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RISK FACTORS ASSESSMENT IN SCHIZOPHRENIA PATIENTS

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ABSTRACT

Background: schizophrenia is psychiatric illness and poorly understand debilitating mental disorder. The cause of schizophrenia is a multifactorial. There are various risk factors for the development of the disease. The prior assessment of risk factor can arbitrate its cause of the disease. PANSS (Positive and Negative Syndrome Scale) is a gold standard assessment tool used in schizophrenia to identify the psychopathologic symptoms. **Aim:** To assess and identify the risk factors in schizophrenia patients. And secondly, to examine the severity of psychopathologic symptoms associated with schizophrenia. **Methods:** the sample of cases were collected from Jaya Krishna psychiatric care and counselling centre in Warangal region. The sample collection was for a period of 3 months by using an observational prospective (cross sectional study) method. The score of PANSS is evaluated by using mean and SD (standard Deviation) method. **Results:** patients with schizophrenia (155) of both sexes aged above 10 - 90 years were included. In the Age group (26-35) years females were more significantly affected. Late onset of disease affected in males whereas early onset in females. schizophrenia is mostly observed in rural area patients. Illiterate or uneducated patients, Unemployed patients, married patients and positive family history are more significantly related to the schizophrenia. Stressful life events especially problems in the work or financial issues, family problems are highly significant and strongly related to the disease. Advanced paternal age is moderately significant to the development of schizophrenia. Epilepsy, head injuries and other mental and neurological disorders are frequently found among the patients in our study. Adverse childhood experiences, patients with comorbidities and perinatal complications like difficult labor and neo natal death are least significantly related to schizophrenia. The distribution characteristics of PANSS were mean and SD, positive symptom score (17.18 and 6.31), negative symptom score (19.4 and 6.73), general psychopathology score (45.93 and 15.08). **Conclusion:** In the present study, multiple risk factors were strongly and exceptionally related to schizophrenia. Factors like substance use like advance paternal age, marriage, alcohol and tobacco are moderately significant to schizophrenia. Future research should explore potential protective risk factors and there is in need of diagnostic tool for schizophrenia risk factor assessment and diagnostic procedure.

KEYWORDS: Schizophrenia, Positive and Negative Syndrome Scale, Standard Deviation.

1 INRODUCTION

Schizophrenia is a heterogenous syndrome characterized by perturbations of language, perception, thinking, social activity, and volition[1] The aetiology of this condition involves many factors like genetic and environmental factors characterized by variable phenotypic symptoms and highly complicated causes with the classic manifestations of positive (e.g., hallucinations and delusion), negative (e.g., social withdrawal and flat affect), and cognitive impairment". suicidal tendencies and violent behaviour are commonly seen in the schizophrenic patients. About 10% of schizophrenic patients commit suicide Schizophrenia is present in 0.85% of individuals worldwide, with a lifetime prevalence of ~1–1.5%.[2]

There are multifactorial aetiology of schizophrenia.[3] The phases of schizophrenia include prodromal phase, advanced prodromal phase, early psychosis phase, the middle phase, the late illness.[4] According to ICD-10 schizophrenia subtypes are categorized as simple, disorganized, catatonic, paranoid, schizophreniform disorder, latent schizophrenia, residual, schizoaffective disorder, and "other" specified type of schizophrenia.[5] Gold standard scales included for schizophrenia are CAINS (Clinical Assessment Interview for Negative Symptoms), BNSS (Brief Negative Symptom Scale), PANSS (Positive and Negative Symptoms Scale), SAPS (Scale for the Assessment of Positive Symptoms).[6]

In schizophrenia condition, most commonly adopted tool for the assessment of ultra-high risk people for psychosis is Positive and Negative Syndrome Scale (PANSS) which includes 30-item scale with three subscales including positive symptoms, negative symptoms, and general psychopathology, which comprehensively

assesses symptoms in schizophrenia. The (PANSS) is most widely used assessment instrument for symptom severity rating scale in schizophrenia.[7]

