Event Related Potential in Schizophrenia

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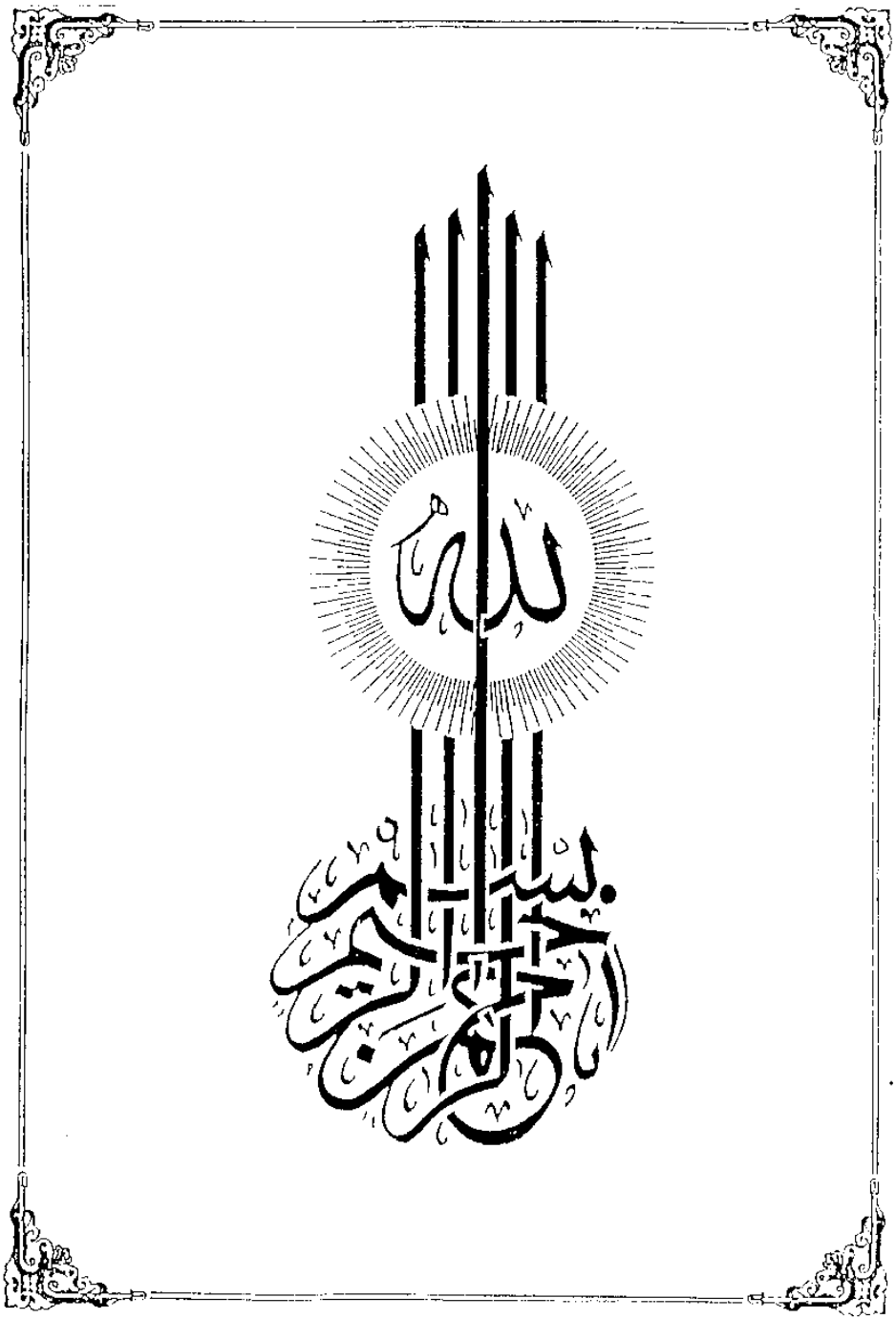

SCHIZOPHRENIA

History:

The two Most prominent people in the history of schizophrenia were Emil Kraepelin *(German,1856 - 1926)* and Eugen Bleuler *(Suiss 1857 - 1939).*

Kraepelin organized the seriously mentally ill patients into three diagnostic groups: dementia precox, manic depressive psychosis and paranoia. Kraepelin's description of dementia precox emphasized a chronic deterioration course in addition to including such clinical phenomenon as hallucinations and delusions.

