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MENTAL ILLNESS: MEDICATION OR THERAPY?

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One in four people will suffer from mental health problems at some point in their lives (World Health Organization, 2001), a reality common to both developed and developing countries. In fact, so important is the issue that the Department of Health (2004) estimates that mental illnesses are the second biggest burden on the NHS (in terms of the years of healthy life that people lose due to disability and illness). Attempts to tackle the situation on a number of fronts have been seen: last year, £18 million were invested in a new action plan called Moving People, aimed at reducing the increasing stigma associated with having a mental illness in England. Despite this, mental health initiatives are often seen as a soft target for funding cuts within the NHS (Brindle, 2006). This has led to a situation in which, more often than not, doctors end up prescribing medication rather than more expensive psychological therapies. Therefore, it is more crucial than ever to have accurate information regarding the effectiveness of the different treatment options for various illnesses.

The vast expanse of research concerning mental illnesses has given rise to numerous forms of treatment. Psychological approaches focus on the cognition of a person, and attempt to help people by changing the way they think about and perceive their environment. Biological approaches, on the other hand, tend to concentrate on the use of medication (and sometimes surgery) to treat mental illnesses. Is one approach more effective than the other? The present article will seek to answer that very question by focusing on some of the key theories as well as providing empirical evidence to support the different arguments with examples. The majority of research discussed will be on depression, schizophrenia and eating disorders – a decision taken because of the large number of studies in those areas; and because of the fact that covering *all* mental illnesses would simply not be feasible. In addition, the applicability of the theories to real-world situations will be assessed.

Most psychiatric medication focuses on levels of neurotransmission within the brain. A neurotransmitter is a chemical messenger that is transmitted across a synaptic cleft (the small gap between two neurons). Once the neurotransmitter has travelled across the synaptic cleft, it binds to a receptor in the post-synaptic cell, causing an electrochemical reaction which either excites or inhibits the cell. Abnormalities in neurotransmission form the basis of theories for various mental illnesses. One class of medication that is prescribed to people suffering from depression is the tricyclic family of anti-depressants. Increasing the availability of certain neurotransmitters in the brain is thought to underlie the therapeutic effect of most anti-depressant treatments (Blier & de Montigny, 1994; Kalat, 2003). Tricyclic anti-depressants function by preventing the reuptake of various neurotransmitters such as serotonin (5-HT) and catecholamines (chemical compounds containing catechol and amine groups – e.g. dopamine) after release, thus allowing them to remain longer in the synaptic cleft. Most medication for mental illnesses functions in a similar manner, by altering the balance of neurotransmitters in the brain. For example, chlorpromazine (an anti-psychotic drug sometimes given to schizophrenic patients) acts as an antagonist on dopamine receptors, decreasing the activity of the synapses (Kalat, 2003). Whilst we know a little about how such medications work, scientists do not know *all* there is to know about them. Take anti-depressants: although they alter synaptic activity rapidly, the effects of the drugs are not seen till two or three weeks after they are first taken; and the reason for this remains unknown. Because the brain is so complicated, it is virtually impossible (at this point in time) to understand exactly what the drugs are doing at a molecular level. This is why many psychiatric drugs have been discovered and developed by chance, rather than being based on a theory.

Medication is often unsuccessful in alleviating symptoms in *all* patients. Thase, Trivedi & Rush (1995) conducted a literature review of research concerning the effectiveness of tricyclic anti-depressants and monoamine oxidase inhibitors (another class of medication for depression) in the treatment of depression. Thase et al. (1995) found that tricyclic anti-depressants were only successful in treating certain patients, as some did not respond to the medication. Further support for this was provided by Hazell, O'Connell, Heathcote & Henry (2002), who found that tricyclic anti-depressants were generally not useful in treating pre-pubertal children and adolescents. Shifting the focus back on to medication as a whole, it is not just tricyclic anti-depressants that have this problem, but also other drugs such as chlorpromazine, described above (Kane, Honigfeld, Singer & Meltzer, 1998). If medication has the problem of being beneficial only to certain patients, would it be more effective to employ psychological approaches, in that they may help more patients?