Risk factors of schizophrenia

The aetiology of schizophrenia is unclear, many genetic and epidemiological studies have manifested various genetic and environmental risk factors[8] Environmental risk factors like childhood traumas, infectious agents, obstetrical complications, urbanicity, migration, cannabis use and psychosocial factors have been associated with the risk of developing schizophrenia. These risk factors can be biological, physical, psychological as well as social and may operate at different times in an individual's life (foetal period, childhood, adolescence and early adulthood) risk.[9] Substance and drug abuse like alcohol, tobacco and cannabis has been reported to be abused by most of patients with schizophrenia.[10] Advanced paternal age is an independent risk factor for schizophrenia.[11] For schizophrenia lower IQ in childhood, hearing impairment, emotional problems, and interpersonal difficulties early in life.[12]

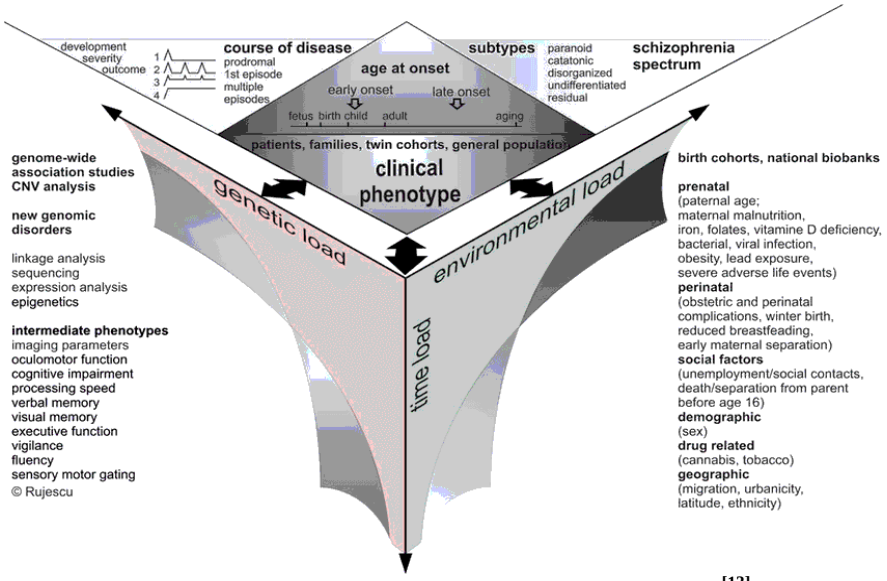

Fig. 1: An overview of risk factors of schizophrenia.[13]

2. METHODS

Study site: Jaya Krishna Psychiatric care and Counselling Centre

Study design: An observational prospective (cross sectional) study

Study period: 3months

Sample size: 155 patients

Study criteria:

Inclusion criteria

- All patients with schizophrenia, and related psychosis disorder
- Patients of age above 10 years and below to 90 years

Exclusion criteria

- Patients who are at unstable status.
- Patients below 10 years and above 90 years of age

Source of data

- Review of patient records
- By interacting with the patients and their care takers

Procedure methodology

Psychiatric patients attending the hospital and who fit in inclusion criteria were enrolled in the study. All the required parameters were considered for each patient and data was entered in the data collection form. Information was collected from the case sheets, patients and their care givers. A detailed medication history interview was conducted for every patient to understand their disease condition, onset of disease, social habits, marital status, family history, presence of other psychiatric disorders.

Then patients were assessed for onset of schizophrenia using positive and Negative Syndrome Scale (PANSS). Later for analysis, the collected data is entered into Microsoft Excel database. To interpret and categorise the patients based on required parameters.