Kraepelin reported that approximately 4 percent of his patients made complete recovery and 13 percent had significant remission. Bleuler coined the term "Schizophrenia" which means split mindedness, in reference to the theoretical schism between thought, emotion and behaviour. Bleuler's definition of schizophrenia differed from Krapelin's dementia precox in two major ways:

First: Bleuler did not feel that deterioration was a necessary symptom into fundemental or accessory symptoms.

The fundamental symptoms were thought disorders charachterized by disturbance of association, autism and ambivalence.

The acessory symptoms included hallucination and delusion.

Both Bleuler and Kraepelin assumed that there was an underlying biological basis for this disturbance.

Other modern psychiatrists and psychologists who theorized about schizophrenia were Adolf Meyer, Harry Stack Sullivan, Gabriel Langfedt and Kurt Schneider.

Meyer, the founder of psychobiology believed that schizophrenia was a reaction to a variety of life stressors so he called the syndrome " Schizophrenia - reaction"

Sullivan, the founder of the interpersonal psychoanalytic school, emphasized social isolation as both a cause and a symptom of schizophrenia.

Gabriel Langfedt, divided the disorder into true schizophrenia and schizophreniform psychosis.
True schizophrenia is referred to as non remitting schizophrenia. Kurt Schneider described a number of so called first-rank symptoms of schizophrenia include the hearing of one's thoughts spoken aloud, auditory hallucinations that comment on the patient's behavior, somatic hallucinations, the experience of having one's thoughts controlled. Schneider pointed out, that they can be diagnosed exclusively on the basis of second-rank symptoms along with an otherwise typical clinical appearance.

Epidemiology of Schizophrenia

Epidemiological research in psychiatry has applied with the construction of diagnostic schemas based on specifiable symptom criteria. The rapid sequential development of diagnostic criteria has come in the past 15 years after a century of experience wideworld with the phenomenology of mental disorders in community , clinic and hospital settings.

Kraepelin`s formulation of the concept of dementia precox emphasized its endogenous nature and its not only destruction of the normal integration of cognition, affect and volition, but also stressed the typically chronic and massively disabling course of the disease. *(Karno et al., 1986)*

Although Bleuler gave full credit to Kraepelin for the concept of dementia precox and its symptomatic classification , Bleuler has his own theoretical elaboration of the structure of schizophrenic pathology which eventually led to an international schism over the conceptualization and diagnosis of schizophrenia from which two principal (and many lesser) schools of thought and practice evolved.

This phenomenon produced dramatically divergent epidemiologies of schizophrenia, depending on the conceptual and diagnostic orientation of the investigator as a consequence of Bleuler`s influence on American psychiatric thinking *(Karno et al.,*

*1986).*The first edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-I) (1959) provided a non-specific definition of schizophrenic reactions, asserting that they were characterized by fundamental disturbances in reality relationships and concept formations, with affective, behavioral and intellectual disturbances in varying degrees and mixtures. In the second edition of DSM(DSM-II) (1968), the definition mentioned symptoms that differentiated Schizophrenia from paranoid and mood disorders provided little clarification *(Dahrenwend et al., 1980).*

Although systematized and specifiable diagnostic criteria, with rules for inclusion and exclusion of cases, have especially great significance in the study of schizophrenia. These landmark studies, demonstrated that psychiatrist interviewers trained in the use of standardized, structured interview (that generate diagnosis according to specifiable criteria) could accurately diagnose schizophrenia, in persons of diverse nations and cultures living at widely different levels of socioeconomic status, urbanization and industrialization *(Dahrenwend et al., 1980).*

Prevalence of Schizophrenia

Definition: the term prevalence refers to the number of cases of disorders present either at a particular point in time (point prevalence) or during a particular period of time , the week, month, year, prior to evaluation : (period prevalence).

Life time prevalence is generally determined only by retrospective recall of whether the disorder had ever occurred during the individual`s life .

Reviews of 50 studies of the prevalence of schizophrenia in the 6 inhabited continents conducted during the period from 1931 through 1983 and based on diverse methodology, revealed point prevalences (10studies) ranging from 0. 6 to 7. 1 cases per 1. 000 population; 3-to 6-month prevalences (10 studies) of 3. 6 to 7. 3 cases per 1,000 population.

