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Mob: 9861042539

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9861273580

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Hi-Tech Medical College

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# LGBT MENTAL HEALTH: THE WAY FORWARD

<table>
<thead>
<tr>
<th>Dr Amrit Pattojoshi</th>
<th>Associate Professor and Head, Department of Psychiatry, Hi-Tech Medical College, Bhubaneswar, Phone: +91 94381 48100, Email: <a href="mailto:dramritp@yahoo.com">dramritp@yahoo.com</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr Biswa Bhusan Pattanayak*</td>
<td>Assistant Director, SAATHII, Phone: +91 93380 47384, Email: <a href="mailto:biswa@saathii.org">biswa@saathii.org</a> (Corresponding Author)</td>
</tr>
<tr>
<td>Dr. L Ramakrishnan</td>
<td>Vice President SAATHII, Phone: +91 98415 57983, Email: <a href="mailto:lramakrishnan@saathii.org">lramakrishnan@saathii.org</a></td>
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## Introduction

India, in its National Health Policy 2017, envisions reaching the entire population in a comprehensive integrated manner by achieving universal, quality and affordable health coverage. Such a mandate would, therefore, necessarily include within its ambit citizens who are lesbian, gay, bisexual, and transgender (LGBT).

A major impediment to realizing such universal coverage for LGBT citizens is the stigma and discrimination they face in health care institutions and other contexts, because of their non-mainstream sexuality and/or gender identity. Such stigma and discrimination persists against gay, lesbian and bisexual persons despite international medical consensus (WHO 1992) that homosexuality is not a pathology but a normal variant of human sexuality.

In the Indian context, three editorials (Rao and Jacob 2012, Rao and Jacob 2014; Rao et al. 2016) in the Indian Journal of Psychiatry reiterate that homosexual orientation is a normal variant of human sexuality, urge the mental health fraternity to challenge the widely prevalent prejudices in society and abandon unethical and unscientific practices such as conversion therapy/reparative therapy for persons of homosexual/bisexual orientations or transgender identity. The Mental Healthcare Act, 2017 has also emphasized that no person shall be discriminated on the basis of sexual orientation or gender while accessing mental healthcare services from government institutions.

Moves towards abandoning the old psychopathological model are also evidenced in proposal of the ICD-11 Working Group on the Classification of Sexual Disorders and Sexual Health to reposition gender diagnoses by moving them out of “Mental and Behavioural Disorders.” to “Conditions Related to Sexual Health” and renaming “Gender Identity Disorder” to “Gender Incongruence” (Drescher 2016).

Despite these official positions, stigma and outdated perceptions of LGBT issues are pervasive among healthcare providers, including mental health professionals, and are reflected in failure to provide unbiased and clinically competent care to members of these communities.

This situation of LGBT people and health care is further complicated by the legal scenario. India has two mutually contradictory Supreme Court decisions, the 2013 ruling (Koushal vs. Naz Foundation and ors., 2013) that upholds criminalisation of same-sex behavior vide Section 377 IPC and the NALSA vs. Union of India and ors. (2014) ruling that upholds transgender rights and
declares that discrimination based on sexual orientation and gender identity is unconstitutional. These legal ambiguities further the ambivalence that exists among the healthcare fraternity about LGBT communities: some fear that providing medical care can be viewed as abetting criminal activities, and others fear that procedures such as emasculation that are part of gender affirmative surgical procedures will place the providers in conflict with the law.

**NEED FOR LGBT-AFFIRMING MENTAL HEALTH SERVICES**

While non-normative sexual orientation and gender identity are not, by themselves, mental disorders, there is substantial evidence of higher prevalence of mental disorders among lesbian, gay and bisexual persons, attributable to minority stress (Meyer, 2003). Experiences of hostile and prejudiced social environments, expectations of rejection, having to conceal one's identity, and internalised prejudice, are among the factors contributing to stress for LGB (and by extension transgender and intersex) communities who experience themselves as minorities in a society that is heteronormative, cis- and binary gendered. Additionally, issues such as the criminalization of homosexuality and the heightened vulnerability to violence can magnify the minority stress faced by LGBT individuals.

Some of the issues we have encountered among LGBT clients seeking mental health care in the Indian context include: loneliness, inability to disclose one's orientation or identity, rejection or fear of rejection by close family members upon disclosure, marriage pressures - often intensified by parents when they find out their child is non-heterosexual, double-stigma related to being HIV positive and of a gender/sexual minority, and experiences of harassment, bullying and violence based on gender, sexuality or gender expression. For individuals who are transgender, a major source of distress arises from the incongruence of gender with assigned-sex. This distress, called gender dysphoria, requires diagnosis by a psychiatrist to enable them embark on procedures to realign body and mind, such as through endocrine therapy and surgical procedures for genital reconstruction.

There is thus a strong need for mental health providers to provide therapeutic support to LGBT individuals in need. In the context of transgender persons, this need has been formally articulated by the Government of Odisha in its draft Transgender Policy (SSEPD 2017) that mandates that transgender persons have access to quality health care facilities, goods and services, that government and private hospitals and facilities should develop transgender inclusive policies on registration, treatment, admissions, investigations and other medical services to prevent discrimination, harassment, abuse or exploitation while providing health care services, and that psychological counseling services to Transgender persons with regard to their gender transition especially during pre-operative and post-operative period.

**HOW TO BE AN LGBT-AFFIRMING MENTAL HEALTH CARE PROVIDER?**

1. **Adopt a human-rights approach**

There have historically been many human rights violations in the mental health profession, when it comes to services for LGBT persons. These have included unethical and unscientific practices such as electro-convulsive and other aversion therapies to try and change sexual orientation (India Today 2015, Patra 2016): practices that some psychiatrists engage in to this day.

- A human rights based approach to mental health
care for LGBT persons is needed because of the bi-directional nature of the two, i.e. human rights violations can adversely impact mental health, and conversely, respecting human rights can improve mental health (Mann et al. 2016).

- Some elements of the client-provider relationship are listed below:

**Respect client goals:** Respect for a person is widely considered to be one of the fundamental principles of bioethics. For some, it may involve primarily expressions of care, attention to needs, and an empathic response, whereas for others, the important aspect of respect may be providing information and allowing them to make autonomous decisions recognizing their individuality (Dickert and Kass 2009). A cautionary note: some LGBT clients, as a result of pervasive homophobia or transphobia, may state a desire to change their sexual orientation or gender identity. In such a situation, it is for the provider to explain to the patient that these cannot be changed by external intervention through any scientifically valid means. Needless to add, forceful application of conversion therapies is unethical (Patra 2016) and must not ever be attempted.

- **Respect need for confidentiality:** Considering the highly stigmatized nature of non heterosexual and transgender identities, it is vital for mental health providers to respect their clients need for confidentiality. Special caution and attention to confidentiality needs to be taken when working with children, adolescents and young adults who may not have shared their concerns about sexual orientation or gender identity with their parents. Children and adolescents are particularly unlikely to share their intimate feelings with clinicians unless their wishes and sensitivities are recognized.

- **Unlearn personal biases:** Even providers who do not view homosexuality or alternative genders as pathological are sometime not free from biases. Towards providing an affirmative service, it is important that the mental health professionals unlearn their personal biases around gender roles, gender identity, sexual orientation, notions of 'normal' vs. 'abnormal', etc.

**ii. Know your terminology:** Terminology around LGBT issues is evolving and not always available in medical textbooks and guidelines. A partial glossary (Orinam 2014) is appended for ready reference. Terminology around clinical diagnoses is also evolving, as mentioned in a previous reference to term gender incongruence and gender dysphoria replacing the previous term gender identity disorder.

- **iii. Know the current best practices in psychiatric/counseling care of LGBT clients:** The “Guidelines for Psychological Practice With Lesbian, Gay, and Bisexual Clients” (APA 2012) provide psychologists with a frame of reference for the treatment of lesbian, gay, and bisexual clients and basic information and further references in the areas of assessment, intervention, identity, relationships, diversity, education, training, and research. In the Indian context a guide to gay-affirmative counselling practices has been published by Ranade and Chakavorty (2013) from the Tata Institute of Social Sciences.

- The World Professional Association for Transgender Health Standards of Care, 7th Version, provides clinical guidance for health professionals to assist transsexual, transgender, and gender nonconforming people in primary care, gynecologic and urologic care, reproductive options, voice and communication
therapy, mental health services (e.g., assessment, counseling, psychotherapy), and hormonal and surgical treatments (WPATH 2011). In the Indian context, a good-practice guide to gender-affirmative care has been published recently (Sappho for Equality 2017).

iv). Learn about Legal versus Medical determination of gender identity: The Government of India, as per Hon'ble Supreme Court's NALSA judgement (April 2014), provides for legal recognition of gender identity based one's self-identification of one's gender as man, woman or transgender/third gender, without hormonal therapy or surgical process. The legal recognition process involves gender identity (and name) change affidavits, similar to name change process. Such a legal recognition may not require a clinical diagnosis of gender dysphoria or gender incongruence. In contrast, medical procedures such as endocrine therapy or genital reconstruction procedures sought by some (but not all) transgender persons, will require clinical determination of gender dysphoria. Psychiatrists should be aware that any insistence on hormone and surgical procedures for legal recognition of gender identity is not required by the government: further such insistence would be deemed illegal.

v) Establish links with community networks for two-way referrals: Many LGBT individuals facing distress on account of their sexual orientation or gender identity seek support from existing community collectives and networks. These networks would benefit greatly from knowing of LGBT-friendly psychiatrists to make referrals for individuals needing professional intervention. Conversely, individuals who first reach out to mental health professionals may benefit from peer support available on an ongoing basis. Make an effort to learn about such peer groups and networks in your area.

HOW TO BE AN LGBT- SUPPORTIVE PSYCHIATRIC ASSOCIATION

i. Advocate for LGBT content in professional training: LGBT issues in psychiatric curricula are currently limited. There is a dire need to go beyond diagnostic criteria for gender diagnoses, and include LGBT-relevant content in undergraduate, post-graduate and continuing-medical education. Professional associations such as the Indian Psychiatric Society and its Odisha chapter can play key roles in advocating for inclusion of such content.

ii. Advocate for adopting standard guidelines for LGBT mental health care: There is a need to collate existing best practices to develop standard guidelines for LGBT mental health care in the Indian context. In the context of transgender mental health care, it is important to factor in cultural specificities such as identification as a 'third' gender (associated with hijra communities), that are absent in international diagnoses.

iii. Expand the network of LGBT-friendly psychiatrists: Currently most psychiatrists exposed to LGBT issues and clientele are located in urban areas. There is an urgent need to include LGBT-focused training among practitioners in rural areas as well, and build linkages with existing resources such as the Adolescent Reproductive and Sexual Health (ARSH) clinics in the government system so as to cater to the needs of LGBT individuals in rural areas.

TERMINOLOGY: A PRIMER (excerpted from Orinam 2014)

We provide here some basic concepts relating to sex, gender, sexuality and gender identity relevant to mental health professionals, as we have noted confusion even
Sex: The assignation of an individual as male, female or intersex, typically made at birth, based on externally visible body parts, anatomy, tissues and/or chromosomes.

Intersex: Intersex conditions may sometimes be identified at birth based on ambiguous genitals. In other cases, they are identified through karyotyping (analysis of chromosomes) to reveal XXY [Klinefelter syndrome], XO [Turner syndrome] and other conditions. Apart from these, there are other conditions such as Androgen Insensitivity Syndrome where cells of an XY foetus do not respond, or respond only partially, to androgens and the individual develops with female anatomy. The proportion of people whose bodies differ from male or female body norms has been estimated to be about one in 100 individuals as per a review of several studies. (Blackless, et al. 2000)

Gender: Refers to socio-cultural attributes and behaviors typically associated with one's sex assigned at birth. Gender-associated expectations are often imposed on individuals without their consent. Both children and adults are encouraged or coerced to perform in ways consistent with the gender expected of them.

Gender identity: A person's internal sense of being a man, a woman, neither of these, both, and so on. It may or may not be aligned with the sex assigned at birth. Two terms to note here are: the terms cisgender refers to those whose sex and gender-identity are aligned. The term transgender refers to people whose sex and gender-identity are non-aligned. They may be binary, identifying as men or women, or they may embrace a gender-queer or other non-binary identity. For yet others, gender identity may be fluid, or even absent.

Gender expression: The ways in which a person manifests masculinity, femininity, both, or neither, through appearance, behaviour, dress, speech patterns, and more—that is, masculine, feminine, androgynous, agender, etc. The cultural expectation is that one's biological sex, gender identity, and gender expression will align in stereotypical ways: that someone who is male will identify as a boy/man and have a masculine gender expression, for example.

Sexual orientation: It describes the pattern of a person's sexual attractions based on their own gender and in reference to the gender of the people they are attracted to. Terms such as heterosexuality (exclusive attraction to the other gender) and homosexuality (exclusive attraction to the same gender) are concepts denoting extremes of a continuum of attractions. Other orientations include Bisexuality, refers to attraction to more than one gender. Pansexual, refers to attraction to people regardless of their gender. Asexual, refers to being not sexually attracted to anyone and/or no desire, nor are all eunuchs are Hijras. The Ministry of Social Justice and Empowerment, Govt. of India, recommends not using this term for hijras or other transgender people, and many hijras consider this term inappropriate to anyone. Asexual people sometimes do experience romantic attraction and not sexual attraction. Questioning refers to a term used by someone who is unsure of or exploring their sexual orientation.

Sexual identity: How one identifies. Sexual identity may or may not be aligned with sexual orientation. Terms such as gay and lesbian (identity terms corresponding to homosexual orientation) or straight (identity term corresponding to heterosexual orientation), have gained currency in recent years. However many people do not identify with these...
terms.

Sexual behavior: Refers to the actual sexual acts performed by the individual. These may or may not be aligned with sexual orientation or identity, may vary over time, may be situational, subject to social pressures, etc. Thus, for example: a heterosexually oriented person may be abstinent for religious or other reasons, a homosexually oriented person may engage sexually with a spouse of the other gender, having been forced into marriage, a person may be bisexually oriented and engage sexually with just the one individual with whom he/she is in relationship with.

Transgender: All persons whose own sense of gender does not match with the gender assigned to them at birth. In the Indian context, it includes trans-men and trans-women, genderqueers and a number of socio cultural identities, such as kinnar, hijra, ranga, maichiya, aravanis, jognas, etc. whether or not they have undergone sex reassignment surgery or hormonal treatment or laser therapy, etc.

Hijra: Individuals assigned male at birth who reject their 'masculine' identity in due course of time to identify either as women, or “not-men”, or “in-between man and woman”, or “neither man nor woman”. Hijras have a long tradition/culture and have strong social ties formalized through a ritual called “reet” (becoming a member of Hijra community). There are regional variations in the use of terms referred to Hijras, for example, Kinnars (Delhi, Rajasthan, and Odisha), Aravanis and Thirunangais (Tamil Nadu).

Eunuch: Originally, this term referred to males who had been castrated/emasculated. In India, this term is commonly used to denote Hijras. But all Hijras are not eunuchs, nor are all eunuchs are Hijras. The Ministry of Social Justice and Empowerment, Govt. of India, recommends not using this term for hijras or other transgender people, and many hijras consider this

References:


National Legal Services Authority vs Union Of India &Ors on 15 April, 2014. Supreme Court of India.


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METABOLIC SYNDROME IN SCHIZOPHRENIA: AN OVERVIEW OF MECHANISMS

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<th>Dr. Mehta Varun S</th>
<th>Assistant Professor of Psychiatry, Central Institute of Psychiatry, Ranchi</th>
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<tr>
<td>Dr. Amrit Pattojoshi*</td>
<td>Professor and HOD, Department of Psychiatry, HITECH, Bhubaneswar Email: <a href="mailto:dramritp@yahoo.com">dramritp@yahoo.com</a>, Contact number: 9438148100 (Corresponding Author)</td>
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**Introduction**

It is seen that people who have schizophrenia have increased rates of physical illness compared with the general population. Data suggest that approximately 70% of them suffer from at least one medical comorbidity, and 33% suffer from three or more comorbid health disorders (Carney et al, 2006). Common medical comorbidities include hypertension, chronic obstructive pulmonary disease, and diabetes; all of which may contribute to the risk of cardiovascular disease and associated mortality (Carney et al, 2006). Even after controlling for the increase in suicide (approximately 10%), life expectancy remains below the normal population.

