



REVIEW ARTICLE

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Factors contributing the outcome of Schizophrenia in developing and developed countries: A brief review

*Mahmuda Naheed¹, Khondker Ayesha Akter¹, Fatema Tabassum¹, Rumana Mawla², Mahmudur Rahman¹

¹Faculty of Health Science, Department of Pharmacy, Northern University Bangladesh, Dhaka-1215, Bangladesh

²Faculty of Pharmacy, Dept. of Clinical Pharmacy and Pharmacology, University of Dhaka, Dhaka-1000, Bangladesh

ABSTRACT

According to WHO, schizophrenia is a severe form of mental illness affecting about 7 per thousand of the adult population, mostly in the age group 15-35 years. Though the incidence is low (3-10,000), the prevalence is high due to chronicity. Schizophrenia is occurring in both developing and developed countries. The remission rate is higher in developing countries compared to the developed ones. There are some compelling factors that may influence the outcome of schizophrenia includes gender, employment, marital status, family support, illness myths, family burden, duration of untreated psychosis etc. In this review we have discussed the epidemiology, pathophysiology, diagnosis, treatment and finally the factors that influence the outcome of schizophrenia in developing and developed countries.

Key Words: Schizophrenia, outcome, developing countries, antipsychotic agents.

INTRODUCTION

Schizophrenia is a heterogeneous syndrome characterized by perturbations of language, perception, thinking, social activity, affect, and volition. There are no pathognomonic features. The syndrome commonly begins in late adolescence, has an insidious (and less commonly acute) onset, and, classically, a poor outcome, progressing from social withdrawal and perceptual distortions to a state of chronic delusions and hallucinations (Harrison *et al.*, 2005). In this article we reviewed the factors that influence the outcome of schizophrenia in developing and developed countries.

EPIDEMIOLOGY AND PATHOPHYSIOLOGY

Epidemiologic surveys identify several risk factors for schizophrenia including genetic susceptibility, early developmental insults, winter birth, and increasing parental age. Genetic factors are involved in at least a subset of individuals who develop schizophrenia. Schizophrenia is observed in near about

6.6% of all first-degree relatives of an affected proband. If both parents are affected, the risk for offspring is 40%. The concordance rate for monozygotic twins is 50%, compared to 10% for dizygotic twins. Schizophrenia-prone families are also at risk for other psychiatric disorders (Harrison *et al.*, 2005).

Schizophrenia is also associated with gestational and perinatal complications, including Rh factor incompatibility, fetal hypoxia, and prenatal exposure to influenza during the second trimester, and prenatal nutritional deficiency. Studies of monozygotic twins discordant for schizophrenia have reported neuroanatomic differences between affected and unaffected siblings, supporting a "two-strike" etiology involving both genetic susceptibility and an environmental insult. The latter might involve localized hypoxia during critical stages of brain development.

DIAGNOSIS AND TREATMENT

Patients may present with positive symptoms (such as conceptual disorganization, delusions, or hallucinations) or negative symptoms (loss of function, anhedonia, decreased emotional expression, impaired concentration, and diminished social engagement) and must have at least two of these for

*Corresponding Author:

Mahmuda Naheed, Senior Lecturer
Faculty of Health Science, Department of Pharmacy
Northern University Bangladesh, Dhaka, Bangladesh
E-mail: naheed2015@gmail.com
Contact No.: +880 1671 079 884

Table 1. Typical and Novel antipsychotic agents¹ (Harrison *et al.*, 2005).

TYPICAL ANTIPSYCHOTICS				
	Usual PO Daily Dose, mg	Side Effects	Sedation	Comments
Low-potency Chlorpromazine	100–600	Anticholinergic effects; orthostasis;	+++	EPSEs usually not prominent; can cause anticholinergic delirium in elderly patients
Mid-potency Trifluoperazine	2–15	Fewer anticholinergic side effects; fewer EPSEs than with higher potency agents	++	Well tolerated by most patients
High potency Haloperidol	0.5–10	No anticholinergic side ef- fects; EPSEs often prominent	0/+	Often prescribed in doses that are too high; long-acting injectable forms of halo- peridol and fluphenazine available
NOVEL ANTIPSYCHOTICS				
	Usual PO Daily Dose, mg	Side Effects	Sedation	Comments
Clozapine	200–600	Agranulocytosis (1%); weight gain; seizures; drooling; hyperthermia	++	Requires weekly WBC
Risperidone	2–6	Orthostasis	+	Requires slow titration; EPSEs observed with doses \geq 6 mg qd
Olanzapine	10–20	Weight gain	++	Mild prolactin elevation
Quetiapine	350–700	Sedation; weight gain; anxiety	+++	Bid dosing
Ziprasidone	40–60	Orthostatic hypotension	+ / ++	Minimal weight gain; increases QT interval
Aripiprazole	10–30	Nausea, anxiety, insomnia	0/+	Mixed agonist/ antagonist