Prevalences for periods between 1 year and life(5,18, 45, and 48 years) revealed a range from 1.7 to 9.5 cases per 1,000 population

Lifetime prevalence(21 studies) range from 0.9 to 11.0 cases per 1,000 population. These data include some rates adjusted for what has been considered in epidemiological catchement area(ECA).

Table (1)

Range of results from prevelance studies in schizophrenia (Data taken from Eaton 1985 and Jablensky,1986)

	Eaton (1985)		Jablensky (1986)	
	Max.	Min.	Max.	Min.
Point prevalence	8.3	0.6	7.1	0.6
Period prevalence	7.0	1.7	7.3	3.6
Life time prevalence	3.7	0.9	9.5	1.7

Risk Factors:

Risk refers to the likelihood that someone will develop schizophrenia, who does not currently have schizophrenia but has been exposed to risk factors.

A risk factor is an inherent or acquired personal characteristic or an external condition associated with an increased likelihood of schizophrenia *(Dunchan, 1976)*

Risk factors are categorized in several different ways : demographic and concomitant factors(e.g., age, sex, race, social class), precipitating factors that operate immediately before the onset of schizophrenia(e.g., life events, migration),and predisposing factors that act for long periods of time or during an earlier part of life(e.g., genes, perinatal complications , infections)

Another scheme describes risk factors as either familial influences or sociodemographic factors. The latter can be further subdivided into mutable factors (e.g., social class , marital status, immigration) and immmutable ones (e.g., ethnic group, sex, birth place) (Dunchan, 1976).

Mutable sociodemographic factors could be a result and not a cause of the disease.*(Eaton et al,1985)*

Several cautions are necessary when considering reports from studies of schizophrenic risk factors.

First, a high prevalence of schizophrenia in a particular area may be the result of a protracted illness rather than an increased incidence

of schizophrenia (i.e., prevalence is roughly equal to incidence) (*Taorrey,1981*).

Second, studies that report only the prevalence of schizophrenia may have failed to control other confounding factors that themselves might increase prevalence.

Third. designating something as a risk factor does not imply that everyone exposed to it is at personal risk to develop schizophrenia. It means that a group of people who are exposed to the risk factor present at some time are likely to have a higher incidence of schizophrenia than a similar group who were not exposed to the risk factor. In other words, risk does not imply etiology but rather an association between the risk factor and the development of schizophrenia.(*Taorrey,1981).*

Fourth, schizophrenia may be an etiologically heterogeneous disorder with many risk factors and many protective factors (*Taorrey,1981).*

Earlier studies of risk factors had many problems. the most important being the failure to standardize diagnostic criteria for selection of schizophrenic cases. However, these studies do help in the continued search to understand this disorder *(Hafner et al., 1987).*

Factors affecting prevalance rate in schizophrenic disorder

A- Socio-demographic factors

1- **AGE** The DSM-III (1980) diagnosis of schizophrenia requires onset of symptoms prior to age 45. This criterion was based on early studies that showed mean ages of onset as below 45 in men and women. However, recent data indicate that onset after age 45 may not be as rare as was previously assumed. Preliminary study reveal that failure to diagnose schizophrenia in the elderly may be due to the fact that the disease has a different presentation in this age group. When compared with younger persons, most elderly people with delusions or hallucinations may not have the typical pattern of chronic progressive schizophrenia and are less likely to be significantly impaired or to be under the care of a mental health specialist. *(Hubuer,1976).* Later, DSM III-R (1987) and ICD 10 (1992) did not comment on age while providing the schizophrenic classification.

2- **SEX** Studies that do not separate groups by age of onset show a male to female ratio of close to one, but this changes when various age cohorts are examined. Men are most likely to have the onset of symptoms between ages 15 and 24; women are at highest risk in the age range of 25 to 34 years. The reasons for this difference are not clear. The disease may manifest itself differently in the two sexes, or sociocultural factors may predispose men to more aggressive behavior that leads to earlier case findings.*(Angermeyer, 1986).*

B- Socio-economic factors

1- **Ethnicity And Racial Factors** Several studies have discovered differences in the prevalence and number of new cases of schizophrenia among various ethnic groups. These findings are not consistent and may result in failure to control the confounding factors, such as age, sex, and immigration status. Findings from the National Epidemiological Cattchement Area study (1985) confirm that if potential confounding factor as education is controlled the difference in prevalence across races disappears *(Rabins et al.,1984)*.