Although the prevalence of obesity in the general population is estimated to be 30%, the rate of obesity among persons who have schizophrenia is estimated to be between 40% and 60% (Flegal et al, 2002). Obesity upsurges the odds of type 2 diabetes mellitus, dyslipidemias, metabolic syndrome, and hypertension. The prevalence of these problems is particularly high in this group, with reported rates approaching 15% for type 2 diabetes mellitus, 69% for dyslipidemias, 63% for metabolic syndrome and 58% for hypertension (De Hert et al, 2009). The mechanisms could be related to the patient's psychiatric disease and lifestyle factors. Studies in neuroleptic-naïve, first-episode schizophrenia patients suggest that metabolic abnormalities, such as insulin resistance, are present in these patients even before they begin treatment with antipsychotic medications (Venkatasubramanian et al, 2007). Genetic and familial studies dating back to the end of the 19th century have shown that people with schizophrenia have a higher prevalence of a family history of diabetes than the general population. Both early life and adult environmental risk factors are also important. Low birth weight and intrauterine malnutrition are both associated with the later development of diabetes and schizophrenia, raising the possibility that a common intrauterine insult may programme the individual to be at risk for both conditions. Although schizophrenia has been identified as a risk factor for diabetes, it is unclear whether schizophrenia per se is an independent risk factor, or whether the additional risk is conveyed by the higher prevalence of other diabetes risk factors in patients with schizophrenia (Woo et al, 2005).

**METABOLIC SYNDROME AND ATYPICAL ANTIPSYCHOTICS**

The use of atypical antipsychotics has specifically been implicated in the development of metabolic syndrome in patients with schizophrenia. Reaven (1988) noted that several of the risk factors for MS namely dyslipidemia,
hypertension, hyperglycemia commonly occur together and introduced the term “syndrome X” to describe this clustering. The syndrome is characterized by insulin resistance and is now called the metabolic syndrome. Its core features are obesity, atherogenic dyslipidemia (elevated triglycerides and low HDL), disturbed insulin and glucose metabolism, and hypertension. Amongst the various second-generation antipsychotics (SGAs), the risk is as mentioned in the table below.

### Table 1: Approximate relative likelihood of metabolic disturbances with antipsychotic medications (Hasnain et al, 2010)

<table>
<thead>
<tr>
<th>Medication</th>
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<th>Weight gain</th>
<th>Glucose metabolism dysregulation</th>
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<td>Low</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td>Clozapine</td>
<td>High</td>
<td>High</td>
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<td>Low</td>
<td>Low</td>
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### MECHANISMS OF ANTIPSYCHOTIC WEIGHT GAIN

Antipsychotic-induced weight gain is a complex side-effect with multiple causal mechanisms.

1. **Food craving**
   
   Frequently, drug-induced weight gain is preceded by a sudden increase of appetite, specifically for sweet and fatty foods (Kazes et al, 1994). This was first noted by Paykel, who coined the term 'carbohydrate craving'. Further, the increased caloric intake is associated with excessive hypercaloric fluid consumption to alleviate drug-induced thirst and dry mouth.

2. **Effect on energy expenditure and energy intake**
   
   A substantial proportion of patients report about weight gain despite subjectively reduced appetite with consecutively reduced food intake for several weeks or months. At the first glance this phenomenon appears paradoxical. However, it might be explained by an altered resting metabolic rate. Under average conditions of motor activity, basal energy turnover can account for as much as 70% of daily energy expenditure, much more than physical activity. Therefore, even a small change in the basal metabolic rate, if maintained over a prolonged period of time, may have a considerable impact on body weight. Sharpe et al (2005) found a lower than predicted resting energy expenditure (REE) in people taking antipsychotic medications. An Australian study showed that the total energy expenditure rates in patients taking clozapine were 20% lower than the WHO recommendations. This indicates that weight management strategies should focus on enhancement of energy expenditure (e.g. exercise) rather than strategies...
to reduce energy intake (e.g. diet or food intake) (Sharpe et al, 2006). But olanzapine treatment did not affect REE rates (Graham et al, 2005b). Moreover, weight gain with antipsychotics is associated with increased food intake and low habitual activity (Gothelf et al, 2002).

3. Effects on receptors and neurotransmitters

Leibowitz (1988) showed that local injections of catecholamines in the perifornical lateral hypothalamus (LH) of rats suppressed feeding establishing the LH as a critical brain area for food intake. In general, alpha-adrenergic neurotransmission is thought to stimulate appetite, while betaadrenergic, histaminergic, dopaminergic and serotonergic signal transduction confers satiety (Garland et al, 1988). Cholinergic receptors do not appear to be specifically involved in appetite control (Wetterling & Mussigbrodt, 1999).

- **Role of serotonin**
  Among the serotonin receptors, 5HT2C is the most commonly implicated. It is postulated that the antagonism of 5-HT2C receptors centrally by antipsychotics increases food intake despite the sensation of satiety, leading to weight gain (Reynolds et al, 2006) whereas blockade of 5HT1A receptors reduces appetite. Therefore, APs with moderate to high affinity for 5HT1A receptors may induce little BWG (Baptista et al, 2002).

- **Role of histamine**
  Histamine neurons are located in the tuberomammillary nucleus of the posterior hypothalamus. Histamine depolarises select brainstem neurons in the nucleus of the solitary tract (NTS) and dorsal motor nucleus of the vagal nerve (DMN) in the dorsal vagal complex (DVC) which together with the hypothalamus, have a fundamental role in the control and regulation of food intake (Jelsing et al, 2009). Histamine exerts its effects through histamine H1, H2, H3 and H4 receptors.

(A) **A role for the H1 receptor**

The severity of weight gain induced by an antipsychotic drug may be predicted by its H1 antagonistic properties. It was noted that acute (1-week) and chronic (12-weeks) olanzapine treatment significantly downregulated H1 receptor mRNA expression in the hypothalamic arcuate (Arc) and ventromedial nucleus (VMH), but not haloperidol or aripiprazole. In addition, olanzapine decreased H1 receptor binding density in the VMH. This altered H1 signalling was accompanied by an increase in food intake and weight gain in olanzapine-treated rats compared to those treated with aripiprazole or haloperidol (Han et al, 2008). In fact, the magnitude of BWG during treatment with clozapine, olanzapine, risperidone, haloperidol, and sertindole correlated positively with their relative affinity for the H1 receptor. Olanzapine and clozapine have the highest affinity for the H1 receptor among all of the APs. A study by Kim et al (2007) found that olanzapine and clozapine activate hypothalamic AMP-protein kinase (AMPK), which increases food intake and weight gain, via H1 receptor antagonism.

(B) **A possible role for the H3 receptor**

The effect of weight-inducing atypical antipsychotic drugs on H3 receptors in the brain appears to be unknown. It is possible that the olanzapine-induced decrease in post-synaptic H1 receptors observed in early study (Han et al, 2008) would result in an increase in synaptic histamine, which may slowdown histamine synthesis and secretion through the H3 autoreceptor, compounding the enhancement of feeding behaviour (Fig. 1). Further, the H3 heteroreceptor activity may also play a role in atypical antipsychotic-induced weight gain. The H3 heteroreceptors are located on pre-synaptic axon terminals of serotonin (5-HT), noradrenaline (NA), and acetyl choline (ACh) neurons, where they regulate neurotransmitter release. It is seen that the H3 heteroreceptors inhibits serotonin release (5-
account for the side-effect of atypical antipsychotic-induced food intake (Fig. 1), as studies show that NA and ACh can act as orexigens to increase food intake (Pratt & Blackstone, 2009). Furthermore, secretion of these neurotransmitters is inhibited by the activation of H3 receptors, whilst H3 antagonism disinhibits the release of these neurotransmitters.

**Figure 1: Proposed mechanism of atypical antipsychotic induced weight gain through histaminergic H1 & H3 receptors (Deng et al, 2010)**

- **Role of dopamine**
  Many experiments support the role of dopamine in the LH. Local injections of dopamine decreased feeding which is probably mediated by D2 receptors. Also, dopamine exerts facilitatory and reinforcing effects on feeding behaviour in mesolimbic areas (Garver et al, 1990), but its relevance in AP-induced obesity has not been clarified.

- **Role of adrenergic receptors**
  Adrenergic receptors, which are sub grouped into 3 families (α1, α2, β), play a role in both appetite and glucose metabolism, and many antipsychotics exhibit marked affinity as antagonists at adrenergic receptors. Microinjection of α1-adrenergic agonists in the paraventricular nucleus of rats suppresses feeding behavior; whereas injection of α2 agonists stimulates feeding. Adrenergic receptor subtypes have also been associated with effects on glucose transport in various tissues. Activation of α-adrenergic receptors on adipose or cardiac tissue is associated with enhanced translocation of glucose transport proteins and increased

\[ \text{Histamine neurons} \xrightarrow{(-)} \text{Histamine} \xrightarrow{(+)} \text{ACh and NA release} \xrightarrow{(+)} \text{Food intake} \xrightarrow{(+) AMPK (↑)} \text{Body weight} \]

- H3 autoreceptors (on histamine neurons)
- H3 heteroreceptors (on ACh and NA neurons)
- H1 receptors (↓ VMH)
- Olanzapine
- Clozapine
- 5HT release

(H1 receptors (↓ VMH))

\[ \text{Histamine neurons} \xrightarrow{(-)} \text{Histamine} \xrightarrow{(+)} \text{ACh and NA release} \xrightarrow{(+)} \text{Food intake} \xrightarrow{(+) AMPK (↑)} \text{Body weight} \]

- H3 autoreceptors (on histamine neurons)
- H3 heteroreceptors (on ACh and NA neurons)
- H1 receptors (↓ VMH)
- Olanzapine
- Clozapine
- 5HT release

(H1 receptors (↓ VMH))
glucose uptake in animal models (Cheng et al, 2000). Kroeze et al (2003) found that α-adrenergic receptor affinity was a predictor of antipsychotic-induced weight gain; however, this effect was modest in relation to the predictive value of affinity at the histamine H1 receptor. Activation of β3-adrenergic receptors in brown adipocytes is also associated with increased glucose transport. However, while the activity of antipsychotics at adrenergic receptors may contribute to some effects on weight and glucose control, it seems unlikely that this mechanism fully defines the ability of anti-psychotics to precipitate these effects.

- **Other receptors**

Two other receptors that have generated recent interest are a-2 adrenergic receptor and the sterol regulatory element binding protein-1 (SREBP-1). SREBP-1 is postulated to regulate peripheral adipogenesis and is influenced by olanzapine. So, one can deduce that the differential receptor binding profiles possibly account for the differential weight gain potentials of the antipsychotic agents. Thus, clozapine and olanzapine, which have the greatest affinity for 5-HT2C and H1 receptor, have the greatest weight gain potential. Risperidone, in contrast, has lesser affinity for the 5-HT2C and H1 receptors, causing lesser weight gain than olanzapine or clozapine. Ziprasidone, which is considered weight neutral, is a potent 5-HT1a receptor agonist and a potent 5-HT2C antagonist. Its weight neutral profile may be explained by its synaptic re-uptake inhibition of serotonin and norepinephrine. Aripiprazole, in contrast, has a unique mechanism of action with partial D2 and 5HT1a agonism and 5-HT2a antagonism. Its low weight gain potential is attributed to its moderate affinity to H1 receptors and lack of 5-HT2C antagonism. Thus, we can conclude that excessive BWG is associated with APs having low to moderate affinity for D2, a2, and 5HT1A receptors and moderate to high affinity for H1, a1, muscarinic, 5HT2A, and 5HT2C receptors (Baptista et al, 2002).

4. **Neuromodulators** A prominent area in obesity research is the study of peptides that modulate feeding and the level of adiposity in the short term [cholecystokinin (CCK), bombesin, gastrin-releasing peptide, neuromedin and glucagon] and in the long term [insulin, leptin, neuropeptide Y (NPY), CRH, melanin-concentrating hormone, orexins, galanin]. It was seen that administration of the gut peptide CCK to rats before the time of food availability caused a dose-dependent decrease in meal size. As CCK and dopamine interact in the brain, AP might modulate food intake by influencing such an interaction.

- **Role of leptin**

Leptin is a hormonal product synthesized by fat cells (ob gene) and was initially thought to be one of the most important signals for the long-term regulation of weight gain. Leptin binds to the ventral medial nucleus (VMN) of the hypothalamus, known as the 'satiety centre'. Binding of leptin to this nucleus signals to the brain that the body has had enough to eat: a sensation of satiety. This action occurs due to the specific inhibition of neuropeptide Y (NPY), which influences feeding behaviour and has an effect in regulating leptin levels itself. Increased serum leptin levels are observed in approximately 90% of obese people and in most types of obese rodents. The initial idea of a role for leptin in BW regulation was that hyperleptinemia is a consequence, or at least a correlate, of increased adiposity, irrespective of its cause. Several early studies postulated that leptin is related to weight gain through impairments in leptin secretion, leptin clearance and central leptin resistance, that is, loss of negative feedback inhibition from the brain (Hagg et al, 2001). Additionally leptin also positively correlated with insulin, glucose and insulin resistance, which suggested leptin's role in insulin sensitivity regulation. The proposal that leptin may cause BWG, rather than
BWG producing hyperleptinemia was put forth by Pollmacher et al (2000) who found that leptin increases rapidly after initiation of atypical AP treatment. But, Baptista et al (2001a) showed that leptin levels do not differ between patients treated with typical APs and BMI matched controls. The expected positive correlation among leptin, insulin, and BMI was also preserved. Small preliminary studies suggest that diverse APs may differentially affect leptin regulation (Hagg et al, 2001). However, there are no published studies showing that serum leptin levels or leptin sensitivity in the brain differs between typical and atypical antipsychotic treated patients when strictly paired according to BMI, body fat distribution, and rate of BWG. Additionally, increased insulin levels might be involved in producing higher leptin levels during the administration of clozapine or olanzapine when compared to other agents. Thus, there is little evidence for a specific role of leptin in antipsychotic induced obesity or other metabolic abnormalities.

- **Role of Ghrelin**

Ghrelin is a newly discovered appetite-stimulating peptide that has a role in the regulation of feeding behaviour. Ghrelin is synthesized principally in the stomach, and the concentration of circulating ghrelin is negatively correlated with leptin and body fat mass. Atypical antipsychotics promote the orexigenic effects of ghrelin, that is, effects to increase appetite during therapy, which at the same time renders anorexigenic pathways ineffective. This may lead to weight gain, and further studies with a ghrelin antagonist may provide support for this hypothesis (Popovic et al, 2007). So far conflicting results have been obtained. Some studies have shown no increase in ghrelin on atypical antipsychotic treatment (Togo et al, 2004). Others have suggested that olanzapine may directly act on the secretion of ghrelin and induce appetite, resulting in weight gain (Murashita et al, 2005). The link between atypical antipsychotic treatment and elevated serum ghrelin levels is not clear so far, but a dysregulation of the central feedback mechanism can be hypothesized.

- **Role of Orexins**

A small number of lateral hypothalamic/perifornical area neurons release the orexins, peptides that are critically involved in body weight regulation and arousal. Antipsychotic-induced weight is associated with activation of distinct orexin neurons. This is a relatively new area and there has been only one study evaluating the effect of antipsychotics and orexins.

5. **Neuroendocrinal mechanisms**

Subjects treated with typical APs often display low serum levels of estradiol (women) and testosterone (men). This endocrine profile is related to hyperprolactinemia and direct drug effects in the hypothalamus and it promotes BWG. Baptista showed that estradiol levels are significantly low following acute and subacute AP administration in women. However, levels become normal after prolonged treatment despite enduring ovary inhibition, perhaps assisted by increased extragonadal estradiol production (Baptista et al, 2001b). Hence, women who develop obesity after prolonged administration of typical APs do not display hypoestrogenemia. Therefore, the proposed use of estradiol agonists to decrease BWG might be useful only before AP induced obesity has been fully established. It was also seen that sustained decrease in progesterone levels during typical AP administration may promote abdominal fat deposition and central obesity. It may be predicted that gonadal steroids are not involved in BWG during treatment with atypical APs (with the exception of risperidone), since they induce minimal or brief hyperprolactinemia. The role of prolactin in the effects of antipsychotics on body weight and carbohydrate metabolism warrants more attention. Experimental research has shown that hyperprolactinemia induces excessive BWG and insulin resistance in humans and rodents. Also, there is local...
prolactin synthesis in the brain that may affect BW regulation independently of the hormone serum levels. It is seen that a subgroup of patients carrying the A1 allele for the dopamine D2 receptor (Baptista et al, 2001b). Hyperprolactinemia is often observed during treatment with APs that induce little or moderate BWG, such as haloperidol, fluphenazine, pimozide, and risperidone. In addition, in most studies, the highest BWG was observed with clozapine, olanzapine, and thioridazine, which tend to induce discrete hyperprolactinemia.

**Insulin and weight gain** - It is seen that antipsychotics cause BW by increasing serum insulin levels, by changes in insulin sensitivity, or both. Insulin level elevation probably arises from increased appetite and as a response to insulin resistance. Due to its anabolic effects, elevated insulin promotes BWG and adiposity. Such effects may be so intense in some subjects as to induce severe metabolic imbalance after only hours or days of clozapine or olanzapine administration (Henderson, 2001).