3. RESULTS

- Distribution of the patients according to gender

Gender	Total no. of patients	%
Female	84	54
Male	71	46
Total	155	100

- Distribution of patients by age and gender

Age in years	Female %	Male%	Total number (%)
15-25	41.37	58.62	29 (18.7)
26-35	54	46	50(32.2)
36-45	52.3	47.61	42(27.09)
46-55	80	20	15(9.6)
56-65	60	40	15(9.6)
>66	50	50	4(2.58)
Total	54.19	45.81	155(100)

- Distribution of patient onset of disease by age and gender

Age of onset in years	Males%	Females%	Total number (%)
<25	41.37	58.62	29 (18.7)
25-44	53.26	46.73	92(59.35)
45-64	67.64	32.35	34(21.93)
>65	0	0	0(0)
Total	45.81	54.19	155(100)

- Distribution of patients based on urbanicity

	Urban%	Rural%	Total number (%)
Male	17.41	28.38	71(45.81)
Female	17.41	36.77	84(54.19)
Total	34.83	65.17	155(100)

- Distribution of patients according to education status

Education status	Total no of patients	Education %
illiterate	54	34.83
primary	26	16.77
secondary	24	15.83
Under graduation	33	21.29
post-graduation	18	11.6
Total	155	100

- Distribution of patients by occupation

Type of occupation	Total no of patients	Percentage %
Housewife	53	34.19
Student	19	12.25
Agriculture	18	11.61
Business	16	10.32
Employed	20	12.9
Non- employed	29	18.7
Total	155	100

- Distribution of patients based on marital status

Marital status	Total no of patients	Percentage (%)
Married	101	65.16
Unmarried	37	23.87
Widow	3	1.93
Divorced	9	5.8
Separated	5	3.2
Total	155	100

- Distribution of patients of schizophrenia based on substance use:

Substance use	Total no of patients	Percentage%
Alcohol	33	21.29
Tobacco	19	12.25
Alcohol and tobacco	11	7.09

Ambar and gutka	10	6.45
Pan	1	0.64
Cannabis	1	0.64
Non substance use	91	58.7
Total	155	100

- Distribution of patients according to family history of schizophrenia

Family history of schizophrenia	Total no of patients	Percentage %
Parents	14	9.03
Brother and sister	9	5.8
Grand parents	2	1.29
Relatives	1	0.64
No history	129	83.22
Total	155	100

- Distribution of patients based on history of neuro motor deficits among the schizophrenia patients

Type of abnormalities	Total no of patients	Percentage
CNS infections	2	1.29
Head injuries	16	10.32
Epilepsy	14	9.03
Mental retardation	3	1.93
other mental and neurological disorders	15	9.67
No history	105	67.74
Total	155	100

- Distribution of patients with schizophrenia according to adverse child hood experiences

Adverse childhood experiences Total no		Percentage
Bullying	2	1.29
Negative Maternal expressed emotion	3	1.93
Negative paternal expressed emotion	7	4.51
Emotional abuse/ neglected	5	3.22
No ACE	138	89
Total	155	100

- Distribution and Perinatal complications among females of schizophrenia:

Type of complications	Total no	Percentage
Difficult labor	6	3.87
Neo natal death	3	1.93
Negative history	146	94.1
Total	155	100

- Distribution of patients based on comorbidities

Types	No of patients	Percentage
Comorbidities	38	24.51
Non comorbidities	117	75.48
Total	155	100

- Distribution of patients with schizophrenia according to stressful life events / high psychosocial stressors

Stressful live events	Total no of patients	Percentage
Problems in work/ financial issues	64	41.29
Family problems	62	40
Severe psychological trauma	16	10.32
non stress	13	8.38
Total	155	100

- Distribution of patients according to maternal age and paternal age

Paternal age	Percentage	Maternal age	Percentage
>25	10.18	>20	0.9
>30	19.4	>22	50.9
>40	13.8	>26	4.6
Total	43.51	Total	56.48

- Summarizes the distribution characteristics of the scales from the PANSS

Distribution characteristics	Positive	Negative	General psychopathology	Total score
Mean	17.18	19.4	45.93	82.51
SD (Standard deviation)	6.31	6.73	15.08	28.12