2- **Social Class** Social class can be specified in various ways using some combination of income, occupation,education, and place of residence. The prevalence and number of newly identified cases of schizophrenia are reported to be higher among members of lower social classes. Some consider the socio-environmental factors found at lower socioeconomic levels to be a cause of schizophrenia(social causation theory). *(Davis ,1982)*. Several factors associated with lower socioeconomic status are presumed to be potentially responsible for the higher risk of schizophrenia: more life event stressors, increased exposure to environmental and occupational hazards, infectious agents, poorer prenatal care (Ovunsan et al.,1986). Others propose that lower socioeconomic status is a consequence of the disorder(social selection-drift theory). (*Hafner,1971)*.

The incidious onset of inherited schizophrenia is believed to preclude elevating one`s status or to cause a downward drift.

Prospective studies have shown that schizophrenic persons have less upward mobility from generation to generation than does the general population and that there is downward drift after the onset of symptoms. others continue to argue this unsettled theory but current opinion appears to favour the social selection-drift theory. It remains unsettled, in part, because previous studies have had inadequate sample sizes, problems with defining social class and selection bias when choosing their case and control populations *(Marvin el at.,1988).*

3- **Marital Status** :Reports based on first hospital admissions have shown higher rates of schizophrenia for single than for married patients, and some have inferred that single status contributes to the development of schizophrenia. (*Odegard et al.,1971).* However, the phenomenon may be similar to that described under social class that is the disease lessens the chance of getting married and increases the chance of divorce.

Studies have not shown marriage to have a protective effect against schizophrenia or an excess of schizophrenia in widowed people, and previous research using subjects hospitalized for the first time may have been flawed wrong because single and married men appear to have different hospitalization patterns *(Marvin, el at.,1988).*

4- **Immigration** A higher risk for schizophrenia among recent immigrants than native populations has been reported, but no study to date has confirmed that immigration stress leads to schizophrenia. (*Marvin, el at.,(1988).*

The increased prevalence of schizophrenia among immigrants could result from selection(i.e.,schizophrenic persons may be more likely to leave their families); from the failure to control other factors, such as social class, age, and sex; or, from the failure to compare these immigrant patients to nonemigrant controls from their homeland. These methodological issues limit any conclusions that can be drawn from current reports (*Grayson et al .,1988).*

5- **Urbanization And Industrialization** The prevalence of schizophrania has been reported to be higher in urban environments than in rural areas. This is consistent with widely held beliefs that cities are places of rapid change and social disorganization, while rural areas are more socially stable and the inhabitants, more integrated.*(Beitchman,1983).* Recent Epidemiological Catchment Area findings show no difference in the prevalence of schizophrenia between urban and rural areas when such factors as race, sex, and age are controlled *(Eaton, 1985).*

The assertion that the prevalence and incidence of schizophrenia have increased in modern times has been tested by comparing less developed cultures with those in industrialized nations, but such studies are fraught with methodological problems. For example, infant mortality is lower in developed countries, so those likely to develop schizophrenia may survive more frequently. Families are smaller and ill members may be more obvious *(Grayson et al., 1988).*

6- **Life Stressors** The association between stressful life events(e.g., loss of job, divorce) and the etiology and course of schizophrenia has been much studied. Schizophrenia or relapse of preexisting disorder often follows extraordinary stress, so it has been suggested that such stress might provoke acute schizophrenia in a normal person.(*Marvin et al.,1988)* Later (Marvin et al., 1990) argue that stress plays only a marginal role in the pathogenesis of the disorder or simply triggers schizophrenia in vulnerable persons. The few studies that have considered this issue have suffered the usual methodological problems of retrospective case-control studies and have had difficulty in outlining predispositional factors in schizophrenia. The stressor might have triggered the onset of a disorder that would have occurred in any case. The issue is not settled and will require further studies, especially prospective ones that can consider the role and severity of stressors in individual cases. (*Marvin et al.,1990)*

C- Seasonability of birth

1- **Time Of Birth**

A disproportionate number of schizophrenic persons are born during the winter months; this, together with a birth pattern in their non schizophrenic siblings, that is similar to that seen in the general population, suggest the presence of a seasonal factor.The proposed explanations for this seasonal effect include a deleterious environmental factor in the winter (e.g., temperature, nutritional deficiences, infectious agents).*(Jablensky,1986),* genetic factor in those with a propensity for schizophrenia that protects against