6. Tumor necrosis factor and weight gain

Studies suggest that TNF-a is also involved in obesity. TNF-a is synthesized by fat cells and these also express both kinds of TNF receptors. TNF-a and soluble TNF receptor levels (particularly sTNFR) are increased in obese subjects. Moreover, TNF may induce insulin resistance under certain circumstances leading to an impairment in glucose metabolism. Studies that have addressed the relationship between the effects of psychotropic drugs on weight and on the TNF-a system propose activation of the TNF-a system. (Kraus et al, 1999). TNF-a system activation by psychotropic drugs is unlikely to be a consequence of weight gain because it occurs very early during the first week of treatment and then remains constant. This early response of the TNF system suggests a predictive value for drug-induced weight gain. However, although TNF-a system activation might predict the ability of a psychotropic drug to induce weight gain it remains to be seen whether increased levels of TNF-a and or soluble TNF receptors early during treatment might be able to predict weight gain on an individual basis.

**CONCLUSION**

Thus, one can see that body weight is finely regulated by a complex physiological system that is often referred to as comprising three interrelated modules: an afferent branch, the controller, and an efferent component.

The central nervous system acts as a "controller" that receives information, transduces the input signals, and, in turn, modulates digestion, energy seeking, consumption, expenditure, and storage. It consists of diverse neuronal circuits that converge in the medial hypothalamus. The input signals modify the activity of peptides that either stimulate or inhibit food intake (FI). These peptides, in turn, influence the functioning of several amines and amino acids that may directly modulate FI.

The afferent component refers to input signals arising in 1) the external environment (sight, smell, taste, touch); 2) the adipose tissue (leptin, tumor necrosis factor alpha, resistin) and muscles; 3) the endocrine system (insulin, glucagon, reproductive hormones and adrenal steroids); 4) the digestive system (cholecystokynin, bombesin, enterostatin and other gut peptides); 5) the nervusvagus; and 6) a multitude of nutrients and metabolic products (glucose, fatty acids, lipoproteins, ketones, etc).

The efferent component consists of the integrated effects of the endocrine and nervous systems that regulate food seeking, digestion, energy storage (mainly in muscles, liver and adipose tissue), and energy expenditure (resting metabolic rate, physical activity and thermogenesis).
Table 5: Postulated effects of antipsychotic drugs that promote BWG (Baptista et al, 2002)

|---------------------------------------------------------------|---------|
| **Afferent**                                                  | Increased thirst by peripheral anticholinergic effects  
|                                                               | Decrement in estradiol (women) & testosterone (men) serum levels, by direct drug effects in the hypothalamus and through hyperprolactinemia  
|                                                               | Increase in insulin sensitivity in rats |
| **Central**                                                   | Increased appetite through the blockade of D1, D2, muscarinic, H1, 5HT1B_2C and alpha 1 receptors |
| **Efferent**                                                  | Decreased energy expenditure (sedative effects)  
|                                                               | Increased fat deposition through hyperprolactinemia, decrease in estradiol (women) and testosterone (men)  
|                                                               | Hyperinsulinemia |

References:


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PHENOMENOLOGY OF SCHIZOPHRENIA

Dr. Dhruv Gupta
Post graduate student (2nd year), Dept. of Psychiatry, Sri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun, Uttrakhand, India

Dr Sumit Mehta
Assistant professor, Dept. of Psychiatry, Sri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun, Uttrakhand, India

Dr. Shobit Garg*
Assistant professor, Dept. of Psychiatry, Sri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun, Uttrakhand, India (Corresponding Author)

Dr. Sumit Khattri
Professor, Dept. of Psychiatry, Sri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun, Uttrakhand, India

Abstract
In the absence of reliable biomarkers, phenomenological approach towards schizophrenia has been propagated since the time of Husserl. The phenomenological description and classification has undergone continuous change from the times of Bleuler and Schneider, to the various classificatory approaches and identification of the various symptom domains. With the negative, cognitive, depressive, anxiety and aggressive symptoms now being given increasing diagnostic and prognostic importance, it is imperative in modern times to recognize, and possibly treat the various other domains of the disorder that has both fascinated, as well as frustrated the medical science since times immemorial.

Introduction
The concept of schizophrenia has evolved over time. Earlier, it was considered as a “functional psychosis”, but gradually it is establishing itself as an “organic syndrome” involving several areas of human brain.

The term phenomenology and the concept was introduced by a German philosopher Edmund Husserl in 1901 as a qualitative method that looks into the 'conscious' mental experiences thereby avoiding psychodynamics, which goes into the various psychological mechanisms that lead to the patient's symptom formation. The knowledge and application of phenomenology is a complete departure from the explanatory or the psycho-analytical component of psychopathology. Phenomenology includes the understanding of the patient's internal experiences in the backdrop of the his/her culture, family and immediate environment.

The proponents of descriptive psychopathology were Berrios (1996), Edmund Husserl (1901), Jaspers (1959) and Walkers (1988). Jaspers' works were translated as 'Allgemeine' psychopathology (into English) for the first time and gave an access of psychiatric signs and symptoms to the British and Americans. In his work Jaspers emphasis throughout upon making the patient's experiences to be as far as possible reduced by 'understanding' and 'understanding'. Jaspers in fact...
was a bridge between philosophy and psychiatry. Interestingly Jaspers emphasised that the knowledge and application of phenomenology cannot be learned from a book. It's comes through examining the patient. In the absence of bio-markers, the diagnoses of schizophrenia is solely based on its phenomenology.

HISTORY OF THE PHENOMENOLOGY OF SCHIZOPHRENIA

Psychosis started being recognized as a medical condition in the 18th century in Europe, and it was then divided into psychosis secondary to general paresis (syphilitic) and functional psychosis. In the 19th century, one view was that all serious mental disorders were expressions of a single entity, which was termed by Griesinger as “Einheitpsychose”, i.e. unitary psychosis.

An alternative view that mental disorders could be separated and classified was put forward by Benedict Morel. He thus coined the term “demence precoce” for describing a chronic deteriorative disorder, starting at adolescence and leading first to withdrawal, odd mannerisms and self neglect and eventually leading to intellectual deterioration.

Emil Kraepelin (1856-1926) – Pioneered the psychiatric nosology and was the first to separate the broad group of functional psychosis into manic depressive psychosis (MDP) and Dementia precox (dementia of the young - a term coined earlier by Morel). His Dprecox was a broad group of disorders including paranoia, catatonia and hebephrenia.

The term schizophrenia was introduced by Eugen Bleuler (1911): Splitting of mind (Sch-Splitting, Phrenia-mind). Bleuler was less concerned with the course of illness than Kraepelin and was deep into the underlying psychological mechanisms, in other words symptom formation of schizophrenia (flowchart: 1).

Flowchart 1: Bleuler's primary and secondary symptoms
Bleuler was interested in psychological study of his cases but never denied of a neuro-pathological cause for schizophrenia. Since Bleuler was more pre-occupied with psychopathological mechanisms than with symptoms themselves, his approach to diagnosis was less precise. Bleuler also saw the symptoms of schizophrenia as a continuum with normal behaviour, a concept that led to major controversies later on.

**Kurt Schneider (1887 – 1967):**

Attempted to make the diagnosis of schizophrenia more reliable by identifying the so called FRS.

<table>
<thead>
<tr>
<th>Bleuler's schizophrenia</th>
<th>Schneider’s phenomenology</th>
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<tr>
<td>Was more into symptom formation</td>
<td>Was more into phenomenology</td>
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<tr>
<td>Mild Bleulerian view</td>
<td>Core Schneiderian approach</td>
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<tr>
<td>In 1960s and 70s Bleulerian concept was</td>
<td>Schneider was more towards pragmatism</td>
</tr>
<tr>
<td>Bleuler was more into the continuum of normal and abnormal</td>
<td>Schneider emphasised on the non understandability of symptoms — inability of a patient to find the boundaries between self and not self</td>
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<td></td>
<td>Satisfied the fundamental need and indeed simplified the perplexing flux of the diagnosis of schizophrenia</td>
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**Table 1: Difference between Bleuler’s and Schneider's approaches**

There was a significant difference between Bleuler's and Schneider's approaches towards the description of schizophrenia (table 1).

**First Rank symptoms of Kurt Schneider:**
- Audible Thoughts:
- Voices arguing or discussing
- Voices commenting
- Somatic passivity
- Thought withdrawal
- Thought insertion
- Thought broadcasting
- Made feelings
- Made impulses
- Made volitional acts
- Delusional perception

Among many abnormal experiences in schizophrenia, Schneider set a high value on certain symptoms not because they were the basic disturbances but because they had a special value in helping to diagnose schizophrenia in different population groups. Schneider in his own writing says "when any of these symptoms are present and no basic somatic illness can be found, we may make the diagnosis of schizophrenia".

He did not derive them nor attempted to relate them to theoretical concepts of the underlying psychotic mechanism of the schizophrenia and his symptoms evolved in the light of clinical experiences i.e. the basis for these symptoms was entirely phenomenological.

He used the qualification 1st rank in preference to 'primary' because there is a variety of opinions as to what is primary and what is secondary.

**Schneider's second rank symptoms:**
1. All other types of hallucinations other than those enlisted above.
2. Emotional changes eg. Emotional blunting and inappropriate euphoric affect.
3. Perplexity (confusion).
4. Catatonic features

C.S. Mellor (1970):
Evaluated all the admissions to a mental hospital during a period of 8 months. The patients were diagnosed by their consultants as cases of schizophrenia, age group 16-60 years (n=166). All the patients were seen within 48 hours of admission.

Frequency of FRS:
- FRS present 71.7%
- History of FRS 7.2%
- No history of FRS 13.3%
- 2nd rank symptoms only 7.8%
- Thought withdrawal and thought insertion were the most commonly observed FRS (table 2).

<table>
<thead>
<tr>
<th>Frequency of FRS</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Audible Thoughts</td>
<td>11.6%</td>
</tr>
<tr>
<td>Voices arguing or discussing</td>
<td>13.3%</td>
</tr>
<tr>
<td>Voices commenting</td>
<td>13.3%</td>
</tr>
<tr>
<td>Somatic passivity</td>
<td>11.6%</td>
</tr>
<tr>
<td>Thought withdrawal</td>
<td>21.4%</td>
</tr>
<tr>
<td>Thought insertion</td>
<td>19.7%</td>
</tr>
<tr>
<td>Thought broadcasting</td>
<td>9.8%</td>
</tr>
<tr>
<td>Made feelings</td>
<td>6.4%</td>
</tr>
<tr>
<td>Made impulses</td>
<td>2.9%</td>
</tr>
<tr>
<td>Made volitional acts</td>
<td>9.2%</td>
</tr>
<tr>
<td>Delusional perception</td>
<td>6.4%</td>
</tr>
</tbody>
</table>

Table 2: The breakup of frequencies of individual 1st rank symptoms. Source: Mellor (1970).

Applying to the same criteria O'Grady (1990) found that in a series of inpatient cases, 73% of schizophrenics exhibited at least 1 FRS, while no cases of affective psychosis did. However, applying less strict criteria O'Grady found that 14% of patients with affective psychosis had broadly defined FRS.

IPSS – For the first time incorporated through major structured interview (PSE) the Schneiderian symptoms across the globe and found that the epidemiological distribution and clinical manifestations were same across very diverse cultures – IPSS, WHO (1200 patients).

Criticisms of Schneider's FRS:
1. They make no contribution to our understanding of schizophrenia.
2. They are not primary even in Schneider's sense.
3. The method of eliciting them is unreliable.

These criticisms are irrelevant as Schneider himself never claimed that FRS had any theoretical value. FRS offer an operational definition of schizophrenia which come handy to a clinician and the overall importance of FRS is at the discretion of the clinician. FRS are also suitable for research purposes particularly when a prior and exclusive selection of schizophrenia is required.

Among most of the FRS, there is little difference in the frequency of occurrence. This finding is not unexpected. If one or two symptoms had been found to occur in a majority it would not have been necessary for Schneider to suggest a list of 11. His empiricism would have led him to reject those symptoms which did not occur frequently enough to be of practical value.
DSM III was the biggest conceptual departure from previous classificatory systems towards standardising the diagnostic criteria and towards defining schizophrenia narrowly. Till 1980, when DSM III was published, schizophrenia was a broad diagnosis and unlike in UK and rest of the world, schizophrenia was being much over diagnosed in US.

Over the decades, amongst many features to make the diagnosis of schizophrenia, a new emphasis on using the course of illness in addition to cross-sectional symptoms was recognised.

Current Diagnostic Criteria – DSM V and ICD 10 inspite of some differences, have a great deal of concordance in terms of defining schizophrenia and both the systems are narrowing upon the diagnosis of schizophrenia. One of the major differences between them is the longitudinal course criterion – DSM V – 6 months (atleast 1 month of active symptoms) – ICD 10 (1 month). DSM V requires decrease in social and occupational functioning whereas ICD X does not require any. ICD 10 continues to include schizophrenia sub-types, whereas in DSM V all the sub-types of schizophrenia were eliminated. In DSM V, there is no special diagnostic importance for FRS and all hallucinations and delusions are treated equally towards the diagnosis regardless of their content. In ICD 10 there is an increased emphasis on FRS. In ICD 10 there is a clear distinction between primary and secondary negative symptoms. Important difference in ICD 10 from DSM V is the strict requirement of 1 month duration of symptoms even in the presence of successful treatment.

DSM V – The patient should not meet criteria for mania or depression during the psychotic phase. In contrast in ICD 10, a patient with mania or depression can still meet criteria for schizophrenia if schizophrenic symptoms were present before the onset of mood episode.

Schizophrenia sub-types have been controversial constructs since the time of Kraeplin. The diagnosis of these sub-types have poor long term stability and poor predictive value. DSM V has totally done away with these sub-types whereas ICD 10 continues to retain them.

PSYCHOTIC SYMPTOMS OF SCHIZOPHRENIA

The current view of schizophrenia symptomology is that as such no symptom alone is diagnostic of schizophrenia, however many of them are highly suggestive of the diagnosis. Florid disturbances usually are set against a background of sustained disability. No particular symptom however, not even the specified hallucinations or delusions justify a diagnosis of schizophrenia, nevertheless, psychotic symptoms because of their unique nature and easy identification are the core of the diagnosis of schizophrenia. Psychotic symptoms are not synonymous with positive symptoms. Also symptoms like inappropriate affect, purposeless activity and disorganization of speech and behaviour which were earlier put into psychotic symptoms are now categorised as disorganization symptoms.

Historically / chronologically FRS in 1960s evoked treatment strategies of maximising the anti psychotic doses to minimize the psychotic symptoms, however, later in 70s and 80s it was revealed that high dose anti-psychotic treatment might impose burdens such as negative symptoms, dyskinesias and increased rates of medical complications.

Hallucinations:

Hallucinations hold a special place in the diagnosis of schizophrenia; many of FRS are hallucinations. In fact, hallucinations are common in other psychiatric illnesses too and although there is no unique feature of hallucinations in schizophrenia, there is a greater chronicity of hallucinations in schizophrenia than that in other psychiatric illnesses.

In DSM IV hallucinations of a running commentary or 3rd person hallucinations were sufficient for the diagnosis of schizophrenia. In DSM V this special status of Hallucinations is eliminated. About 5 – 8 % of general population experiences hallucinations. Anxiety states and substance abuse and withdrawal are also at times associated with hallucinations.

In a Dutch study younger age, urban background, low income, less education, unemployment, female gender and being single are associated with increased rates of hallucinations. Hallucinations do not rule in or rule out schizophrenia V/S any other psychiatric diagnosis. Jaspers opined on true Vs pseudo hallucinations subsequently, it was viewed that a person having hallucinations in inner subjective space, with all the other qualities of a true hallucination, were pseudo-
hallucinations. According to Hare, having insight into the hallucinations, classifies them as pseudo-hallucinations. Fish, however, has emphasized upon a continuum from pseudo-hallucinations to hallucinations.

Kraeplin (1919)– In long-standing cases hallucinations do not appear as sense perceptions and in fact they are ‘voices of conscience’, nevertheless they're significant diagnostic features. There are large gaps in the current knowledge of hallucinations and most studies focus on the presence or absence of a symptom. There is a paucity of literature dealing with questions like—

i. When do hallucinations arise?
ii. What provokes them?
iii. How patients cope with them?
iv. What other perceptions or thoughts are associated with hallucinations?

Auditory hallucinations are most commonly followed by visual, tactile (haptic), olfactory and gustatory hallucinations. Auditory hallucinations are the best characteristic of the psychotic symptoms – IPSS studies – 2rd person auditory hallucinations were reported in 70% of cases. The content of auditory hallucinations is usually derogatory, threatening, demeaning and prophane leading to emotional experiences of distress, fright, anger, sadness, guilt etc.