Sticking with the example of depression, a psychological approach to its treatment is cognitive-behavioural therapy (CBT). The principles of CBT are to change the way a person thinks about a situation, as it is proposed that a person's behaviour and feelings are influenced greatly by their subjective

assessments of situations (e.g. Beck, 1972). However, how effective are psychological approaches such as CBT against mental illnesses? Dobson (1989) conducted a meta-analysis (a statistical method for combining the results of several independent studies to provide a general overview to a research question) assessing the effectiveness of CBT in tackling depression. Reviewing a total of 28 studies, Dobson (1989, p. 417) concluded that 'cognitive therapy is more effective than nothing at all' in the treatment of clinical depression, though this does not necessarily prove that it is better than a placebo treatment.

Further evidence for the efficacy of CBT has been provided by a more recent meta-analysis (Butler, Chapman, Forman, & Beck, 2006). Their review of the literature concludes that CBT is highly effective in the treatment of depression, as well as anxiety disorders and post-traumatic stress disorder (PTSD). In addition, Butler et al. (2006) looked at the treatment of schizophrenia with CBT. Schizophrenia is largely seen as a biological disorder in which people can have a variety of symptoms (e.g. thought disorder, hallucinations, delusions, lack of emotional expression etc.), and it has been found that people with schizophrenia tend to show an excessive release of dopamine (Kalat, 2003). Because of this biological view of schizophrenia, the treatment given to patients almost always tends to be medication. However, patients rarely get an insight into their illness this way. Butler et al. (2006) found that CBT was also a good addition to medication in the treatment of schizophrenia because the two treatments combined allowed patients a better insight into their illness. This finding tends to indicate that psychological therapies should not be overlooked, even when the illness is believed to be a mainly biological one.

Although both psychological and biological approaches have been proven to be successful in the treatment of mental illnesses, which is more effective? Peterson & Mitchell (1999) conducted a literature review investigating the effectiveness of various psychological (CBT and Interpersonal Therapy [IPT]) and pharmacological approaches in the treatment of bulimia nervosa[1]. They found that both CBT and IPT were generally more effective than the use of medication, although medication was found to relieve some symptoms of bulimia nervosa (e.g. Pederson, Roerig & Mitchell, 2003). They concluded that although there were contradictory findings, the combination of IPT/CBT with medication was a better approach than using psychological or pharmacological treatments alone. However, it must be mentioned that research in the area of bulimia nervosa has tended to focus more on psychological approaches than pharmacological ones (Peterson & Mitchell, 1999), and thus it could be that a lack of research concerning the latter has resulted in the view that the former is more effective than the use of medication.

Returning to the example of depression, DeRubeis, Gelfand, Tang & Simons (1999) conducted a meta-analysis of studies investigating the efficacy of CBT and anti-depressant medication on patients suffering from severe depression. The results of their analysis revealed that CBT was just as effective as anti-depressant medication, despite the fact that CBT is not a biological approach that seeks to tackle depleted neurotransmitters, as anti-depressants do. Therefore, we can assume that, in general, psychological treatment approaches and medication are both effective, despite their differences. What is more important, when comparing the two, is factors such as individual differences between patients, types of mental illness, and personal circumstances.

In fact, it has been found that psychological treatment approaches can produce almost the same metabolism changes in the brain that drugs can (Brody, Saxena, Stoessel, Gillies, Fairbanks, et al., 2001). Further evidence showing that both approaches affect the same underlying cognitive processes has been provided by Norbury, Mackay, Cowen, Goodwin & Harmer (2007). As stated previously, CBT has the advantage of changing a person's negative beliefs about themselves. For example, people with depression have been found to have a negative bias in their memory – remembering more of the 'bad things' than the 'good'. Norbury et al. (2007) conducted a study investigating how an anti-depressant, reboxetine, affects emotional facial processing and the amygdala. The amygdala is an almond-shaped cluster of nuclei found deep within the brain, and is known to be involved in processing emotion. Norbury et al. (2007) found that reboxetine reduced activation of the amygdala when participants were presented with subliminal negative facial expressions. As people with depression tend to show increased activation of the amygdala when presented with such stimuli (Sheline, Barch, Donnelly, Ollinger, Snyder & Mintun, 2001), Norbury et al.'s (2007) findings provide evidence that medication can alter cognition using a 'bottom-up' molecular approach, while psychological therapies achieve the same effect on cognition via conscious and deliberate 'top-down' strategies.

