3. POST-MORTEM STUDIES AND DIAGNOSIS OF MENTAL DISORDERS

3.1. POST-MORTEM STUDIES OF THE BRAIN

The post-mortem study of the human brain "remains the gold standard" method because of the ability to study genetic, molecular, cellular, and neurochemical aspects (Deep-Soboslay et al 2005). This gives it advantages over the study of non-human animals, or of live humans in neuroimaging studies (table 3.1).

STRENGTHS	WEAKNESSES
1. Overcomes limitations of using animals to study human behaviour. 2. More detailed examination of genetic, molecular, cellular, and neurochemical aspects of the brain than neuroimaging of live participants. 3. Used to study brain structure as well as biochemistry. 4. Gains details that non-invasive studies cannot, like ability to study individual parts of the brain under a microscope.	1. Problems of psychiatric diagnosis after death. 2. Sample sizes usually very small, and/or take a long time to collect a sizeable number of brains. 3. Death may cause changes to the brain. 4. Confounding variables including: * Peri-mortem (ie before death) eg fever as cause of death; * Post-mortem eg method of storing body after death; * Miscellaneous eg age of individual, smoker, drug addict 4. Not possible to establish cause and effect relationships as in experiments with live participants.

Table 3.1 - Strengths and weaknesses of post-mortem studies of the brain.

An example of the post-mortem study of the brain

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structure is Highley et al (2001). The volume of white matter and cortical components of the frontal lobes were measured in the brains of 28 controls and 24 schizophrenic patients. The mean ages at death were 67-74 years for the former and 61-73 years for the latter group. Causes of death were reasonably similar. The three hospitals of origin were in England and Northern Ireland.

There was no evidence of alteration in the volume of the frontal lobe of the schizophrenic patients.

3.2. POST-MORTEM DIAGNOSIS OF MENTAL DISORDERS

The post-mortem method can be used to study the brain of individuals known to have a mental disorder while alive (prospective recruitment; Deep-Soboslay et al 2005). But, in some cases, post-mortem diagnosis is required. This can be achieved by interviewing family members of the deceased ("psychologic autopsy"; Deep-Soboslay et al 2005) as well as from the physical brain.

The "psychologic autopsy" requires time and resources to find the relatives, and diagnosis is dependent upon what they say. Retrospective information is always limited by memory, and/or the concerns of how to present the dead. Relatives may fail to give full details of "unusual" behaviours based on the maxim, "never speak ill of the dead" (table 3.2).

Alternatively, post-mortem diagnosis could be made from medical records, assuming that they are available and complete (table 3.3).

3.2.1. Comparison of Methods

Deep-Soboslay et al (2005) were interested in the comparison of methods of diagnosis. For 37 individuals with mental disorders, who died between December 2001 and December 2003 in the eastern USA, psychiatric records were obtained, and family members were interviewed.

Originally 119 cases were examined, but psychiatric records were missing for some and family interviews were not possible with others. Thus leaving thirty-seven cases.

The family interviews aimed to gather demographic, educational, social, occupational, and psychological information about the deceased as well as family history. The psychiatric records were examined using the Diagnostic Evaluation After Death (DEAD)(Zalcman and Endicott 1983). Independent judges were also asked to make diagnoses from the information.

STRENGTHS	WEAKNESSES

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1. Relatives spent time with the deceased and can describe details of their behaviour. 2. Close relatives can give details of the development of the disorder (eg when it started). 3. Relatives may be able to highlight co-morbid disorders, like substance abuse, which psychiatrists might miss. 4. Relatives can be grateful for the opportunity to talk about the deceased, and to try and make sense of their behaviour. 5. Trained interviewers can sensitively gain a lot of information.	1. Recall of information is not always accurate. 2. Impression management ie downplaying certain behaviours as not to speak ill of the dead. 3. Time and resources needed to find and interview relatives. 4. Relatives may not be contactable, for example, because dead. 5. When there is information that conflicts with medical records, who to believe? 6. Relatives may have problems identifying and describing some symptoms of mental disorders. 7. Need to train interviewers. 8. Not the same as interviewing the individual themselves.

Table 3.2 - Strengths and weaknesses of family interviews for post-mortem diagnosis of mental disorders.

Overall agreement between diagnosis from family interviews and psychiatric records was 0.67 (ie diagnostic agreement for 25 cases). The figures varied with the disorder, and was 0.94 for schizophrenia, but 0.68 for major depressive disorder and 0.58 for bipolar disorder.

The researchers were confident that post-mortem diagnosis of schizophrenia is accurate from psychiatric records, while "the use of data from a variety of sources.. can maximize a postmortem research team's ability to obtain a global perspective on an individual's symptoms, course of illness, and functioning, thus improving the likelihood of arriving at an accurate postmortem psychiatric diagnosis".

STRENGTHS	WEAKNESSES

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1. Information from medical professionals. 2. Does not depend upon party with vested interest (relatives) in the impression of the deceased. 3. Data from the whole lifespan. 4. Can be re-assessed by another doctor or psychiatrist.	1. May not be complete. 2. May not be available (eg lost or mislaid). 3. Next of kin may refuse access. 4. Not the same as having an individual in front of you. Not possible to ask questions of them, for example.

Table 3.3 - Strengths and weaknesses of using medical records in post-mortem diagnosis of mental disorders.

3.2.2. Evaluation

1. Length of time of relatives' interviews after death - Relatives for sixteen cases were interviewed within nine months, and the remainder within two years. The researchers argued that waiting 6-9 months was optimal as it allowed grieving time for the family.

2. Large number of cases that could not be used because of lack of complete information (n= 82). Psychiatric records were not available because, for example, individuals had never been hospitalised, or, more often, the records had been lost or destroyed.

Family interviews did not take place because of refusal (usually "passively declining" by not responding after initial contact rather than direct refusal) or inability to contact them. Three attempts were made to contact the family by telephone, and then a brief letter.

3. Opportunity sample based upon who is available, and thus not representative. For example, 23 of 37 cases were male, overall 18 were single and only seven married, and twelve of the sample died by suicide.

Having a representative sample is important if the researchers are intending to generalise the findings to other people.

4. Family interviews were conducted blindly to psychiatric records, partly because the retrieval of these records took months.

5. The number of cases with specific disorders were very low. Only four cases with major depressive disorder and five with bipolar disorder, but only single cases of tic

disorder, adjustment behaviour, and Alzheimer's disease, for example.

6. The family interviews were extensive, using the Structured Clinical Interview for DSM-IV - Clinician Version (SCID-CV)(First et al 1997), an adapted "psychologic autopsy" interview.

7. Diagnosis from the medical records was done independently by two psychiatrists, and if they did not agree, a third opinion was sort.

8. As well as medical records, police reports and medical examiners' reports in relation to the death were used in diagnosis.

3.3. REFERENCES

Deep-Soboslay, A et al (2005) Reliability of psychiatric diagnosis in postmortem research Biological Psychiatry January, 96-101

First, M.B et al (1997) User's Guide for the Structured Clinical Interview for DSM-IV Axis I Disorders - Clinician Version (SCID-CV) Washington DC: American Psychiatric Association

Highley, J.R et al (2001) Schizophrenia and the frontal lobe British Journal of Psychiatry 178, 337-343

Zalcman, S & Endicott, J (1983) Diagnostic Evaluation After Death New York: NIMH Neurosciences Research Branch, Department of Research Assessment and Training, New York State Psychiatric Institution