Not as a rule, but evenings and nights before retiring are associated with more intense hallucinations. Some patients over the years adopt simple strategies such as yelling at the time of hallucinations which decreases or stops the edge – often distressing to be seen by the family members. In some chronic schizophrenics, hallucinations become more of companions and in states of social isolation, these hallucinations can rather be welcome companions to the patient. A phenomenon of command auditory hallucinations is quite common – 40 – 50% of schizophrenics. The quality of command hallucinations is such that

The voice appears as a real communication.

Voices have benevolent intentions.

Voices have over-whelming powers.

Adverse consequences if voices are not complied.

Visual Hallucinations:

Are less common than auditory. About 1/3rd of schizophrenics have visual hallucinations at some point in their illness. Relatively uncommon for a schizophrenic to have visual hallucinations in the absence of auditory hallucinations. May suggest a more severe illness. Patients with intense psychotic symptoms have less visual hallucinations as compared to patients with primary negative symptoms or disorganization symptoms.

Olfactory, gustatory and tactile hallucinations:

15-25% of schizophrenics have these hallucinations particularly tactile such as feeling bugs crawling (formication). Cultural acceptability influences the mode and content of hallucinations.

Disorders of thought in schizophrenia:

Loosening of associations was the basic disorder on the premise of which Bleuler (1911) described schizophrenic thought disorder. The absence of central determining tendency led thought to be determined by incidental thoughts, clang associations, condensation, displacement, indirect association, perseveration and symbolism. Cameron mentioned the following types of formal thought disorders: 1. Asyndetic thinking, 2. Metonymy, 3. Interpenetration of themes, 4. Overinclusion.

Goldstein differentiated concrete thinking of patients with schizophrenia from those with coarse brain damage, as in the former patient's fund of words remains intact. Schneider isolated 5 types of FTDs: Derailment, Substitution, Omission, Fusion and Drivelng.

Disorders of Flow or Stream of thought:

These can be further divided into disorders of tempo and disorders of continuity.

Disorders of Tempo:

I. Flight of Ideas: classically found in mania, but occasionally it can also occur in excited schizophrenic and in organic states.

ii. Inhibition or retardation of thinking: typically found in retarded depression, but can also occur in schizophrenia.

iii. Circumstantiality: also referred to as over-inclusion.

Disorders of Continuity of Thinking:

i. Perseveration: usually found in organic brain disorders and is less common in schizophrenia.

ii. Thought Blocking: must be differentiated from
sudden loss of the thread of thought often seen in normal people, especially when anxious and exhausted.

Disorders of Possession of Thought:
Normally the subject experiences his thoughts as its own. However, in some psychiatric conditions there is a loss of control or sense of possession of thinking.

i. Obsessions & compulsions: found in a variety of conditions like OCD, depression, schizophrenia & also in organic conditions.

ii. Thought Alienation Experiences: these experiences were given significant emphasis by Schneider in his list of first rank symptoms, as being strongly suggestive of schizophrenia. These include Thought Insertion, Thought Broadcasting & Thought Withdrawal or Deprivation. The latter being suggested by many as the subjective experience of thought blocking & omission.

By convention thought disorder overlaps the phenomenon of delusions and at times hallucinations but this is confusing as delusions and hallucinations overlap the disorder of verbal cognition. There is an identifiable thought disorder in 20-50% of subjects across a variety of studies and this number goes up to 75% in the 1st episode / acute exacerbations. The disorder that does not respond well to treatment is predictive of a worse outcome.

Disorders of content of thinking:
Delusion is a false, unshakeable belief that is out of keeping with the patient's social and cultural background. Delusions are divided into primary (autochthonous) and secondary depending upon their origin. Primary delusions arise suddenly from unaccountable origins whereas secondary arise from some morbid experience and are common in chronic schizophrenia. There are no unambiguous distinctive features between the delusion of schizophrenia and those of other psychotic illnesses. However, delusion of schizophrenics have an enigmatic character, rarely seen in other disorders. In affective psychosis the delusions are usually consistent with the prevailing mood state.

The delusion of schizophrenia reflects an experience of the patient such that there is no logical consistency between or among the components of the belief and behaviour has an unpredictable relationship to the delusional belief.

According to Schneider, primary delusional experience can be delusional mood, delusional perception and the sudden delusional idea. Patients do not remember the exact sequence of such unusually and often disturbing mental events and therefore it is difficult to be certain what is primary and what is secondary.

Depending upon the content, delusions are usually described under the following headings: delusions of persecution, jealousy, love, influence or control, grandeur, ill-health, guilt, nihilism, poverty, somatic or hypochondriacal delusions, etc.

Systematisation of delusions is what follows a primary delusion. A primary delusion gets integrated into some sort of a sequential system and gets elaborated (delusional work). Systematisation of delusions is related to the retention of personality such that earlier is the onset of schizophrenia, more unIntegrated and less systematised are the delusions. Later is the onset of schizophrenia more and more of delusions systematisation tends to occur.

NEGATIVE SYMPTOMS:
Neither Kraepelin nor Bleuler said about positive or negative symptoms, nevertheless the concept were embedded in their writings. The earliest source of positive and negative dichotomy was Huglings Jackson (1931), which as he describes seem to be influenced by the Darwinian view (flowchart 2).
The Dichotomy

Positive Symptoms

Exaggeration of normal functions

From limbic system (primitive brain)

Negative Symptoms

Loss of normal functions

From developed brain (neocortex)

Flowchart 2: Dichotomy as proposed by Hughlings Jackson.
In 1970s came some sporadic references on the positive and negative symptoms and in 1980 Crow for the first time gave two syndrome hypothesis of schizophrenia (flowchart 3).

Type I and Type II

Type I
- Positive symptoms
- Acute onset
- Good PMP
- Good response to treatment
- Intact cognition
- Intact brain structures
- Underlying mechanism – neurochemical (dopaminergic) and therefore reversible

Type II
- Negative symptoms
- Insidious onset
- Poor PMP
- Poor response to treatment
- Impaired cognition
- Structural brain abnormalities
- Underlying mechanism – neuronal loss and therefore irreversible

Flowchart 3: Type I and II schizophrenia as proposed by Crow.
The hypothesis, among other problems, had the biggest difficulty in explaining as to how patients with both positive and negative symptoms could have both reversible and irreversible abnormalities and therefore the hypothesis is abandoned. Nevertheless, this hypothesis has made us revisit the soft Bleulerian symptoms which were earlier de-emphasised. Patients designated as recovered when their delusions and hallucinations were gone, yet, many of them did not achieve functional recovery. Paradoxically the phenomenological approach seems to be coming back full circle to the work of Kraepelin and Bleuler.

Negative symptoms however, were and are unrecognised and under-appreciated. Identification of negative symptoms is of utmost importance because of their predictive value about the long term disability. They are more stable across time than are positive symptoms.

Original concepts of schizophrenia held them at the forefront (table 3).

<table>
<thead>
<tr>
<th>Kraepelin</th>
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<tbody>
<tr>
<td>Emotional dullness</td>
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</tr>
<tr>
<td>Loss of inner sympathy</td>
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</table>

<table>
<thead>
<tr>
<th>Bleuler</th>
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</thead>
<tbody>
<tr>
<td>Flat affect</td>
<td></td>
</tr>
<tr>
<td>Emotional deterioration</td>
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</table>

Table 3: Negative symptoms as conceptualized by Kraepelin and Bleuler.

The severity of negative symptoms predicts short-term and long-term disability better than the severity of psychotic or disorganization symptoms.

Following Schneiderian concepts the negative symptoms were put in the backyard. The work of Strauss and William Carpenter, T.J. Crow, Nancy Andreasen and others through the 70s and 80s drew attention to the role of negative symptoms in schizophrenia.

DSM III-R onwards for the first time, negative symptoms in the form of flat affect were added to the diagnostic criteria. In DSM V negative symptoms like diminished emotional expressions or avolition is one of the necessary symptoms for the diagnosis of schizophrenia. Adding negative symptoms to the diagnostic criteria has not increased the incidence figures of schizophrenia – an indirect confirmation that these symptoms were always present but under-recognized throughout modern diagnostic criteria.

Negative symptoms are not pathognomonic of schizophrenia and 5-10% of people who do not meet any criteria for a psychiatric illness, may report negative illness. In CATIE trial, 40% of patients had significant negative symptoms and of those only ½ had significant positive symptoms. Although the diagnostic schemes are all about positive symptoms only but negative symptoms may better distinguish schizophrenia from other psychiatric disorders.

Negative symptoms are more associated with
- male gender
- poor educational level
- poor vocational functioning
- earlier onset of illness
- longer DUP

Negative symptoms in the prodrome and specially at the onset of schizophrenic illness predict persistence. There is an inverse relationship with affective symptoms such that more prominent affective symptoms are associated with milder severity of negative symptoms. There is a modest but consistent correlation between negative symptoms and cognition.

There is a greater concordance in MZ twins for negative vs psychotic symptoms and there is an overall increase in negative symptoms in the relatives of patients with negative symptoms.

Categories of negative symptoms NIMH 2005 – 5 Categories:
These can be divided into two broad groups (table 4):

<table>
<thead>
<tr>
<th>Volitional Symptoms</th>
<th>Affective Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avolition</td>
<td>Affective blunting</td>
</tr>
<tr>
<td>Anhedonia</td>
<td>Alogia</td>
</tr>
<tr>
<td>Asociality</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: NIMH division of negative symptom schizophrenia (2005).

It has been found that people with
schizophrenia and anhedonia can experience levels of pleasure similar to control populations while participating in pleasurable activities but experience much less anticipatory pleasure than controls. Affective blunting is more common in men, in people with early onset and in patients with poor pre-morbid adjustment and it predicts lower scores on the quality of life measures. Alogia is loss of production of speech which includes increased latency to respond, short verbal responses and a lack of spontaneity. If recognizable akinesia (difficulty in initiation of motor activity) is present at the onset of illness, there is an increased risk of subsequent negative symptoms. Frequently unrecognized cause of negative symptoms is treatment with antipsychotics which can cause a phenocopy of primary negative symptoms. The situation can be solved only with medication adjustment.

Primary negative symptoms:
- Those negative symptoms that appear intrinsic to the disease.
- These symptoms are least variable and tend to continue throughout the course of illness.
- When multiple negative symptoms occur and when they are not due to secondary causes – called the deficit syndrome.

Schedule for the deficit syndrome:
Atleast 2 of these should have been present in the preceeding year and are not due to other symptoms of schizophrenia to other psychiatric illness or to medication. Six deficit symptoms are:
1. Restricted affect
2. Diminished emotional range
3. Poverty of speech
4. Curbing of interests
5. Diminished sense of purpose
6. Diminished social drive

Deficit syndrome is 10% to 30% of all schizophrenics and has more insidious onset and disorganization of behaviour, poor response to treatment, less likely to have severe delusions around social themes, less likely to have suicidal ideations. According to Robert Buchanan, it is not always possible to differentiate long standing and problematic negative symptoms from a true deficit syndrome. He suggested the idea of persistent negative symptoms where possible secondary negative symptoms fail to respond to treatment.

Disorganization Syndrome:
Part of the phenomenology of schizophrenia since Kraeplin included hebephrenia into Dementia Precox. The boundaries of disorganization syndrome are less clear however it appears the most heritable of the sub syndrome of schizophrenia. Disorganization symptoms include formal thought disorders, bizarre and catatonic behaviour and inappropriate affect. They also include odd gestures, sing song or child like prosody, silly grimicing and expressions of surprise at times. Erratic behaviour, jerking the head, posturing, poor hygiene, unusual attire, multi-layers of clothes during summer days and sometimes dramatically eccentric. This group of disorganization symptoms constitutes the traditional hebephrenic subtype of schizophrenia. It responds poorly to treatment.

Motor Symptoms:
Can include repetitive purposeless hand movements – gestural equivalent of neologism. An early onset of prominent motor symptoms has been associated with significant thought disorder and may predict greater disability and a deteriorating course. Catatonic symptoms are included in disorganization syndrome although catatonia is more common in mood disorders. This overlap with catatonia is made explicit in DSM V where catatonia can be a diagnostic specifier for other mental illnesses. The diagnostic criteria requires atleast 3 of 12 motor signs: Stupor, catalepsy, waxy flexibility, mutism, negativism, posturing, mannerism, stereotypy, agitation, grimacing, echolalia and echopraxia.
Catatonia is becoming less and less prevalent and it is seen very less in the western world. Despite its decreased prevalence in schizophrenia, some signs of catatonia are present in a large minority of patients during some phase of their illness. One estimate puts catatonia at 8% lifetime prevalence and DSM V suggests upto a 35% rate in in-patient settings.

Going beyond negative symptoms:
Neuro cognitive deficits have been well established in schizophrenia as independent disease characteristics in addition to positive and negative
symptoms. However, the exact nature and structure of cognitive deficits has long been a topic of debate. Research into cognition in schizophrenia covers 7 key domains:

- Working memory
- Attention/vigilance
- Verbal learning and memory
- Visual learning and memory
- Reasoning and problem solving
- Speed of processing
- Social cognition

Neurocognitive impairment has been clearly demonstrated as a core feature of schizophrenia, and not merely a result of positive symptom interference or treatment side effects. A meta-analysis comparing the cognitive functions of antipsychotic naïve patients with schizophrenia spectrum disorders and another meta-analysis comparing the cognitive performance of schizophrenics with affective psychosis patients clearly show that large deficits were noted in schizophrenics on all the seven key domains mentioned above but the largest deficits were noted in

- Verbal memory
- Speed of processing
- Working memory

In the spectrum of cognitive disorders observed in schizophrenia, working memory is considered to be a core deficit and to be the best predictor of propensity for relapse. It is also the most consistently observed cognitive dysfunction in schizophrenia. Working memory is understood to be a dysfunction in the neural circuitry involving the prefrontal cortex, however, the role of hippocampus is also a subject of intensive research. It has also been reported that dopaminergic modulation in prefrontal cortex is also crucial, thereby raising a possible role of dopamine signaling via NMDA receptors is being contemplated.

**Depression:**

The overlap of depression and anxiety with schizophrenia is such that it has evoked a discussion about whether depression and anxiety are comorbidities or they’re intrinsic parts of schizophrenia. It tends to worsen the core symptoms of schizophrenia.

The message is that one should attempt to rule in or rule out depression and anxiety so that they can be treated.

Depression can be confused with negative symptoms and vice-versa and there is an unfortunate tendency to consider that depression can’t occur in schizophrenia.

DSM III and IV excluded major depression in the presence of schizophrenia, however, in DSM V the diagnosis of depression is neither specifically excluded nor endorsed with schizophrenia. Despite the uncertainty of this overlap, when asked in the hindsight, patients are fully capable of describing depression features rather than psychotic features.

Depression is a common symptom in the early course of illness with more than 50% experiencing depression during the prodrome. Estimates of the lifetime rates of depression on the basis of patient prevalence studies over a period of 15 years find significant depression syndrome in 25-75% of schizophrenia. Another feature that obscures depression in schizophrenia is a frequent overlap of the vegetative symptoms like decreased sleep, appetite, energy and weight.

The Calgary depression scale emphasises depression symptoms in schizophrenia and has very good reliability, henceforth recommended to be the 1st choice for monitoring depression in schizophrenia. There has been a focus on post-psychotic depression in schizophrenia and it has been attributed to demoralization and increased insight after the resolution of psychotic symptoms. However, excepting an increased risk of suicide in post-psychotic depression there is a little else to distinguish it from depression otherwise.

**Anxiety:**

Association of anxiety with schizophrenia is well known but the frequency of full syndromic diagnosis with schizophrenia is probably not as well established. DSM V on anxiety with schizophrenia:

1. Phobias may sometimes be better explained by delusions; 2. If generalized worry occurs only during the course of schizophrenia, GAD should not be diagnosed – OCRDs are not considered anxiety disorders in DSM V.

Social phobia is the most common anxiety disorder with schizophrenia – a prevalence of 15%. Premorbid social anxiety continues into prodrome as revealed by life histories of patients with schizophrenia. There is a feed forward cycle of
suggests that 5% of schizophrenics will commit suicide. Increased risk of suicide is early in the course of illness, with frequent relapses, at around the time of admission and soon after discharge. Schizophrenia patients who attempt suicide tend to use more lethal means, have a strong intent to die and make multiple attempts. Schizophrenia patients with persistent primary negative symptoms have a lower risk of suicide.

**Insight:**

Was found as the most common symptom in the IPSS study. Decreased insight is associated with decreased functional outcome, decreased quality of life, decreased treatment compliance, increased psychopathology and frequent relapses.