More recent studies have investigated the area of pharmacogenomics. Researchers in this area

[1] Bulimia nervosa is an eating disorder which revolves around a fear of being perceived as obese, resulting in a cycle of binge eating because of hunger, and then 'purging' (e.g. vomiting, use of laxatives) (González, Huerta-Sánchez, Ortiz-Nieves, Vázquez-Alvarez & Kribs-Zaleta, 2003).

have attempted to account for the varying rates of medication effectiveness as being at least partially down to individual differences at a genetic level. Uhr, Tontsch, Namendorf, Ripke, Lucae, et al. (2008) found that when a certain gene was removed in mice, there was a higher level of neurotransmitters in the brain than normal. These findings indicate that the genetic makeup of an individual may help predict the efficacy of a certain drug. However, it must be noted that this research is still in its early stages, and there is a lot more work that needs to be done before we know the full extent of genetic influences.

Another important factor to consider is the relapse rate of patients after treatment. A treatment is generally considered more effective if it makes a long-term beneficial change in a patient, rather than a short-term beneficial change before the patient relapses to their previous state. Case study evidence has shown that CBT can be effective in preventing the relapse of anxiety disorders in children (Linares Scott & Feeny, 2006). However, evidence has also been provided to the effect that anti-depressant medication can be just as effective in preventing relapse amongst people who suffer anxiety disorders (Bandelow, Wolff-Menzler, Wedekind & Ruther, 2006). Given that both psychological and pharmacological approaches are seemingly as effective as each other, factors such as the monetary cost of implementation are also taken into account when it comes to deciding which method to use to prevent relapses. However, is this apparently equal effectiveness also the case when it comes to treatment for other mental illnesses?

Evans, Hollon, DeRubeis, Piasecki, Grove et al. (1992) conducted a study that compared the results for patients who received medication, CBT, or medication with CBT, as treatment for depression. After a two-year follow-up, Evans et al.'s (1992) findings suggest that patients who recover from depression with the help of psychotherapy are less likely to relapse than patients who have received only medication: 'Patients treated with cognitive therapy (either alone or in combination with medication) evidenced less than half the rate of relapse shown by patients in the medication, no-continuation condition, and their rate did not differ from that of patients provided with continuation medication' (Evans et al., 1992, p. 802). It is worth mentioning that Evans et al.'s (1992) findings are also applicable to other mental illnesses. For example, Craighead & Agras (1991) conducted a literature review comparing psychotherapeutic and pharmacotherapeutic treatments for obesity and bulimia. They concluded that CBT was more effective in treating patients' internal cues which influence relapse (e.g. in the case of patients with bulimia, their 'internal cue' is the intentional effort to restrict food intake in the belief they are overweight), than medication – which was more effective in altering the moods of patients. Thus, medication alone was not deemed sufficient to prevent relapse, as patients still held the internal cues which could influence them again (also supported by Gorman, 1994). The presented studies taken collectively seem to support the finding that using psychological treatment approaches such as CBT during acute treatment helps prevent relapse, though this can vary slightly depending on the mental illness.

A point worth raising is that when comparing psychological approaches with medication as treatments for mental illnesses, it would also be wise to consider the side effects and monetary cost of the different treatments. Arguably one of the most infamous side-effects of a drug for a mental illness is that Prozac (fluoxetine) can sometimes cause people to have intense suicidal thoughts. This finding also applies to people without any history of mental illnesses, prior to being given the drug. Tueth (1994) highlighted that although Prozac did not produce these side-effects in everyone, the association is too serious to be overlooked. The prescription of anti-depressants (and other forms of medication) needs to be monitored carefully to check for signs of danger.

Antonuccio, Danton, DeNelsky, Greenberg & Gordon (1999) conducted a review of research examining anti-depressant medication and psychological treatment for depression. They suggested that a problem with anti-depressant (and other forms of) medication is that side effects are fairly common, even with newer forms of medication. For example, a form of anti-depressants known as selective serotonin reuptake inhibitors (SSRIs) can produce mild nausea and headaches (Feighner, Gardner, Johnston, Batey, Khayrallah, et al., 1991). In comparison, psychological approaches rarely, if ever, have any documented side effects, apart from the financial burden of therapy. Another example of this can be seen in the treatment of antisocial personality disorder: almost no side-effects have been found in the use of psychotherapy treatment of antisocial personality disorder; however, this is not the case with pharmacological approaches. Lithium has been used successfully to control the aggressive behaviour that antisocial personality disorder can cause (Markovitz, 2004), though severe side-effects resulting from the toxicity of the substance, including death, have been observed (Nolen-Hoeksema, 2006).