a 1-month period and continuous signs for at least 6 months to meet formal diagnostic criteria. “Negative” symptoms predominate in one third of the schizophrenic population and are associated with a poor long-term outcome and a poor response to drug treatment.

Antipsychotic agents are the cornerstone of acute and maintenance treatment of schizophrenia, and are effective in the treatment of hallucinations, delusions, and thought disorders, regardless of etiology. The antipsychotic agents are classified into two classes. They are typical antipsychotics and novel antipsychotic agents (Table 1).

FACTORS AFFECTING OUTCOME OF SCHIZOPHRENIA

According to world Health Organization, Schizophrenia affects about 24 million people worldwide. In developing countries around 90% of people with schizophrenia remain untreated. But the outcome of

schizophrenia appears to be better in low and middle income countries (Isaac *et al.*, 2007). There are several factors that may influence the outcome like employment, marital status, family support etc. Our aim of the study is to find out the factors that may affect the outcome of schizophrenia in developing in comparison with developed countries.

Gender

Sex differences in the risk of a particular disorder can yield important clues regarding its pathogenesis. The evidence for a sex difference in the risk of schizophrenia is inconclusive. No significant sex differences were reported in studies from developing countries (Aleman *et al.*, 2003). That is schizophrenia is equally common in male and female. In a study carried out with fifty schizophrenic patients in Bangladesh it was found that 54% male and 46% female were suffering from schizophrenia (Ahammad *et al.*, 2009). Which proves in case of schizophrenia gender difference is not a prime contributory factor in developing countries. Although sex difference is not a significant factor in schizophrenia, it has been ob-

served that the clinical remission and recovery is higher in female rather than male (Carpiniello *et al.*, 2012).

Employment

Physical and mental fitness plays a very important role in case of employment. These two are prerequisites in getting job in many countries. People with schizophrenia in low- and middle-income countries are more likely to be employed than their Western counterparts. In 1997 Srinivasan & Thara found an annual rate of employment of 63-73% in the first 10 years of follow-up in a cohort of 90 people with first-episode schizophrenia (Srinivasan *et al.*, 1997). Moreover, among untreated Indian people with schizophrenia almost one-third was employed (Padmavathi *et al.*, 1998). Generally, high employment rates (up to 75%) have been found in India (Thara *et al.*, 2004). A similar trend is described among Chinese patients; nearly half were able to work after 5, 10 and 15 years of follow-up (Tsoi *et al.*, 1991). These rates of employment are markedly higher than those in similar populations in high income countries (Mueser *et al.*, 2001).

It has been mentioned earlier around 90% schizophrenic patient remain untreated in developing countries whereas their remission appears to be better, this is probably due employment. When a schizophrenic patient involved in a job he comes in contact with social surroundings and routine work; which helps to lead a normal life. In low- and middle-income countries, social bonding is very strong and work place colleagues are very co-operative. Even study proves that workplace colleagues are found to be generally supportive in low- and middle income countries (Srinivasan *et al.*, 2005). The employment rate in the UK over the past 20 years among people with schizophrenia ranges from 4 to 31%; whereas most Western studies report a rate between 10 and 20% (Marwaha *et al.*, 2004).

From this discussion it is observed that in low- and middle-income countries a large population with schizophrenia remains untreated. Untreated patient engaged in job. In their service life they become a part of the society and get support from the surroundings to become a part of the society, It compel them to lead a normal life and help them in their remission.

Marital status

In low- and middle-income countries society plays a very important role in case of marriage. In these countries marriage considered as a social identity for a person. In developing countries marriage is an once-in-a-lifetime event and is associated with a high degree of social approval. The sociocultural factors determining marriage and its maintenance are vastly different from those in Western societies. Marital state can be considered an outcome measure, as its maintenance depends on stability and functioning of both partners. Schizophrenia manifests maximally at a marriageable age (i.e. around the 20s). Most studies from the West have reported low rates of marriage for people with schizophrenia (Nanko *et al.*, 1993, Harrison *et al.*, 2001). In contrast, a 10-year follow-up study from India found a high marital rate of 70% (Thara *et al.*, 1996). So the marriage rate of schizophrenic patient in developing countries is much higher than that of developed countries. This is because in developing countries schizophrenic patients live with their partners and share their views and feelings. This mental support helps them to lead a normal life and also affect their outcome.