However, there is evidence that better insight is associated with increased suicidality, depression, self-reported distress. Insight is not a unitary phenomenon and impaired insight is not due to any single underlying process. There is a continuum of insight, from complete understanding of illness to total denial of the same. A scheme about the insight in schizophrenia:

1. Awareness of illness
2. Awareness of symptoms
3. Awareness of the need for treatment.
4. Awareness of the consequences of illness.

Research into the nature of some symptom particularly the disorganization symptoms lags behind the efforts in investigations into psychotic and negative symptoms therefore disorganization symptoms would evoke research studies in future.

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TARDIVE DYSTONIA

Dr. Sanjay Pany
Assistant Professor of Psychiatry, Central Institute of Psychiatry, Ranchi

Dr. Amrit Pattojoshi*
Professor and HOD, Department of Psychiatry, HITECH, Bhubaneswar
Email: dramritp@yahoo.com, Mobile: 9438148100 (Corresponding Author)

Dr. Jay Prakash Russel Ravan
Associate Professor KIMS Hospital, Bhubaneshwar

Dr. Pranab Mahapatra
Asst Prof KIMS Hospital Bhubaneshwar

Dr. Rati Ranjan Sethy
Assistant professor Department of psychiatry IMS & Sum Hospital, Bhubaneswar Email: ratisethy@gmail.com

Dr. Seema Parija
Assistant professor PG Department of Psychiatry, KIMS ,Patia Bhubaneswar, Odisha.
email: drseemaparija@gmail.com mob: 7873272188

In 1984, an ad hoc committee members of the Scientific Board of the Dystonia Medical Research Foundation defined dystonia as 'a syndrome dominated by sustained muscle contractions frequently causing twisting and repetitive movements, or abnormal postures' (Fahn et al, 1987). The term “dystonia tarda” was introduced in 1973 to describe involuntary sustained muscular contractions that cause repetitive movements or abnormal postures (Keegan and Rajput, 1973). This particular presentation (phenomenology, risk factors and epidemiology) has somewhat different associations, is much more functionally incapacitating, and has somewhat different treatment characteristics. It rarely occurs by itself and usually occurs along with tardive dyskinesia.

Table 1: Differences between Tardive Dystonia and Tardive Dyskinesia (Adityanjee et al, 1999)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Tardive Dystonia</th>
<th>Tardive Dyskinesia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prevalence</td>
<td>1. Lower (1.0–2.0%)</td>
<td>1. Higher (15-20%)</td>
</tr>
<tr>
<td>2. Age</td>
<td>2. More common in young adults</td>
<td>2. Increases with old age</td>
</tr>
<tr>
<td>5. Awareness of symptoms</td>
<td>5. Marked</td>
<td>5. Minimal or none</td>
</tr>
</tbody>
</table>
Because in some patients other movement disorders may coexist, Adityanjee et al (1999) have suggested a classification based on the purity of the dystonic symptoms as follows:

1. **Type I:** Pure tardive dystonia in the absence of any other concomitant movement disorder.

2. **Type II:** Tardive dystonia with coexisting dyskinetic movements in the same or different body part, but dystonia is the most prominent manifestation.

3. **Type III:** Tardive dystonia with coexisting dyskinetic movements in the same or different body part, but dystonia is less prominent than dyskinesia.

4. **Type IV:** Tardive dystonia with other coexisting movement disorders including Parkinsonism, akathisia, myoclonus and Tourette's syndrome.

**Epidemiology**

Epidemiological studies estimating the prevalence of tardive dystonia are difficult to interpret because quite a few studies have included some cases with tardive dyskinesia. Also, most studies are retrospective and are difficult to compare, as different population samples have been studied-for example, inpatient versus outpatient and psychiatric versus mixed populations. The prevalence of tardive dystonia in these studies ranged from 0.5% to 21.6% with a mean of 2.7% for a total of 4166 psychiatric patients exposed to DRBAs (Bhatt et al, 2004). Gardos et al (1987) reported that 42% (8/19) of tardive dyskinesia subjects had tardive dystonia. Miller and Jankovic (1990) found that 24% of subjects with drug-induced movement disorders (30/125) had tardive dystonia.

**Risk Factors**

- Increasing age, although mean age of onset is less than that of tardive dyskinesia
- Male gender (twice as common)

**Pathogenesis**

The pathophysiologic basis of tardive dystonia remains obscure. There is a complete absence of data in support of any particular mechanism. Clinical pharmacology of tardive dystonia is different from that of acute dystonia. Although a number of hypothesis have been proposed for acute dystonias like dopaminergic excess, cholinergic excess and increased stimulation of sigma receptors, these models could not be replicated for tardive dystonia.

Trugman et al (1994) proposed that chronic neuroleptic administration leads to repetitive stimulation of the D1 receptor by endogenous dopamine, which results in sensitization of the D1-mediated striatal output. By selectively blocking D2 receptors, chronic treatment with a conventional neuroleptic disrupts the normal coordinated balance of D1- and D2-mediated striatal outputs, which is a fundamental mechanism mediating both tardive dyskinesia and tardive dystonia.

Lohr (1991) proposed that free radical mechanism may be the cause of tardive dystonia based on some reports that Vitamin E helps in improvement of the dystonia.

**Diagnostic Criteria**

Operational Criteria for the Diagnosis of Tardive Dystonia were given by Burke et al in 1982. All five items are required for a definite diagnosis.

1. Presence of chronic dystonia (sustained involuntary muscular contractions frequently causing twisting and...
repetitive movements or abnormal postures).

2. If other involuntary movements (such as
dyskinesia, akathisia) are additionally present, the
dystonia is the most prominent disturbance.

3. The dystonia develops during or within 2 months of
discontinuation of treatment with dopamine
agonists.

4. Other known causes of secondary dystonia have
been adequately ruled out.

5. A negative family history of dystonia.

- **Clinical feature**
- Any kind of dystonia can be classified on the basis of
distribution in the body, which is as follows:
- Focal: A single body part only (e.g. antero-/retro-/
latero-/torti-collis) Occupational dystonias (writers' cramp etc.) Blepharospasm
- Segmental: Two or more contiguous body parts E.g.

<table>
<thead>
<tr>
<th>Cervical muscles</th>
<th>Torticollis, retrocollis, and anterocollis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelvis and lower extremities</td>
<td>Abnormal gait (stiff, mechanical quality)</td>
</tr>
<tr>
<td>Trunk</td>
<td>Opisthotonus, lordosis, scoliosis, abnormal postures, vertebral body fractures, degenerative changes in the spine, degeneration of intervertebral disks</td>
</tr>
<tr>
<td>Face and neck</td>
<td>Blepharospasm, oromandibular dystonia, platysmal contractions, involuntary tongue protrusions, jaw clenching, facial disfiguration, speech problems, respiratory difficulties</td>
</tr>
<tr>
<td>Rare</td>
<td>Diurnal bruxism, tardive laryngospasm, tardive spasmodic dysphonia, tardive oculogyric crisis, tardive Meige's syndrome (blepharospasm and oromandibular dystonia, reported with olanzapine)</td>
</tr>
</tbody>
</table>

**Pisa syndrome**

Pisa syndrome or pleurothotonus is characterized by tonic lateroflexion of the trunk with backward rotation (Suzuki et al, 1990). It is more common in patients who are older and female, who are receiving combination antipsychotics, or who have organic brain pathology. Pisa syndrome may be seen acutely or it may occur as a manifestation of tardive dystonia (Suzuki and Mazakoa, 2002).

**Tardive Oculogyric Crisis**

This term was coined by Chiu (1989) to describe worsening of auditory hallucinations during acute oculogyric crisis among patients receiving antipsychotic medication. But later authors (Dave, 1994) used the term when oculogyric crisis occurred late in treatment without exacerbation of psychotic symptoms.
Tools for assessment of dystonia

Toronto Western Spasmodic Torticollis Rating Scale (TWSTRS) (Consky et al, 1990): Commonly used to rate the severity of spasmodic torticollis. There are three scales in the TWSTRS: clinician-rated symptom severity scale, patient-rated disability scale (including activities of daily living), and pain scale.

Global Dystonia Scale (GDS) (Dystonia study group, 1997): The GDS is a Likert type scale that rates dystonia severity in the 14 body areas on a scale from 0 to 10, with a maximal total score of 140.

Unified Dystonia Rating Scale (UDRS) (Dystonia study group, 1997): The UDRS includes severity and duration ratings for 14 body areas, with a maximal total score of 112.

Fahn-Marsden Scale (Burke et al, 1985): The F-M rating scale evaluates dystonia in nine body areas in following domains: severity rating (0-4), provoking factor rating (0-4), and weight factor (0.5 or 1) with a maximal total score of 120.

Course and outcome (Adityanjee et al, 1999)

Tardive dystonia starts insidiously and progresses over months or years until it becomes static. It develops much faster and the patients suffer more from their symptoms than with severe tardive dyskinesia. Initially, a single body region is affected, but multiple sites may become involved; focal dystonias may progress to segmental dystonias. Increased blink rate or blepharospasm may be the first symptom. Jerking movements of the neck were the earliest sign in one patient. Whereas withdrawal tardive dyskinesia is common, withdrawal tardive dystonia appears to be rare. Tardive dystonia runs a chronic course and spontaneous remission is uncommon. The outcome of tardive dyskinesia was quite positive in one study; 30% of patients improved and 28% completely recovered. Spontaneous improvement in tardive dystonia during certain mood-dependent phases has been reported. Tardive dystonia may disappear gradually after discontinuation of all medications. A few patients with remission have developed persistent dystonia again on re-exposure to neuroleptics. Complete remission is unlikely within 6 months of neuroleptic withdrawal. Burke et al (1982) noted remission in only 12% (5/42) of cases after discontinuation of neuroleptics.

Complications

Tardive dystonia causes pain, and physical and emotional disability. Disability was moderate to severe in 70% patients with tardive dystonia (Wojcik et al, 1991).

44% of patients with tardive dystonia have gait disturbance. Any truncal or lower limb dystonia causes a gait abnormality (Gimenez-Roldan et al, 1985).

Fixed abnormal postures due to atrophy have been reported (Wojcik et al, 1991).

Persistent involuntary muscle contractions may result in pathology of striated muscles and elevated creatine phosphokinase levels (Egan et al, 1993).

Multiple rib fractures secondary to severe tardive dystonia have been reported (Szymanski et al, 1993).

Sudden onset of severe dystonia and elevation of serum muscle enzymes either following abrupt neuroleptic withdrawal or in the setting of systemic infection can be potentially life-threatening (Burke, 1993).

Treatment

Anticholinergics: In a review by Kang (1986), a 46% improvement was noted with antimuscarinics such as trihexyphenidyl; they recommend a maximum dose of 32 mg of trihexyphenidyl or 450 mg of ethopropazine. Ethopropazine may be better tolerated than trihexyphenidyl by the elderly, but both are equally efficacious. These findings have been corroborated by various studies.

Dopamine-depletors: in the same review by Kang et al (1986), reserpine and tetrabenazine, were also found effective. However, 20-40% of patients had dosage-limiting side effects, including parkinsonism, hallucinations, depression, confusion, and lethargy.

Clozapine: It has been reported to be effective in the treatment of tardive dystonia (Trugman et al, 1994).

Other therapies that have been employed include benzodiazepines, baclofen, morphine, calcium channel blockers, Vitamin E and ECT; but none of them have any proved efficacy.

Botulinum toxin: Botulinum toxin is a polypeptide produced by the bacterium Clostridium botulinum. This potent biological toxin exerts its effects by blocking acetylcholine release at the neuromuscular junction permanently, producing local chemical denervation. It is considered the treatment of choice for focal tardive dystonias unresponsive to medical management (Jankovic and Schwartz, 1993).

Surgical approaches: In medically intractable cases of tardive dystonia, pallidotomy, and intrathecal baclofen can be employed. Thalamotomy is another method of treatment.
useful therapeutic modality employed in selective cases of intractable dystonia.

Deep brain stimulation: There are isolated case reports of tardive dystonia benefited by deep brain stimulation of the globus pallidus (Trottenberg et al., 2001). The Scientific Board of the Dystonia Medical Research Foundation defined dystonia as 'a syndrome dominated by sustained muscle contractions frequently causing twisting and repetitive movements, or abnormal

**Table: 3 Primary Dystonia vs Tardive Dystonia (Sethi et al, 1990)**

<table>
<thead>
<tr>
<th>Primary dystonia</th>
<th>Tardive dystonia</th>
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<tr>
<td>In primary dystonia, patients at a younger age of onset tend to develop generalized dystonia, and those with onset in adulthood are more likely to have craniocervical, focal or segmental dystonia.</td>
<td>Regardless of age at onset, tardive dystonia usually progresses over months or years from a focal onset to become more widespread.</td>
</tr>
<tr>
<td>The site of onset ascended from the lower limbs to the face as the mean age of onset increased.</td>
<td>Tardive dystonia in adults tends to remain focal or segmental and tends to involve the craniocervical region.</td>
</tr>
<tr>
<td>Will improve with sensory tricks (gesteantagoniste)</td>
<td>Will improve with sensory tricks (gesteantagoniste)</td>
</tr>
<tr>
<td>Oromandibular dystonia occurring predominantly in women and responded well to botulinum toxin injections</td>
<td>Oromandibular dystonia occurring predominantly in women and responded well to botulinum toxin injections</td>
</tr>
<tr>
<td>Not seen</td>
<td>Limb stereotypies, akathisia, and respiratory dyskinesia were seen only in the tardive oromandibular dystonia.</td>
</tr>
<tr>
<td>Retrocollis is an infrequent manifestation of primary cervical dystonia</td>
<td>Retrocollis is frequently seen in tardive cervical dystonia.</td>
</tr>
<tr>
<td>Patients with idiopathic dystonia more often have lateral torticollis and twisting of the trunk laterally</td>
<td>One clinical pre sentation of tardive dystonia that is particularly more characteristic of tardive dystonia is the combination of retrocollis, trunk arching backward (opisthotonus), internal rotation of the arms, extension of the elbows, and flexion of the wrists.</td>
</tr>
<tr>
<td>Less common</td>
<td>The presence of lightning-like (myoclonic) movements in association with dystonia may be more common in tardive dystonia.</td>
</tr>
<tr>
<td>This is distinctly unusual in idiopathic dystonia, in which the dystonic movements are usually exacerbated by voluntary action</td>
<td>Reduction of dystonic movements with voluntary action such as walking is often seen in tardive dystonia.</td>
</tr>
<tr>
<td>Idiopathic dystonia, which shows a bimodal distribution with one early peak in childhood and another later peak in adulthood</td>
<td>Tardive dystonia tends to occur in all ages without predilection for any particular age range. The mean age of onset in the literature is about 40 years.</td>
</tr>
<tr>
<td>Responds to anticholinergic drugs</td>
<td>Responds to antidopaminergic and anticholinergic drugs</td>
</tr>
</tbody>
</table>
TRANSIENT TARDIVE DYSTONIA

Dystonia can be induced by compounds other than antipsychotics, such as antidepressants, levodopa, carbamazepine, dextro-amphetamine, and diphenylhydantoin. In these cases, it is transient, generally disappearing after the dose is reduced or the causative drug is stopped. Dystonia induced by injury can also be transient.

Trauma-induced dystonia can be identified based on the following criteria:
1) Onset of dystonia within 1 year of injury
2) Well documented history of trauma, and
3) Site of dystonia anatomically related to site of injury.

Cases of drug-induced dystonia, brain injury, Wilson's disease, and other recognized causes of dystonia are to be excluded.

Two important considerations are involved in determining causality:

a) the relationship of the anatomical site of the dystonia to the site of injury, and
b) Disappearance of dystonia after healing of the traumatic lesion also adds to the implied causal chain.

The possible pathophysiology of movement disorders induced by peripheral injury is far from clear. Pre-existent dysfunction of dopamine pathways in the central nervous system probably plays an important role, making individuals with dopamine-related conditions or those receiving dopamine agonist or antagonist drugs vulnerable to trauma that, in itself, can be minor in nature. Injuries to peripheral nerves result in partial loss of motor, sensory, and autonomic functions secondary to the interruption of axonal continuity. Functional deficits caused by nerve injuries are subsequently compensated by three mechanisms: reinnervation of the denervated targets by regeneration of the injured axons, reinnervation of nearby undamaged axons, and central remodelling. But central plasticity may itself result in maladaptive changes, such as neuropathic pain, hyperreflexia and dystonia. Dystonia can theoretically be caused by the original nerve injury or by compensatory mechanisms, which explains the variable time latencies between injury and emergence of dystonia.

Anticholinergic medication could also be tried as a first stage intervention. If there is no improvement in the dystonia after 2 to 3 months, botulinum toxin becomes the treatment of choice. The chances of remission are good if intervention is begun early (Seeman et al, 2008).

