implication that schizophrenia, bipolar disorder, and autism are neurobiological disorders because of their genetic aetiology. In fact, even if genetic causation were demonstrated as convincingly as the APA thinks it has been, the notion of mental illness as a neurobiological disorder does not necessarily follow. The argument seems to be that genes affect biological mechanisms and therefore that abnormal biology can be corrected by medication. However, it is illogical to regard a genetic basis as indicating that environmental factors are not important. Environmental factors, such as family and cultural variables, can play a role in aetiology. Genetic influence in mental illness may not be very specific. Genes set the boundaries of the possible; environments define the actual (Eisenberg, 2004).

(c) The mechanisms of action of effective medications have been elucidated

Taken at face value, elucidating the mechanism of medication is not the same as discovering the biological basis of mental disorder. The biochemical mechanism of medication may have nothing to do with its apparent clinical effect in the disorder.

The only example of the action of medication specified in the APA statement is the blocking of the reuptake mechanism of norepinephrine by antidepressants. For many years, the prevailing hypothesis has been that depression is caused by an absolute or relative deficiency of monoamines, such as norepinephrine, in the brain. What the APA fails to point out is that the monoamine theory of depression has been found insufficient to explain the aetiology of depression (Hirschfield, 2000). The theory was originally encouraged by the finding that reserpine, an antihypertensive and antipsychotic drug, which was thought to cause depression as a side effect, produces depletion of monoamines in the brain. However, it has been argued that reserpine does not in fact cause depression and the myth of this effect has been perpetuated because of a reluctance to discard the monoamine hypothesis (Baumeister, Hawkins and Uzelac, 2003).

Anyway, research findings do not support the monamine theory, at least in its entirety (Nair and Sharma, 1989). For example, other neurotransmitter systems besides monoamines are affected by antidepressants, and different types of antidepressants exert widely differing effects on monoamine systems. Some antidepressants are, in fact, very weak inhibitors of monoamine systems (eg. iprindole) and others, paradoxically, enhance monoamine uptake (eg. tianeptine) (Hindmarch, 2001). Monoamine depletion has not

been observed to produce depression in healthy individuals; nor is rapid elevation in monoamines correlated with quick antidepressant action (Heninger, Delgardo and Charney, 1996). Neither impairment of monoamine synthesis, nor excessive degradation of monoamines, is consistently present in association with depression. It is also not clear why there should be a time lag for the antidepressant effect as the biochemical effect on monoamine levels is acute (Duman, Heninger and Nestler, 1997). All these inconsistencies undermine the monoamine theory, and suggest it should be abandoned as the basis for understanding the effect of antidepressants in clinical practice.

The APA has therefore not supported the implication that depression, schizophrenia, anxiety and attention deficit disorder are neurobiological disorders because the mechanisms of actions of medications in these disorders have been elucidated. Indeed, there is more uncertainty about the effectiveness of these medications than is commonly assumed (Fisher and Greenberg, 1997). For example, the small difference in clinical trials of antidepressants between placebo and active medication should be more widely known (Moncrieff and Double, 2003). Problems in the methodology of randomised controlled trials of antidepressants, such as unblinding leading to ascertainment bias, mean that the apparent antidepressant advantage over placebo could be explained by reinforced expectancy effects.

The truth is that we do not know the mechanism of psychotropic medications; nor can we say that their effectiveness is totally proven because of the methodological complications and uncertainties of randomised controlled trials. Certainly the effect of medication cannot be said to confirm the neurobiological basis of mental illness.

Conclusion

The APA statement, although brief, does not amount to an adequate rebuttal of the hunger strikers. The APA has behaved as though the answers to the issues raised by the hunger strikers are so obvious that detailed argument is unnecessary. Nonetheless, the APA clearly considers its position authoritative, and as far as it is concerned all that is needed is more research to substantiate its claims.

Fifty years ago, I do not think the APA would have made such a definitive statement. Modern psychiatry may have always been predicated on the somatic model of mental illness. However, at times it has been more pluralistic than the recent APA statement would suggest. For example, Adolf Meyer's Psychobiology focused on the patient as a person and was seen as an advance over the mechanistic views of the 19th century. Also, psychoanalysis was more influential up to about 1970. In retrospect, the view that mental illnesses have primarily psychological causes could be regarded as a brief interlude in the history of psychiatry. During the 1960s and certainly by 1970 in the USA, the biological model of mental illness reasserted its dominance, as the power and attractiveness of Freudian psychology and Meyerian Psychobiology declined (Roth and Kroll, 1986).

What produced the change? Psychopharmacology developed in the 1950s on a wave of therapeutic optimism created by the marketing success of chlorpromazine for the treatment of schizophrenia. Psychiatry also had to withstand a withering critique in the 1960s and 70s from what came to be called "anti-psychiatry" (Tantam, 1991). Anti-psychiatry had an anti-authoritarian popular, even romantic, appeal as an attack on psychiatrists' use of psychiatric diagnosis, drug and ECT treatment and involuntary hospitalisation. The response from mainstream psychiatry was to attempt to improve the reliability of psychiatric diagnoses by introducing operational criteria, as for example in the third edition of the Diagnostic and Statistical Manual (DSM-III). It also took refuge in an over-defended biomedical model of mental illness. This stance can still be seen in the recent APA statement I have been criticising.

The problem is that the basis of psychiatric practice, if we follow the APA, is more dependent on speculation

than science. The hunger strikers asked for evidence that major mental illnesses are "proven biological diseases of the brain". The APA has not been able to provide that evidence. It seems to be asking people to take a step of faith to believe in the neurobiological basis of mental illness.

The Presidents' New Freedom Commission on Mental Health (2003) recommends a fundamental transformation of the Nation's approach to mental health care. I am arguing that these recommendations can only fully be met by a shift away from a biomedical towards an interpretative model of mental illness. This approach tries to understand the reasons for mental health problems and does not mislead people into thinking that psychiatric practice can be justified by postulating brain pathology as the basis for mental illness (Double, 2002). The APA needs to take a more balanced view of the evidence about the neurobiological basis of mental illness. The hunger strikers are to be commended for exposing the bias of the APA.

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