- The scores of distribution characteristics from PANSS scale

Individuals scale items	Mean	Standard deviation
Positive scale		
P1 delusions	1.98	0.73
P2 conceptual disorganisation	2.28	0.76
P3 hallucinatory behaviour	2.47	0.86
P4 excitement	2.47	0.94
P5 grandiosity	2.56	0.97
P6 suspiciousness	2.66	1.08
P7 hostility	2.74	0.94
Negative scale		
N1 blunted effect	2.52	1.01
N2 emotional withdrawal	2.82	0.89
N3 poor rapport	2.76	0.93
N4 apathetic social withdrawal	2.87	1.01
N5 difficulty in abstract thinking	2.85	0.94
N6 lack of spontaneity and flow of conservation	2.81	0.94
N7 stereotype thinking	2.72	6.73
General psychopathology scale		
G1 somatic concern	2.82	0.95
G2 anxiety	3.02	0.90
G3 guilt feelings	3.02	0.91
G4 tension	2.96	0.95
G5mannerism and posturing	3.15	1.02
G6 depression	2.97	0.93
G7 motor retardation	2.81	0.97
G8 uncooperativeness	2.90	0.93
G9 unusual thought content	2.98	0.90
G10 disorientation	2.96	0.91
G11 poor attention	3.08	1.08
G12 lack of judgement and insight	3.10	1.07
G13 disturbance of volition	2.74	0.90
G14 poor impulsive control	2.81	0.88
G15 preoccupation	2.56	0.86
G16 active social avoidance	1.99	0.86
Total positive score	17.18	6.31
Total negative score	19.4	6.73
Total general psychopathology scale	45.93	15.08

4. DISCUSSION

Gender

A total 155 study population, males were (46%) and females are (54%). Our results are almost similar to the observation made[14] who observed male (46.2%) and female (53.8%). In contrast to our findings, study conducted by[15] males were (59.41%) and females were (40.59%) males were more than females for all years

except 1998 in which females were more (33) as compared to males (32). Maximum number of males were admitted in the year 2003 (77) and females in the year 2002 (66). The male to female ratio was found to be 1.46.

Age Group and Gender

A total of 155 schizophrenia patients included in the study, which found that half of the sample are in age group of (26-35) years where males (46%) and females (54%) which are similar to the study observed by[14] who observed the male (28.1%) and female (71.9%) of age group of (25-44) years. Schizophrenia can affect both sexes at any age group especially young adults. In contrast to our findings, study conducted by[16] males were (59%) of age group (25-44) years and age wise distribution showed that highest number (34.98%) of patients were classified in the age group (21-30) years, observed by study.[15] Young adults are more prone to the effect of the disease because of different social and cultural changes.

Age of onset Disease and Sex

A total of 155 schizophrenia patients included in the study, which found that the onset of disease may occur in the early age of life. Our study demonstrated that the disease starts early in the age group of below 25 years more significantly among females (58.6%) than males (41.3%). Our study in contrast to the study observed by[14] the age of onset of disease was in the age group of below 25 years males are more significantly among in males (71%) than females (28%), it was observed that in our study in the age group of (25-44) years males are more significantly than females. The age of onset of schizophrenia in communities of the developing countries are seen earlier in males than females it was reported that the possible cause for this is the increase responsibilities of the males for their families. The probable cause is underreporting of the disease among the females in the developing countries because of sociocultural considerations.

Urbanicity and Gender

Of 155 patients with schizophrenia included in the study, mostly (65%) are from rural areas and around (34 %) patients are from urban areas where males are (46 %) and females are (54%).In contrast to our findings,[17] who Compared to residents in rural areas, living at higher levels of urbanicity was associated with 10 % greater risk of schizophrenia. The study observed that schizophrenia for adults found that the level of degree of urbanicity increased, schizophrenia risk of males grew faster than the risk of females[18] observed that risk of developing schizophrenia is approximately 2.37 times greater in urban compared with rural settings. This discrepancy may be due to the difference in the degree of urbanicity among our region and their region. This can also be attributed to the superstitious believes of the patient associated with poor literacy rate in rural areas in our region and social stigma regarding the occurrence of psychiatric disorders. This may also be affected by the higher number of consanguineous marriages as stated by[19] that a child of consanguineous parents is at increased risk of common mood disorders and psychoses.