Reference


GERIATRIC PSYCHIATRY IN INDIA: AN OVERVIEW OF STATUS, CONCERNS AND PROPOSALS

ABSTRACT
A significant section of the elderly population in India is developing mental health morbidity which necessitates the need to focus more on geriatric psychiatry. This article is an attempt to present an overview of the subject in the context of DSM-5, diagnosis, management, concerns, proposals and scope of research to raise further awareness, alert and action from an Indian perspective.

BACKGROUND
Average life expectancy across the globe was recorded as 69 years for 2016 [1]. In India, in 1991, the population of this segment of society was 56.7 million, which doubled in 2011 i.e. 103 million and is expected to triple in the next four decades i.e., 316 million[2, 3]. However, with old age (>60 years) there is less of useful, goal directed activity in an individual. A dull and inactive mind hastens disability, personality and mood changes, increased irritability, self-centeredness, social withdrawal or feelings of insecurity and neglect. With rapid urbanization and breakdown of the joint family system the elderly are often isolated and neglected causing them to experience several health problems, including mental problems. Data from epidemiological studies indicated an average of 20.5% mental health morbidity in older adults in India [4, 5]. Accordingly there is an urgent need to develop geriatric mental health care services in India. This article is a brief review of the current status, concerns and probable solutions for promoting this branch of psychiatry in the Indian context.

IMPLICATIONS OF DSM-5
There have been disorder specific changes in DSM-5 pertaining to practising geriatric psychiatry [6]. According to Sachdev et al. [7] changes in the areas of schizophrenia, bipolar disorder, depressive disorders and anxiety disorders are unlikely to have major treatment implications. The classification of neurocognitive disorders has however seen a major revision and elaboration in comparison with DSM-4 [6, 8]. Mild and major neurocognitive disorders were introduced. Major neurocognitive disorder has been equated with dementia. Mild neurocognitive disorder, closely similar to MCI, has a distinct definition in the DSM-5 which is likely to impact diagnosis and thereby disease prevalence due to restricted application of neuropsychological test in-clinic and non-specified details or cut-offs of alternate quantified clinical assessment. Further, the removal of “bereavement exclusion” from the diagnostic criteria of a major depressive episode can also likely increase false positives [7].

“Somatic symptom disorder” definition in DSM-5 requires the presence of one or more physical symptoms that are distressing or result in significant disruption of daily life. Additionally, the patient must have excessive thoughts, feelings, and behaviour about the symptoms or associated health concerns, generally for six months or more [6]. It is likely that in the primary and tertiary care settings, this category may over-identify patients with physical symptoms as having a mental disorder.

SCOPE OF NEUROIMAGING BIOMARKERS
Research by Khandai and Azenstein [9] suggests that neuroimaging biomarkers can be of use in clinic, in geriatric psychiatry in future. Structural and functional neuroimaging can be useful in the clinical assessment of disease presence, process and treatment response for geriatric mood disorders. Magnetic resonance imaging would be a better option compared to a computed tomography scan in detecting subtle and widespread anatomical changes particularly relevant in the psychiatric context like late...
life depression diagnosis. Magnetic resonance spectroscopy can also provide quantitative biochemical data on geriatric disorders. Functional magnetic resonance imaging or PET can be best used for functional imaging studies. However, their effectiveness in future clinical practice would possibly be limited due to their qualitative nature. Even quantitative measurements of a particular region of interest would be guided by human directives and hence likely to generate plausible error.

**GERIATRIC PSYCHOPHARMACOLOGY**

Research of geriatric psychopharmacology is centered on antidepressants, antipsychotics and treatments of Alzheimer's disease. However, for Alzheimer's, the current focus is on early diagnosis and treatments that prevent the development of disease associated impairments rather than making an attempt to delay the process of cognitive decline. The focus on geriatric psychopharmacology was heightened after the USFDA introduced the geriatric labelling rule. This was possibly due to observations of older adults in clinical trials demonstrating continued efficacy with antipsychotics across the lifespan but increased sensitivity towards particular side effects and poor tolerability thereby often leading to a compromised quality of life [10]. Findings by Roose et al [11] however, claim that neuropsychological factors and underlying age related changes in brain structure may diminish the efficacy of antidepressants in the elderly. Physical and mental illness often coexist in the geriatric population. Reynolds et al. [12] found comorbid anxiety or other disease conditions are likely to impact efficacy of selected antidepressants in maintenance of patients 70 years and older.

**MENTAL HEALTH SERVICES FOR THE ELDERLY IN INDIA:**

The current picture Grover in his editorial [13] candidly pointed out that mental health professionals in India treat children, adult as well as elderly patients simultaneously. In addition, they are significantly fewer in number when doctor-patient ratio is considered. As consequence, the focus is primarily on acute care. A high workload of the clinicians leads to sub-optimal attention and care of the elderly patients. Further, training in geriatric psychiatry is also not in priority during the post-graduate period of education. This is often responsible for lesser proficiency and interest in managing geriatric mental disorders. There is also lesser focus on psychiatry at the undergraduate level. As a result, physicians are deficient in managing mental health issues in any age group, including the elderly population. This is a relevant concern since most of the care at the primary level is provided by physicians and a right beginning to treatment is important for early remission and recovery. Thus geriatric psychiatry services are less in India and those available are also localized at urban locations [14].

**PROBLEMS OF MANAGEMENT:**

The clinical complexity in geriatric psychiatry. The psychiatrically ill geriatric patients require intensive management, including frequent communication with family members and caregivers as well as coordination of treatment with other physicians primarily due to the existence of comorbid medical conditions. The management of late life depression can also be a complex phenomenon wherein elderly patients frequently fail to achieve full remission of acute depression with monotherapy and may require polytherapy with antidepressants, augmenting agents, or electroconvulsive therapy [15]. Managing elderly patients with major psychiatric disorders also involves greater risk of adverse outcomes, including suicide, drug side effects and interactions, unanticipated shifts of polarity from depression to mania, delirium, and medical complications [16].

**FINANCIAL CONCERNS**

The treatment of geriatric patients with psychiatric disorders, involves greater risks and time and hence psychiatrists are likely to find this clinical work uneconomic. Further, most patients who cannot afford to pay privately will always constitute the majority of those in need, and these patients have the least of options if they seek specialized care for the psychiatric problems of aging [17].

**FURTHER CONSIDERATIONS**

Significant section of the elderly are affected mentally. Depressive disorders alone account for about 8%–15% of community-dwelling elderly. They have clinically significant symptoms, with considerably higher rates found among patients in primary care settings, general inpatient hospital units, and nursing homes [18-20]. About 38% of elders 85 years or older have at least moderately severe cognitive impairment [21] and clinically significant subsyndromal anxiety symptoms have been reported...
in about 40% of patients treated in inpatient and outpatient geriatric medical settings [22, 23]. Paranoid or other psychotic symptoms can be found in 11% of the elderly population [24].

A lack of access to care is likely to lead to excess disability, increased medical burden, suicide, premature nursing home placement, increased elder abuse, and geriatric self-neglect [25-30]. In recent years, attention is also directed towards the impact of behavioral problems on caregivers of the elderly [31]. There is realization that inadequate availability of timely psychiatric intervention is responsible for hospitalization and other more expensive interventions later on thereby increasing the economic burden of the caregivers [32].

MEASURES TO ADDRESS CONCERNS

Grover [13] proposed that multiple measures need to be adopted to address the needs of the elderly. They include promoting preventive measures, advocating stronger family structure, facilitating change in health care facilities and implementing curriculum with adequate focus on geriatric psychiatry for post graduate students.

Physical and psychiatric comorbidity is usually very high amongst the elderly. Many chronic physical illnesses causing disability induce a person to mental disorders. Therefore, there is a need to focus on preventive measures to avoid development of psychiatric illness. For those who are already ill, it is important to give relevant treatment at the earliest to prevent complications and disability. Hence, large community based awareness campaigns should be launched to make people aware of these non-communicable diseases and the role of early identifications, role of life style factors in development of these illnesses, role of protective factors and appropriate management to reduce complications.

In India, family and informal caregiving has been a major strength. It is impossible to plan health care without the involvement of the family in India. Therefore, it is important to take appropriate measures to preserve the role of family. Even countries from the west are now recognizing the importance of the family and emphasizing the role of family dynamics in the development and management of psychiatric disorders. We need to advocate that even after retirement, the elderly can contribute a lot to the family and society when given appropriate opportunity and support. We need to respect our elderly, involve them in family matters so that they do not feel lonely and neglected [33].

In terms of financial independence and health care several governmental initiatives like - "The Maintenance and Welfare of Parents and Senior Citizen Act, 2007", old age pensions, the National Policy for Older Persons (1999), the National Initiative on Care for the Elderly (2004), and National Programme for the Health Care of the Elderly (2011) are all positive steps in the right direction. In addition, specialized geriatric centres should be opened in rural areas so as to cater to the majority of the elderly population who reside in the villages and is not able to travel long distances to seek health care.

Dealing with the elderly requires special skills like patience, thorough evaluation of physical and psychosocial issues, including the issue of nutrition and hygiene [34]. Medical officers should be provided specialized training in the area of geriatric medicine and psychiatry. The primary health care workers like ASHA and other community health volunteers should also be trained to recognise and refer the elderly patients to the health care services for timely management of the ailments [35]. Most of the hospitals in India do not have specialized geriatric medicine and psychiatry services. Therefore, geriatric medicine and geriatric psychiatry need to be in focus, at least in pioneering Institutes, which can act as training and referral centres for complicated cases. According to Tiwari and Pandey [34], there is a need to establish state-level Geriatric mental Health Departments which providetraining in traditional methods like yoga and spirituality as part of preventive measure in addressing geriatric mental disorders. With the elderly population likely to increase to almost 3-fold in the future, it is important to develop a new model for geriatric psychiatry to address a greater need [36]. A focus on recovery in addition to symptomatic relief, practice of prevention of depression post chronic or major illnesses and promotion of complementary, alternative and integrative interventions that enhance the positive psychological traits in old age needs to be proposed. Such a practice of geriatric psychiatry should improve outcomes and reduce healthcare cost. Telepsychiatry and internet-based interventions are also promising.
mechanisms to enhance access to therapies [37].

The Indian Association of Geriatric Mental Health (IAGMH) has been playing an important role in improving the mental health care for elderly as it acts as an advocacy group for the elderly to make the government aware about the priorities for the elderly and implementation of the laid down policies. A liaison with other geriatric associations like Geriatric Society of India and Indian Academy of Geriatrics can further help to identify and manage psychiatric morbidity in elderly. The Journal of Geriatric Mental Health will also be a useful knowledge resource for the clinicians, researchers and general public at large [38].

FUTURE SCOPE OF RESEARCH
Clinical innovations related to geriatric psychiatry will be enhanced further if the pathophysiologies of aging and age-related diseases are exactly understood. The objective should also be that the period of poor health is minimized. Put together, they will ensure that there is a delay in disease onset and even if diseased, the patient encounters minimal disability, dependency and suffering [39].

Health neuroscience is related to the interplay of the brain and physical health across a lifespan [40]. A better understanding of health neuroscience will help to develop insights into how the brain links genetic, psychological, behavioral, social and environmental factors with physical health. This will probably help to put a check on vulnerability and improve resilience against clinical illness and be relevant to geriatric psychiatry.

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COPING STYLES AND ITS DETERMINANTS IN SPOUSES OF INDIVIDUALS WITH ALCOHOL DEPENDENCE

Background: Coping styles adopted by the spouses of individual with alcohol dependence depends on various psychosocial factors. Discord coping was found to be most commonly used coping style by spouses of alcohol dependent patients. Our study aimed to study the determinants & pattern of coping behaviour of the spouses in this population which has a high prevalence of alcoholism.

Methods: A cross-sectional study enrolling 120 consecutive married patients diagnosed with alcohol dependence and their spouses seeking consultation for alcohol dependence at MGMCRI, Puducherry, a tertiary care hospital. Short Alcohol Dependence Data and Alcohol Problems Questionnaire were applied on the patient and Orford Guthrie's Coping with Drinking Questionnaire was used in spouses to determine the pattern of coping. Spouses were also screened for depression & personality disorder using Patient Health Questionnaire and Standardized Abbreviated Personality Assessment.

Results: The most common coping behaviours found were discord, avoidance and indulgence. Depression was screened positive in 62.5% of the spouses of which 46% met ICD-10 criteria for depression, but none of them had personality problems on screening. There was significant positive correlation between educational status of the spouse with discord and sexual withdrawal coping (p<0.02). There was also significant positive correlation between discord and competition coping with patients having alcohol problem behaviour in marital domain (p<0.001) whereas avoidance and indulgence coping were
significant in spouses having depression (p<0.03). Regression analysis showed education status and presence of depression of wife are predictors for dysfunctional coping styles.

**Conclusion :**

Discord, avoidance fearful withdrawal coping were the most common coping behaviors in spouses of alcohol dependent patients in our population. Depression is a common mental health problem in spouses which determines their style of coping and thus further relapses in patients.

**Key-words:**

Spouses, Coping, Alcohol dependence, Depression

**Introduction :**

Problematic alcohol consumption in a family member produces a huge psychosocial impact on other family members. Interpersonal relationships become strained & chaotic between the members. This may increase chances of alcohol intake or frequent relapses in the alcohol dependent individual and aggravation of current family problems leading to a vicious cycle. Spouses are the worst affected among the members of the family. They often hide the problem from others, lie for their alcohol dependent partners, support them in form of enabling or co-dependent behaviour or take up the responsibility of the alcohol dependent individual. They often resort to excessive care-giving behaviour in an attempt to be accepted and to control their husband's drinking behaviour. Over a period of time spouse becomes prone to stress related psychiatric disorders. As a result, they develop depression, guilt, tension and fear, loss of trust, low self-esteem and suicidal tendencies.

Spouses develop ways of dealing with the concomitant stress with different coping styles. Personality plays a vital role in coping with a stressful situation as shown in various studies. Recent studies found that the changes in personality of spouse was a result of their maladaptive behaviour in response to their husband's alcohol intake rather than they are having independent personality disorders. Frequent use of specific coping behaviour by these spouses was related to their partner's drinking outcome along with other factors such as wife's personality, presence of psychiatric illness in spouse or other psychosocial factors. in an initial study reported coping behaviours such as discord, avoidance, withdrawal and assertion as common in the spouses. Coping behaviours commonly reported in subsequent studies were discord, avoidance, indulge, fearful withdrawal and assertion respectively. However, in an Indian study by Chandrasekaran & Chitraleka reported “avoidance” as the most common coping behavior. In another Indian study “discord” coping was found to be the commonest one. However, there is dearth of Indian literature on the various factors associated with dysfunctional coping patterns by spouses of alcohol dependent individuals and thus the need for this study.

**Materials & Methods :**

The study was a cross-sectional observational study, conducted at tertiary care hospital in Pondicherry for a duration of one year. All consecutive male cases of alcohol dependence (ICD-10), married, aged between 21-64 years, registering in Department of Psychiatry were
included for the study. The spouse was included when she is married for at least two years and constantly staying with the patient. Consent was taken from both patient and the spouse separately. Patient having psychosis, delirium, depression or other comorbid psychiatric condition were excluded. Spouses were screened for alcohol dependence, psychosis & cognitive impairment before inclusion in the study. Short Alcohol Dependence Data Questionnaire (SADD) was used to measure the severity of alcoholism in patient. SADD has a good test-retest reliability and construct validity and is relatively independent of socio-cultural influences. Problem behaviour in terms of marital problems, problems with children, socio-occupational and legal domains were assessed in patients using Alcohol Problems Questionnaire (APQ) which is a validated questionnaire with good test-retest reliability. Orford Guthrie coping with drinking questionnaire was used to assess coping in the spouses. It is comprehensive questionnaire, more relevant to our purpose & more extensive than coping questionnaire for family members of alcohol dependent individuals. Spouses were screened for depression & personality disorders using Patient Health Questionnaire (PHQ-9) and Standardized Abbreviated Personality Assessment Scale (SAPAS). The spouses screened positive for depression was assessed by Consultant for depression by clinical interview and using ICD-10 criteria. Those found to have syndromal depression was treated appropriately.

Data was statistically analysed using SPSS version 18.0 (IBM SPSS, US) software. Normality of the data was examined using histogram and Shapiro-Wilk test. Descriptive analysis was done to see the distribution of the sample. Correlation between coping, socio-demographic and clinical variables were studied using Spearman's correlation. Regression analysis was done to find the predictors of dysfunctional coping in the spouses. P value of less than 0.05 was taken as statistically significant.

Results:

Mean age of individuals with alcohol dependence is 41.54±10.09 years and of the spouses is 39.17±9.81 years with a range between 35-44 years. Most of the spouses are from rural background (89.2%) and belonging to lower socioeconomic class (65.8%) (Table 1).