Antonuccio et al. (1999) concluded that psychological treatment approaches are as effective as medication. However, factors such as side effects, and the tendency for industry-funded research studies with negative findings not to be published, should be taken into account when comparing the two approaches.

In general, studies comparing the efficacy of psychological and medication treatment approaches have differed slightly in their findings – some supporting the belief that medication is a superior form of treatment in comparison to psychological approaches (Klein & Ross, 1993); others providing support for the position that psychological treatment is a better method for treating mental illness (Dobson, 1989); whilst other researchers have found both approaches to be equally effective (DeRubeis et al. 1999). What are the causes of these variations in results between different studies?

Jacobson & Hollon (1996) proposed that researchers in the field are no longer objective scientists collecting data, but selectively choosing data and inappropriately making inferences. An extreme example of this was recently uncovered with reference to the anti-depressant drug Seroxat (British Broadcasting Corporation, 2007). It was found that researchers and drug companies knowingly withheld data from clinical trials that would negatively impact upon the status of the drug and the drug company. Although nothing as damaging as this was mentioned by Jacobson & Hollon (1996), they did raise serious methodological considerations for research comparing psychological approaches and medication in the treatment of mental illnesses. After reviewing previous controversial studies, Jacobson & Hollon (1996 p. 8), concluded that 'priori biases (i.e. pre-existing assumptions) and preferences can color the way different individuals interpret the same literature'. In addition, they also mention that allegiance of researchers to a particular treatment (e.g. IPT, CBT, family therapy, pharmacology) can also play a role in influencing data collection/findings (evidence for which was found by Gaffan & Kemp-Wheeler, 1995).

Returning focus back on to depression, more recently, fresh doubts have been raised over the efficacy of anti-depressant medication. Kirsch, Deacon, Huedo-Medina, Scoboria, Moore & Johnson (2008) conducted a meta-analysis investigating the efficacy of anti-depressants. What makes Kirsch et al.'s (2008) study all the more fascinating is that they used data from published and unpublished studies, thus overcoming the problems associated with pharmaceutical sponsored studies, selective reporting in studies etc. Surprisingly, the results of the study indicated that the overall effects of anti-depressants were clinically insignificant (i.e. they were virtually no better than placebo 'dummy' pills). Kirsch et al.'s (2008) study highlights an important problem in the research process concerning publishing bias. Additionally, it casts yet more questions on the debate of the effectiveness of anti-depressants.

Apart from methodological implications, something worth noting about the research discussed above is that the majority of studies make use of meta-analyses. Shapiro & Shapiro (1983) criticised the overuse of this methodology, believing it to be too idiosyncratic and over-generalising. The problem with using meta-analyses for investigating the efficacy of treatment approaches is that it is hard to control for confounding variables (something that has an unintentional effect on the results of a study) that original researchers may have missed out on. In addition to these issues, there is also the problem of comorbidity. Peterson & Mitchell (1999, p. 695) claimed that 'individuals with comorbid substance dependence or who engage in self-injurious behaviours have sometimes been excluded from empirical investigations'. Because of this, it may be that research comparing the efficacy of pharmacological and psychological treatment approaches to mental illness may have missed out on interactions between various illnesses and treatments.

Overall, studies investigating the efficacy of both psychological approaches and the use of medication in the treatment of mental illnesses have varied slightly in their findings, depending on what the mental illness is. Medication appears not to help every individual (e.g. Heathcote & Henry, 2002), and in some cases, psychological treatment approaches such as CBT may be more effective (e.g. Butler et al., 2006). Referring to the question of which approach is more effective, past research has proven to be inconclusive, as the efficacy of any given approach varies between mental disorders (e.g. DeRubeis et al., 1999, Peterson & Mitchell, 1999). Therefore, the type of illness, the type of therapy, and individual differences must be taken into account when attempting to compare psychological and pharmacological treatment approaches. This has important implications for funding differences within the NHS, in that psychological approaches should not be seen as a soft target for cut-backs. There is a wide variety of mental illnesses, and treatment should not be limited to the cheaper method of medication; therapy may be time-consuming and expensive, but it is clearly successful enough not to be seen as an inferior solution to mental illness. The future of research in the area seems bright, but there still remains a lot of work to be done.

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