Education status

Study includes total 155 patients with schizophrenia, the education status percentage were illiterate (34.8%), primary education (16.7%), secondary education (15.83%), under graduation (21.2%), post- graduation (11.6%). By the aggregation of primary education, secondary education, under graduation and post-graduation the total percentage was 65%. Our study was almost similar to study conducted by[20] observed that over 80 % of the participants had a middle or high educational level. Our study observed that no education level who are illiterate were 35%. In contrast to our study[21] who observed that below education level was 51%. as a developing country, the regional factors play a role in poor educational status and low awareness of disease which is causing as risk factor in schizophrenia patients.

Occupation

Of total 155 patients of schizophrenia, occupation total percentage were housewife (34.1%), student (12.2%), agriculture (11.6%), business (10.32%), employed (12.9%), non-employed (18.7%) where non-employment category include with both non- employed and house wife percentages were (52.8%), employed category include employment, agriculture and business percentages were (34.8%) and student category percentage (12.2%).our study findings are similar to the study observed by[20] that employed were (78%), unemployed (20%), student (1.4%). After additional adjustment of above socio-economic status (employment status, educational status) were associated with increased risk for all psychiatric symptoms.

Marital status

Of 155 patients with schizophrenia marital status, married (65.16%), unmarried (23.8%), Widow (1.93%), divorced (5.8%), separated (3.2%). Our study findings are similar to the study observed by[14] who observed married (30.8%), unmarried or single (56.7%), divorced (10.6%), widow (2%). In contrast to our study[22] who observed single or unmarried (63%), divorced (12.4%), widowed (0.9%), married (10.2%), and separated (7.2%). The present study showed a significance and a strong association between married subjects and schizophrenia development. A possible explanation is that most schizophrenia patients are unable to carry out the marriage responsibilities. Being married is significantly associated with the disease in the present study

Substance use

Of 155 patient's substance use of schizophrenia were alcohol (21.2%), tobacco (12.25%), alcohol and tobacco (7.09%), Ambar and gutka (6.45%), pan (0.64%),

cannabis (0.64%) and non-substance use (58.7%). Our findings are found to be contrast with the results of [23] where both alcohol intake and smoking was seen in (22.3 %) of patients. In contrast to our findings, study conducted by [24] observed tobacco use were (33%), alcohol (30 to 88). Substance use disorders occur commonly in patients with schizophrenia and dramatically worsen their overall clinical course.

Family history of schizophrenia

Of 155 patients of schizophrenia according to family history, parents (9.03%), brother and sister (5.8%), grandparents (1.2%), relatives (0.64%) and no history of schizophrenia (83.2%). Our findings are found to be contrast with the results of,[14] where parents (5.8%), brothers and sisters (15.4%), relatives (23.1%), grand-parents (0%), and no history of schizophrenia were (54.8%). In the present study there is significant and a strong relationship of family history in the parents and in the brothers and sisters. Schizophrenia starts early in the life more common among those who have positive history of disease in the parents and brothers or any other relatives.

History of neuro motor deficits

Of 155 schizophrenia patients based on history of neuromotor deficits, CNS infections (1.29%), head injuries (10.3%), epilepsy (9%), mental retardation (1.9%), other mental and neurological disorders (9.6%), and no history (67.7%). Our findings are found to be contrast with the results of,[14] where CNS infections (7.7%), head injuries (3.8%), epilepsy (2.9%), mental retardation (1.9%), other mental neurological disorders (3.9%) and no history (62.5%). In the present study found that head injuries and epilepsy are significantly associated with schizophrenia development. Studies showed that individuals who had suffered with childhood epilepsy and perinatal brain damage were more likely to develop schizophrenia.

Adverse child hood experiences

Study includes 155 patients with schizophrenia based on adverse childhood experiences, bullying (1.29%), negative maternal expressed emotion (1.9%), negative paternal expressed emotion (4.5%), emotional abuse/ neglected (3.2%), no ACE (adverse childhood experiences) (89%). Our results are found to be contrast with the results of,[25,26] where bullying (24.3%), negative maternal expression (24%), negative paternal expression (31.8%), emotional abuse (5.9%). Studies showed that the risk factors and correlates investigated are not specific to schizophrenia, it is possible that childhood psychotic symptoms are developmental precursors not only of schizophrenia but also of other disorders.