On an average, duration of alcohol dependence is 20 years and 31(25.8%) had high, 69 (57.5%) had medium & 20 (16.7%) had low alcohol dependence on SADD. Average score of 22.02±5.68 in APQ denoting severe alcohol related problems. Out of the two domains of Alcohol related problems, problems in common domain is more than marital domain (Table 2). On applying Orford Guthrie coping with drinking questionnaire to find the different coping behaviours adopted by the spouses, most of the spouses score highly on discord, avoidance and indulgence coping (Table 3). This shows that spouses are involved in dysfunctional coping styles rather than using healthy coping styles of assertion, anti-drink, withdrawal and taking special action. Only one spouse had scored high on marital breakdown suggesting that despite problematic drinking the couple are continuing with their marriage. On probing for depression in spouses, 62.5% of the spouses were screened positive on depression using PHQ-9. 46% of the spouses had clinical depression when the screened positive spouses were clinically interviewed by Consultant and a diagnosis was made using ICD-10 (Table 4). None of the spouses have personality problems on personality.
screening questionnaire SAPAS.

To study the association between coping behaviours of spouses and socio-clinical variables Pearson Correlation was done. There was significant negative correlation between educational status of the spouse with discord (p=0.001) and positive correlation with sexual withdrawal coping (p=0.001). There was also significant positive correlation between discord and competition coping with patients having alcohol problem behaviour in marital domain (p=0.02; p=0.001) whereas avoidance and indulgence coping were positively correlated in spouses having depression (p=0.003; p=0.002). Severity of alcohol dependence had significant positive correlation with assertion coping (p=0.03) (Table 5). The spouses were divided into two groups—those using dysfunctional coping styles and those using healthy coping styles. To find the predictors of dysfunctional coping styles, binary logistic regression analysis was done using the variables education of spouse, severity of alcohol dependence, alcohol problem–marital domain and presence of depression in spouse. Regression analysis showed education status and presence of depression of wife are predictors for dysfunctional coping styles. The model explained 63% to 81% of variance in the sample (Table 6).

Discussion:

Spouses go through stressful conditions, adopt various coping styles which may lead to several psychological sequelae.9,11 Coping styles of the spouse affect both themselves & the alcohol dependent individual. It is also known to affect the drinking outcome of the husband in a bilateral interaction.19,28.

Patients were married for more than ten years which gives the spouse an adequate time to spend with their husbands. Most of the couples were residing in rural areas and are devoid of other facilities of urban life and spent their life mostly with families. Thirty nine (32.5%) of spouses were illiterate and 74 (61.7%) were unemployed or housewife which is similar to several Indian studies where spouses of individuals with alcohol dependence had low educational & occupational status in comparison to the common population & also in comparison with her husband.21,29

Most of the spouses scored highly on discord, avoidance and indulgence coping. The most common coping behaviours were discord, avoidance, indulgence and competition which are considered to be dysfunctional coping styles which is similar to previous studies.21,22 Also, Indian studies by Rao & Kuruvilla and Chakravarthy & Ranganathan identified discord and indulgence as most common coping strategies adopted by spouses of alcoholic patients.20,21 The finding could be explained by the fact that the husband is the dominant partner and spouses comply with their husband in their drinking behaviour, which is a common finding in our patriarchal society. Also a high incidence of competition coping supports the helplessness of the spouses.

Our study has found high correlation of maladaptive coping of spouses with their education level, alcohol related problem in marital domain and with the presence of depression. This finding suggests that socio-demographic variables plays a major part in coping behaviours of spouses in our study. This was similar to previous studies where they found coping behaviour of spouses were related to the alcohol dependent partner's job status, spouse's age & hardship faced by the spouse.12 Moos & Moos found that greater use of avoidance coping in response to a recent
stressful event was associated with greater alcohol use, anxiety, depression, physical symptoms and medication use among spouses of alcohol dependent individuals. Rychtarik et al. found that women of higher occupational status may have learned to be less dependent & more assertive on their partners. Rognmo et al. in a Norwegian study, found age & educational status of spouse to be related to mental distress & thus indirectly affecting coping behaviour of the spouses. Nayak et al. in an Indian study, observed severe alcohol dependence of the partner increases the risk for mental health disorder in the other partner along with intimate partner violence and is associated with poor education and occupational status of the spouse.

There was a high incidence of depression in spouses which was found in this study. Tempier et al. found high level of anxiety, depressive symptoms, aggression and cognitive impairments in spouses of individuals with alcohol dependence. Montgomery and Johnson observed a greater frequency of husband's alcohol problems was associated with increased depressive symptoms in the wives. There was robust association between alcohol problems and presence of psychological distress, mood and anxiety disorders among spouses. In a recent Indian study, Kishor et al. observed 65% of the spouses had psychiatric disorder, primarily mood & anxiety disorder. It also reported an association between partner excessive alcohol use, marital satisfaction with women's common mental health disorders.

None of the spouses in our study had screened positive for personality disorder. Edwards et al. on a study about personality of wives of alcohol dependent individuals deduced that these women have essentially normal personalities which manifest as neurotic traits as a consequence of living with their alcohol dependent partners. Similarly, an Indian study comparing personality characteristics of wives of individuals with alcohol dependence with wives of normal controls found there was no statistically significant difference between these groups. Extroversion, neuroticism and psychotism personality characteristics of the wife were related with poor marital adjustment & maladaptive coping behavior.

The study showed that education of spouses and the presence of depression are predictors of dysfunctional coping styles. Similar predictors are found in other Indian studies by Chakravarthy & Ranganathan and Chandrasekaran & Chitraleka. However, none of the studies have assessed for depression in the spouse. In our study the depression seen in spouses is mostly reactive depression as there was no past or family history of depression in them. This high occurrence of depression can be explained by the active & maladaptive coping strategies adopted by spouses which inversely increases alcohol intake of the dependent individual. The problem is further compounded by their low socio-economic class, lower educational & occupational status. As depression leads to adoption of maladaptive coping which also leads to further worsening of depression, these forms a vicious cycle. It also leads to further relapse of drinking behaviour of husband.

Conclusion:

The study suggests that depression is an important aspect which has to be assessed in spouses of individuals with alcohol dependence. The revolving door phenomenon in the management of alcohol dependence is often witnessed because of repeated relapse as we don't address the psychosocial environment of the patient and its interaction with patients drinking behaviour. Apart from early and
effective treatment of patients, adopting healthy coping by spouses, conducting spouse support group and treatment of their depressive symptoms, if any will help to deal with alcohol dependence more efficiently.

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Table 1. Distribution of socio-demographic data of individuals with alcohol dependence and 
their spouses (N=120 pair)

<table>
<thead>
<tr>
<th>Socio-demographic variables</th>
<th>Individuals with alcohol dependence</th>
<th>Spouse of individuals with alcohol dependence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (years)</td>
<td>39.17±9.81</td>
<td></td>
</tr>
<tr>
<td>Educational status n(%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher education</td>
<td>67 (55.9)</td>
<td>37 (30.8)</td>
</tr>
<tr>
<td>Primary level</td>
<td>31 (25.8)</td>
<td>44 (36.7)</td>
</tr>
<tr>
<td>Illiterate</td>
<td>22 (18.3)</td>
<td>39 (32.5)</td>
</tr>
<tr>
<td>Occupational status n(%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>43 (35.9)</td>
<td>3 (2.5)</td>
</tr>
<tr>
<td>Skilled worker</td>
<td>37 (30.8)</td>
<td>14 (11.7)</td>
</tr>
<tr>
<td>Unskilled worker</td>
<td>39 (32.5)</td>
<td>29 (24.2)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1 (0.8)</td>
<td>74 (61.7)</td>
</tr>
<tr>
<td>Socio-economic class n(%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper</td>
<td>12(10)</td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td></td>
<td>29 (24.2)</td>
</tr>
<tr>
<td>Lower</td>
<td></td>
<td>79 (65.8)</td>
</tr>
<tr>
<td>Area of domicile n(%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td></td>
<td>77 (64.2)</td>
</tr>
<tr>
<td>Urban</td>
<td></td>
<td>43 (35.8)</td>
</tr>
</tbody>
</table>
Table 2. Distribution of clinical variables of patients with alcohol dependence (N = 120)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of alcohol dependence (in years)</td>
<td>20.19 ± 9.882</td>
</tr>
<tr>
<td>Severity of alcohol dependence (SADD score)</td>
<td>16.57 ± 6.232</td>
</tr>
<tr>
<td>Alcohol problems-total (APQ total score)</td>
<td>22.02 ± 5.689</td>
</tr>
<tr>
<td>Alcohol problems-common domain score (APQ)</td>
<td>16.98 ± 4.517</td>
</tr>
<tr>
<td>Alcohol problems-marital domain (APQ marital domain score)</td>
<td>4.98 ± 1.501</td>
</tr>
</tbody>
</table>

Table 3: Distribution of coping styles of spouses of individuals with alcohol dependence using Orford-Guthrie coping with drinking questionnaire (N=120)

<table>
<thead>
<tr>
<th>Coping Styles (Mean Score/Total Score)</th>
<th>Number of spouses n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discord (34.56/52)</td>
<td>62(51.6)</td>
</tr>
<tr>
<td>Avoidance (27.43/36)</td>
<td>48(40)</td>
</tr>
<tr>
<td>Indulgence (10.00/12)</td>
<td>44(36.6)</td>
</tr>
<tr>
<td>Competition (17.53/24)</td>
<td>30(25)</td>
</tr>
<tr>
<td>Anti-drink (11.43/20)</td>
<td>12(10)</td>
</tr>
<tr>
<td>Assertion (8.54/20)</td>
<td>10(8.3)</td>
</tr>
<tr>
<td>Sexual withdrawal (7.67/12)</td>
<td>7(5.8)</td>
</tr>
<tr>
<td>Fearful withdrawal(6.95/12)</td>
<td>6(5)</td>
</tr>
<tr>
<td>Taking special action (11.38/24)</td>
<td>2(1.7)</td>
</tr>
<tr>
<td>Marital breakdown (8.48/16)</td>
<td>1(0.8)</td>
</tr>
</tbody>
</table>

Table 4: Distribution of depression scores in spouses (N = 120)

<table>
<thead>
<tr>
<th>Depression (on screening with PHQ-9)</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>75(62.5)</td>
</tr>
<tr>
<td>Absent</td>
<td>45(37.5)</td>
</tr>
<tr>
<td>Depression (confirmed by consultant)</td>
<td>55(46)</td>
</tr>
<tr>
<td>Severity of depression (ICD-10)</td>
<td></td>
</tr>
<tr>
<td>Mild depression</td>
<td>45(37.5)</td>
</tr>
<tr>
<td>Moderate depression</td>
<td>10(8.3)</td>
</tr>
</tbody>
</table>
Table 5. Correlation between coping behavior of spouses and socio-clinical variables (N=120)

<table>
<thead>
<tr>
<th>Coping behaviors</th>
<th>Educational status wife r(p)</th>
<th>Severity of Alcohol dependence r(p)</th>
<th>Alcohol Problem-Marital r(p)</th>
<th>Depression in wife r(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discord coping</td>
<td>-0.33**(0.001)</td>
<td>0.02(0.78)</td>
<td>0.18*(0.02)</td>
<td>0.93(0.42)</td>
</tr>
<tr>
<td>Avoidance coping</td>
<td>0.02(0.98)</td>
<td>0.13(0.72)</td>
<td>0.05(0.89)</td>
<td>0.85**(0.003)</td>
</tr>
<tr>
<td>Indulgence coping</td>
<td>-0.03(0.68)</td>
<td>0.23(0.68)</td>
<td>0.05(0.88)</td>
<td>0.47**(0.002)</td>
</tr>
<tr>
<td>Competition coping</td>
<td>0.03(0.72)</td>
<td>0.24(0.82)</td>
<td>0.29**(0.001)</td>
<td>0.03(0.67)</td>
</tr>
<tr>
<td>Anti-drink coping</td>
<td>-0.06(0.51)</td>
<td>0.53(0.66)</td>
<td>0.78(0.19)</td>
<td>0.19(0.80)</td>
</tr>
<tr>
<td>Assertion coping</td>
<td>0.07(0.94)</td>
<td>0.28* (0.03)</td>
<td>0.13(0.62)</td>
<td>0.13(0.14)</td>
</tr>
<tr>
<td>Sexual withdrawal coping</td>
<td>0.35**(0.001)</td>
<td>0.06(0.58)</td>
<td>0.33(0.75)</td>
<td>0.12(0.64)</td>
</tr>
</tbody>
</table>

* p< 0.05 level ; **p< 0.01 level

Table 6: Stepwise Logistic Regression showing the predictors of Dysfunctional coping of spouses (N=120)

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>Wald</th>
<th>p</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education of spouse</td>
<td>0.275</td>
<td>6.153</td>
<td>0.03**</td>
<td>2.13 (1.08-2.39)</td>
</tr>
<tr>
<td>Severity of Alcohol dependence</td>
<td>2.647</td>
<td>5.811</td>
<td>0.07</td>
<td>4.67 (1.19-18.67)</td>
</tr>
<tr>
<td>Alcohol Problem-Marital</td>
<td>4.730</td>
<td>4.860</td>
<td>0.06</td>
<td>45.86 (23.89-64.96)</td>
</tr>
<tr>
<td>Depression in spouse</td>
<td>5.232</td>
<td>9.314</td>
<td>0.02**</td>
<td>66.56 (45.78-138.66)</td>
</tr>
</tbody>
</table>

**p<.01; Cox & Snell R Square= .728; Nagelkerke R Square =.894; Chi square=66.82, df=8, p<.001Dysfunctional coping includes Discord, Avoidance, Indulgence & Fearful withdrawal coping

Authors Contribution:

The concept & design of the study was done by JK & SS. Literature search was conducted by JK, SS & ES, data acquisition was done by JK. Statistical analysis was done by SS along with Senior Statistician. Manuscript preparation, manuscript editing and manuscript review was done by all the authors. SS will be responsible for the integrity of the work as a whole from inception to published article and will designated as 'guarantor'. The manuscript has been read and approved by all the authors.
ASSESSMENT OF MARITAL QUALITY AND FAMILY ENVIRONMENT IN ALCOHOL DEPENDENCE: A CROSS SECTIONAL STUDY

Dr. Nupur Kumari | Research Officer, Department of Psychiatry, PGIMER DR RMLH, New Delhi.
Dr Amrit Pattojoshi* | Professor, Hi-Tech Medical College
E-mail - dramritp@yahoo.com (Corresponding Author)
Dr. Shobit Garg | Assistant professor, Dept. of Psychiatry, Sri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun, Uttarakhand, India
Dr C R J Khess | Director Professor of Psychiatry and In charge- Deaddiction Centre, Central Institute of Psychiatry, Kanke, Ranchi, Jharkhand, India.

Abstract

Background: Quality of marital life and immediate family environment define the dynamic structure harmonious functioning of subsystem called family. Alcohol affects the permanent stability of family with enmeshed internal boundaries. Alcoholism and family functioning has relationship of cause and effect. Thus the aim of the present study was to evaluate and find the association of the quality of marital life and family environment in alcohol dependence syndrome.

Methods:
30 Male patients diagnosed with alcohol dependence syndrome and their spouses (with age group 25-50 years) as per ICD - 10 criteriastaying together for at least 2 year were assessed by Severity of Alcohol Dependence Questionnaire (SAD-Q), Family Environment Scale and Marital quality scale. Quality of life was assessed by applying WHOQOL-BREF Scale. We studied the descriptive statistics in form of frequency, percentages and Mean + SD. For correlation Pearson correlation coefficient was used.

Results:
The marital quality scores are in the range of poor scores. Dissolution potential of Marital Quality Scale with environmental/financial resources of WHOQOL scale had positive correlation and negative correlation was found between the dominance of Marital Quality Scale with social relationship and environment and financial resources of WHOQOL scale. The social relationship of WHOQOL scale was positively correlated with independence and active recreational orientation of family environment scale among spouses of patients with ADS.

Conclusion:
There quality of marital life suffered in the families of the patient with alcohol dependence syndrome. Addressing these could enable designing family therapy to attenuate the relapse rates and violence in families suffering from alcohol dependence.

Keywords: Alcohol dependence; marital quality; Family environment; WHO-Qol

Introduction
Quality of marital life is one of the significant indicators of quality of life. Quality of life in patients with psychiatric disorders has significant implication in context of the outcome and course of the given disorder. Murdock (1995) studied 250 primitive societies and found that main aim of the marriage was sexual satisfaction, economic cooperation and child rearing, and socialization of children. Marital quality of life depends upon these aims of the marriage.