Patients, whose marriages have broken down, in addition to the stress of their mental illness, face hostility from family members and rejection by society. This can be a significant contributing factor to outcome in traditional societies (Thara *et al.*, 2003).

Support from family and society

Family and social support plays vital role in the outcome of schizophrenia. Recent studies propose that supportive and favorable attitudes among family members and the community contribute to the improved outcomes (Kurihara *et al.*, 2000, Kurihara *et al.*, 2005). In low and middle incoming countries, majority of people stay in joint families. Schizophrenic patients from these families primarily stay at home as the numbers of family members are large. Since they stay in a family surrounding and get sufficient care from the members, their outcome accelerated in low and middle incoming countries. The mean time spent in hospital by people with schizophrenia is approximately a fifth in Bali compared with Tokyo (Kurihara *et al.*, 2000). Studies from Asian countries showed that less than 10% were hospitalized during follow-up, suggesting

high levels of family involvement in patient care (Ganev *et al.*, 1998). Migration, urbanization, changes in family structure and social support networks, plus the increase in economic insecurity and widening social inequalities which are evident in low- and middle-income countries will change the social support available for people with schizophrenia and influence their outcome (Patel *et al.*, 2006).

Illness myths

A significant delay in seeking treatment for people with schizophrenia has been observed in low- and middle-income countries. The reason behind that may be ignorance, superstition and Misconceptions of illness. However, recent studies have shown that very few people still named supernatural factors alone as a cause of schizophrenia (Srinivasan *et al.*, 2001). In a study of Indian patients supernatural cause was named by only 12% of families with a member with schizophrenia (Srinivasan *et al.*, 2001).

Family burden

Burden of care is related to the different socio-cultural factors of a country. As in low- and middle-income countries the majority of patients stay with their caregivers. So the burden is somewhat higher in low- and middle-income countries compared to the western countries. In a study it has been found that, there are six areas of burden these are financial, family routine, leisure, interaction, effect on physical health and effect on mental health (Pai *et al.*, 1982). In addition, inability to care for others, unpredictable behavior of the patient and dissatisfaction with the help from health care professional also be considered as burden. Some family members leave their ill relatives in psychiatric hospital for long time but in that case the outcome follows negative trend. Study shows that caregiver burden decreases with a reduction in the patient's symptoms and improving drug adherence. Reduction of family burden is associated with better outcome and social functioning (Pai *et al.*, 1982).

Duration of untreated psychosis (DUP)

Studies from the West have shown that the duration of untreated psychosis (DUP) is associated with poorer outcome; with the relationship being strongest in the initial months of psychosis (Drake *et al.*, 2000). This is particularly relevant in low- and middle-income (LAMI) countries where a significant

number of patients come late for treatment. Reasons for this include lack of awareness, a strong belief in magical or religious causes, poor accessibility to healthcare systems and lack of community care (Isaac *et al.*, 1981, Padmavathi *et al.*, 1998).

Non-adherence to prescribed antipsychotic medications places patients with schizophrenia at a greatly increased risk of illness exacerbation and re-hospitalization (Lacro *et al.*, 2002). There appears to be an inverse relationship between income and DUP in LAMI countries. The cost of treatment is an impediment to care and subsidized antipsychotic medication would improve the access to treatment and the outcome of psychotic illness in LAMI countries. The average mean DUP in a study from LAMI countries was 125.0 weeks compared with 63.4 weeks in studies from high-income countries (Large *et al.*, 2008).

CONCLUSION

It has been found that supportive and favorable attitudes among family members and the community contribute to the improved outcomes. Moreover workplace colleagues are found to be generally supportive in low and middle-income countries. These factors also affect the outcome as well as the remission rate. Clinical outcomes of schizophrenia seem to be worse in Europe compared with other regions. In a 3-year follow-up study it was found that the remission rate is 60.1% in North Europe and 84.4% in East Asia (Haro *et al.*, 2011). In the majority of the studies we reviewed, did not use standardized and culturally appropriate instruments. Longitudinal studies using parameters such as neurocognitive function and quality of life are almost non-existent. Further studies regarding better outcome needs to be examined through prospective studies.

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