Perinatal complications among female

Total study includes 155 patients with schizophrenia, where female (84) with schizophrenia total percentage were difficult labor (3.8%), neo natal death (1.9%), and negative history (94.1%). In contrast to our results,[14,27] who observed difficult labor (6.7%), neo natal death (3.02%). A history of maternal schizophrenia and related disorder or maternal affective disorder was found to be a greater risk factor for perinatal death due to congenital malformation.

Comorbidities

The total 155 study population with schizophrenia include patients with comorbidities (24.51%) and non-comorbidities (75.4%). In contrast to our results[28] who observed comorbidities (70%) and non-comorbidities (30%). Individuals of schizophrenia who found with comorbidities were associated with higher risk.

Stressful life Events/High psychosocial stressors

In 155 patients of schizophrenia the total percentage according to stressful life events were problems in the work /financial issues (41.2%), family problems (40%), severe psychological trauma (10.3%), non- stress were (8.3%). In contrast to our results[14] who observed severe psychological trauma (29.8%), family problems (26.9%), problems in the work (15.4%) and negative history of stress (23.1%). The present study found that problems in work/ financial issues and family problems are significantly associated to schizophrenia development due to the fact that members of the family spouse or parents may fail to cope with every day duties resulting in failure to maintain stable family life.

Maternal Age and Paternal age

Of 155 schizophrenia patients there are 108 patients are considered in maternal and paternal age, paternal age were > 25 (10.18%), >30 (19.4%), >40 (13.8%) and maternal age were >20(0.9%), >22(50.9%), >26(4.6%). Our findings are found to be contrast with the results of [29] where paternal age >25(61.76%), >30(36.37%), >40(4.9%) and maternal age were >20(5.39%), >22(61.39), >26 (36.2%). The fact that advanced paternal age acts as a risk factor for the development of schizophrenia and variety of mental as well as somatic conditions.

The PANSS (Positive and Negative Syndrome Scale) for schizophrenia

In study the distribution characteristics of the PANSS for the 155 schizophrenics were Mean SD, positive symptom score (17.18 and 6.31), negative symptom score (19.4 and 6.73), general psychopathology score (45.93 and 15.08). In contrast to our findings.[7] who observed Positive symptom score (10.75 and 2.80) Negative symptom score (12.19 and 4.17) General symptom score (25.52 and 7.00). our findings are almost similar to the study observed by [30] who observed positive symptom score (18.20 and 6.08), negative symptom score (21.01 and 6.17), general psychopathology score (37.74 and 9.49).

5. CONCLUSION

The present study examined the various risk factors attributed to the development of schizophrenia In our

study the prevalence of schizophrenia is seen in mostly females than males. The commonest age group of the disease in general between (26-35) years, schizophrenia affects the males in the age group less than 26 years more than the females of same group, while the disease is more significant among females in the age group of (26-35) years The age of onset of the disease was earlier among females. Late onset schizophrenia is more common in males. In our study the prevalence of schizophrenia is mostly observed in rural area patients. Illiterate or uneducated patients are more significantly related to the schizophrenia than educated patients. Unemployed patients are more significantly related to the schizophrenia whereas Students are least significantly related to the schizophrenia. Married patients are most significantly related to the schizophrenia whereas widow and separated are least significantly related to the schizophrenia. Substance use like alcohol and tobacco are moderately used among the schizophrenia patients. Family history of schizophrenia is most common among parents, brothers and sisters of schizophrenia patients. The disease starts earlier among those having a positive family history in general. Epilepsy, head injuries and other mental and neurological disorders are frequently found among the patients in our study. Adverse childhood experiences are least significantly related to schizophrenia. Perinatal complications like difficult labor and neo natal death are least significantly related to schizophrenia. Patients without comorbidities are mostly significant than patients with comorbidities. Stressful life events especially problems in the work or financial issues, family problems are highly significantly and strongly related to the disease. Advanced paternal age is moderately significant to the development of schizophrenia. We demonstrated the three factor PANSS model for symptoms assessment. There is a need of research which might be further improved for measuring individual severity differences clinical Pharmacist plays pivotal role in counselling about disease, creating awareness about risk factors and the importance of medication adherence for better quality of life

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