Economic resources are positively associated with mental health (Kessler, 1982) and the married have more economic resources than do the unmarried (Zick& Smith, 1991). The economic benefits of marriage primarily derive from the dual-earning potential of the married, and these benefits exist for men as well as women (Ross et al., 1990).
Recent research on happy marriage indicates that these couples, despite internal and real conflict, have found a special goodness of it between their individual needs, wishes, and expectations. They regard this fit as unique and probably irreplaceable. Interchange with its extended environment and developing intergenerally through time (Hartman, 1979).

It is important to recognize the connection and to understand the implications of relationship among all family members. A change in any one member affects other individuals and the group as a whole. System theory focuses on the broad range of elements that affect the family, including their interrelationships and interdependencies.

**Family Environment**

The family is generally perceived by society as the unit responsible for providing children with an environment that serves their physical and emotional needs. It is accepted practice today to view the family as a system organized around the support, regulation, nurturance, and socialization of its members (Minuchin, 1974). Members enter the family through birth, adoption, or marriage and leave only by death. In general system terms, the family can be perceived as a dynamic system consisting of a complex of elements or components (family members) directly or indirectly related in a network, in such a way that each component (family member) is related to some other in a more or less stable way within any particular period of time. The interrelationships of the family members create a whole (family) that is greater than the sum of its parts (Compton, et al., 1979). Within this context, the family is seen as a transactional system, in constant interchange with its extended environment and developing intergenerally through time (Hartman, 1979).

It is important to recognize the connection and to understand the implications of relationship among all family members. A change in any one member affects other individuals and the group as a whole. System theory focuses on the broad range of elements that affect the family, including their interrelationships and interdependencies.

**Impact of Alcohol dependence on Marital Quality and Family Environment**

Alcoholism is a chronic, progressive, and often fatal disease. Excessive alcohol consumption is a major cause of public health concern in most countries in the world today having negative impacts in all domains of a person's life that is physical, social, financial and familial.

Alcoholism results in majority of divorce cases with increased prevalence violence in family (United States (up to 80%), Britain (approximately 75%)) (Glucksman, 1994; Giesbrecht, et al., 1989). Marital satisfaction is related strongly to a couple's ability to communicate effectively. But heavy alcohol use is associated with more negative and hostile communication, more expressions of anger, and less warmth and unity in the relationship. These factors decrease a couple's satisfaction in their marriage and create greater tension. Alcohol use disorders are related to sexual problems, such as lower sexual satisfaction and erectile dysfunction among men(Jacob & Jennison, 2001).

Drug addiction and alcoholism can be viewed as a symptom of a dysfunctional family system in which the addicted person emerges as the identified patient of the system. In some families alcohol become prime center around which all family interaction and dynamics revolve. These kinds of family only seek temporary stability by grossly affecting permanent stability, and areunable to choose appropriate coping strategy (Steinglass, 1995; Pattison & Kaufman, 1981). Such families usually likely to form rigid external boundaries (Hindman, 1976) with diffused and enmeshed internal interpersonal boundaries. If family organization and dynamics are settled well on alcoholism then there is danger of transmission of...
alcoholism to coming generation as family settlement to alcoholism become part of family tradition and family rituals (Walin, et al., 1980).

Thus it is evident that alcoholism and family functioning have relationship of cause and effect. At one stage, family problems and conflict serve to evoke, support and maintain drinking behavior (Bowen, 1974), on the other family needs to deal with dysfunctional patterns and relationships. And in this way be a symptom of pathological family styles rules the patterns of alcohol use (Walin, et al., 1980).

**Need for the study**

This is evident from researches that family factors play a pivotal role in alcohol dependence. There is dearth of literature throwing light on relation between family environment and alcohol dependence, especially in Indian context. Indian studies addressing this area are few, especially considering the importance of marital quality and family environment in context of alcohol dependence. Examination of this would greatly help in the better understanding and management of patients with alcohol dependence and identify areas and groups which need family intervention, when there are limited resources in a country like India.

Thus the aim of the present study was to evaluate and find the association of the quality of marital life and family environment in alcohol dependence syndrome. Quality of life of spouses of probands has also been assessed. The null hypotheses were that there would be no association of marital quality and family environment in families of the patients with alcohol dependence.

**METHODOLOGY**

This was a cross sectional hospital based study conducted in the Central Institute of Psychiatry (CIP), Kanke, Ranchi (post-graduate teaching hospital with a wide catchments area). The sample was selected by purposive sampling technique. This study was conducted on 30 spouses of patients with Alcohol Dependence syndrome. The sample was selected from De-addiction Center, various wards and outpatient department of Central Institute of Psychiatry, Kanke, Ranchi.

Spouses (with age group 25-50 years) of male patients diagnosed with alcohol dependence syndrome as per ICD - 10 criteria staying together for at least 2 years and education status ≥ 5th std and those who gave informed consent were included. Substance dependence other than alcohol (except nicotine and caffeine) and presence of any other co-morbid psychiatric or medical condition (in the patients or spouse) were excluded.

The objectives of the study were explained to the participants. After establishing rapport and explaining the purpose of the study the details of the socio-demographic data and clinical variables (like onset of drinking, maximum and average amount spent of money, maximum and average amount of alcohol consumed in a day) were gathered from informants, case record files and patients themselves. The severity of alcohol dependence among the patients was assessed with the help of Severity of Alcohol Dependence Questionnaire (SAD-Q) (Edward & Gross, 1976).

SAD-Q is a self-report scale consisting of 20 items to be answered on a 4-point scale. It is designed to measure aspects of physical symptoms, mood and state of mind, recent period of drinking and period of off drinking followed by heavy drinking (maximum score possible is 80 and minimum 20). Its test retest reliability is 0.85.

The spouses of the patients were first screened on the basis of General Health Questionnaire-12 score (Goldberg & William, 1988). Subsequently, marital quality of healthy spouses was assessed by Marital Quality Scale, female form (Shah, 1995). The
Marital Quality Scale is a 50 item 4-point self-report scale standardized on normal population in India. The range for the total score is 50-200. Higher score indicates lower quality of marital life and mean of the total score is the cutoff point to differentiate 'poor' quality of marital life from the 'better' quality of marital life.

The Family Environment was assessed by Hindi version of Family Environment Scale (5 point Likert scale having has 79 items. It measures 3 domains of family i.e. relationship, personal growth and system maintenance dimension. The scale has moderate to high test retest reliability and internal consistency (Joshi & Vyas, 1987). Quality of life was assessed by applying WHOQOL-BREF Scale (26 items on 5 point Likert scale, measuring physical health, psychological health, social relationships, and environment) (WHOQOL –BREF, 2004).

The collected data was then tabulated, analyzed and assessed properly with use of Statistical Package for Social Sciences-13 (SPSS 13). For socio demographic variables and clinical variables descriptive statistics was used in form of frequency, percentages and Mean + SD. For correlation Pearson correlation coefficient (r) was used.

RESULTS AND DISCUSSION

The current study aimed at assessing the quality of marital life and family environment among the spouses of patients with alcohol dependence syndrome. There were many studies measuring the level of expressed emotion in family of the patients with alcohol dependence (Epstein et al; 1993) as well as the burden of illness on family (Illango and Nirmala, 1992). But impairment related specifically to marital quality and family environment was always a neglected area. With this background this study holds a special reverence in Indian context where the rates of alcohol dependence (7.3) is so high and spouse were the one in the family to face all trouble because of illness as they were the Primary caregivers.

Assessment of subject was done cross-sectional and it focused on the debilitating effect of alcohol dependence on marital quality, family environment as well as on quality of life of spouses of the patients with alcohol dependence. So the global impression of non-psychotic mental illness and its effect on spouses was assessed.

For assessment of quality of married life, Marital Quality Scale (Shah, 1995) was used. This is a validated instrument on Indian population used by other (Dasgupta et al, 2004). Family Environment Scale used by Joshi and Vyas, (1987) was preferred (than McMaster Family Assessment Device) as it was validated Hindi version scale on Indian population. The assessment of quality of life of spouses with the use of WHOQOL-BREF added strength to the study findings in terms of measuring the effect of alcohol dependence (George et al, 2007) on the spouses of patients.

The outcome variables were domains of Marital Quality as used by Gregory & Kenneth, (2005), subscales of Family Environment and subscales of WHO-Quality of life (WHOQOL)-BREF. Subsequently, the correlations of marital quality with family environment and the scores of different subscales of WHOQOL-BREF were seen as mentioned by Spotts, (2004) and Paula (2002).

Table 1 and 2 gives socio demographic Characteristics of the patients and their spouse have been. Most of the patients with ADS were above matriculation (70%) and their spouses had intermediate (40%) education. 16.7 % of patients with ADS has family history of substance use and 80% of spouses of patients with ADS were hailing from urban background, especially from the milieu of the study conducted as mentioned by Mueser, et al., (2001). On the basis of socioeconomic status it was found that
33.3% of spouses of ADS group were from middle socio economic status. Most of the patients in ADS family history of substance dependence (46.7%) but only 3.3% patient's family history had psychiatric illness. The reason can be very well understood that behavior and learning factor can affect drinking behavior (Bell, et al., 2006).

The present study showed that clinical characteristics of patients of ADS (Table 3). Most of the patients were using non-binge type of drinking pattern (83.3%) while in 16.7% of patients were using binge type of drinking pattern as mentioned by recent publications (Nita, 2007; Samachar, 2009). 76.7% of patients were in pre-contemplation stage of motivation while 23.3% of patients were in contemplation stage of motivation. Also most of the participants have not experienced withdrawal seizure (86.7%), while 13.3% of patients have experienced withdrawal seizures as found by Caetano, et al., (1998).

The present study assessed WHO-quality of life in spouses of ADS (Table 4). The spouses of ADS perceived average quality of life (as found by Veltro, et al., 1994) and Dawson, et al, (2007).When spouses’ marital quality scores were analyzed, the findings revealed that the mean scores lie in the range of poorer marital quality (Table 4). Previous researchers mentioned that marital dissatisfaction was there in ADS but lesser in comparison to other psychiatric disorders (Gregory & Kenneth, 2005). Moreover, it was found that Alcohol abuse serves as a chronic stressor between partners and has a deleterious effect on marital quality and relationship functioning (Rozhnova et al., 2007).

Family Environment of Spouse of Patients

The spouses of the patients were assessed on the various domains of Family Environment Scale (Table 4). The variables including cohesiveness, conflict, active recreational orientation and organization showed that spouses of ADS perceived better family environment. This is in contrast to the findings of previous studies which mentioned that Cohesion and Conflict used to be poor in family of ADS patients (West & Prinz 1987; Seilhamer & Jacob 1990). But alcohol dependence are characterized by noted inefficiencies in life functioning and impaired relationships.

Relationship between WHOQOL, Marital Quality and Family environment

There has been no association established between marital quality and psychological domain of WHO-Qol (Table 5).

There was significant negative relationship between dominance variable of Marital Quality Scale with domains of social relation and environmental/financial resources of WHOQOL-BREF, also reported by other studies (Lee, 1999; Shin, 1995).

On the other hand dissolution potential of Marital Quality Scale had positive significant correlation with environmental/Financial Resources of WHOQOL-BREF. As it was mentioned in the scale that this domain was significant as there was lesser prevalence of divorce in Indian society, which means that if the environment and financial resources are conducive like in our study dissolution potential will be also good (Shah, 1995; Lakda & Verma, 2000).

There was significant positive correlation between social relation and domains of active recreational orientation and independence (domains of family environment) among the spouses with ADS (Table 5). It can be easily explained that strong social relationships and social interaction are always said to be predictors of better recreation and independent environment in family (Molassiotis, et al., 1997; Tung & Dhillon, 2006).
Relationship between marital quality and family environment

There has been significant negative correlation between was found in rejection domain of marital quality with control domain of family environment scale of spouses of patient with ADS (Table 6). Researchers have suggested that if in their marital life they are rejected more and their control over family environment is less due to feeling of getting rejected again in every sphere of family functioning (Segev & van den Akker, 2006). On the other hand, role functioning and moral religious emphasis of patient were positively correlated suggesting that better the role prescribed in the marital couples, better will be the family's moral and religious values. This is an old finding mentioned by the studies of (Sussman, 1980). Also Despair domain showed positive significant correlation with intellectual cultural orientation which may be chance finding of the study.

CONCLUSION

There quality of marital life suffered in the families of the patient with alcohol dependence syndrome as compared to the family environment of the families of the patient with alcohol dependence syndrome. There was no association of marital quality and family environment in spouses of the patients with alcohol dependence syndrome and though there was negative correlation between rejection in marital life and control in family environment in spouses of the patients with alcohol dependence syndrome. Addressing these could enable designing family therapy to attenuate the relapse rates and violence in families suffering from alcohol dependence.

Reference:
Bell, N.S. Harford, Thomas C; Fuchs, Cara H; McCarroll, James E ; Schwartz, Carolyn E;(2006) Spouse abuse and alcohol problems among white, African American, and Hispanic U.S. Army soldiers. Journal of Alcoholism, clinical and experimental research, 30 , 1721-33.


Marriage and the Family, 52, 1059-1078.


World Health Organization (2004). World health organization quality of life (WHOQOL)- BREF.

### Table 1: Socio demographic Characteristics of the patients and their spouse

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADS N (30) Mean + SD</th>
<th>Spouse N (30) Mean + SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (in yrs)</td>
<td>38.13 + 5.72</td>
<td>32.13 + 4.63</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-10</td>
<td>9 (30)</td>
<td>14 (46.7)</td>
</tr>
<tr>
<td>Intermediate</td>
<td>9 (30)</td>
<td>12 (40)</td>
</tr>
<tr>
<td>&gt;Graduation</td>
<td>12 (40)</td>
<td>4 (13.3)</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>25 (83.3)</td>
<td>3 (10)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>5 (16.7)</td>
<td>27 (90)</td>
</tr>
</tbody>
</table>

### Table 2: Socio-demographic Profile of the spouse of ADS (N=30)

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADS (N=30) n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family history</td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td>12 (40)</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>0</td>
</tr>
<tr>
<td>Substance</td>
<td>5 (16.7)</td>
</tr>
<tr>
<td>None</td>
<td>13 (43.3)</td>
</tr>
<tr>
<td>Duration of marriage</td>
<td></td>
</tr>
<tr>
<td>2 yrs and above</td>
<td>19 (63.3)</td>
</tr>
<tr>
<td>10 yrs and above</td>
<td>11 (36.7)</td>
</tr>
<tr>
<td>Family type</td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td>21 (70)</td>
</tr>
<tr>
<td>Joint</td>
<td>9 (30)</td>
</tr>
<tr>
<td>Domicile</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>6 (20)</td>
</tr>
<tr>
<td>Urban</td>
<td>24 (80)</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
</tr>
<tr>
<td>Hindu</td>
<td>22 (73.3)</td>
</tr>
<tr>
<td>Non –Hindu</td>
<td>8 (26.7)</td>
</tr>
<tr>
<td>Family income (in Rs.)</td>
<td></td>
</tr>
<tr>
<td>10000 and above</td>
<td>5 (16.7)</td>
</tr>
<tr>
<td>5000-10000</td>
<td>15 (50)</td>
</tr>
<tr>
<td>Below 5000</td>
<td>10 (33.3)</td>
</tr>
</tbody>
</table>
Table 3: Clinical Characteristics of ADS patients (N=30)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency n (%) Mean + SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking pattern</td>
<td></td>
</tr>
<tr>
<td>Binge</td>
<td>5 (16.7)</td>
</tr>
<tr>
<td>Non-binge</td>
<td>25 (83.3)</td>
</tr>
<tr>
<td>Level of motivation</td>
<td></td>
</tr>
<tr>
<td>Pre-contemplation</td>
<td>23 (76.7)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>7 (23.3)</td>
</tr>
<tr>
<td>Withdrawal symptom</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30 (100)</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>Withdrawal seizure</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4 (13.3)</td>
</tr>
<tr>
<td>No</td>
<td>26 (86.7)</td>
</tr>
<tr>
<td>Number of relapses</td>
<td>1.50 + 1.25</td>
</tr>
</tbody>
</table>

Table 4: Marital quality, family environment and WHO-Qol of spouse of ADS (N=30)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Spouse ADS (N=30) Mean + SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Quality</td>
<td></td>
</tr>
<tr>
<td>Understanding</td>
<td>6.00 + 2.03</td>
</tr>
<tr>
<td>Rejection</td>
<td>13.50 + 4.57</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>7.40 + 1.52</td>
</tr>
<tr>
<td>Affection</td>
<td>5.86 + 2.02</td>
</tr>
<tr>
<td>Despair</td>
<td>4.93 + 1.01</td>
</tr>
<tr>
<td>Decision making</td>
<td>5.73 + 2.01</td>
</tr>
<tr>
<td>Discontent</td>
<td>7.70 + 1.51</td>
</tr>
<tr>
<td>Dissolution potential</td>
<td>4.60 + 1.52</td>
</tr>
<tr>
<td>Dominance</td>
<td>7.33 + 2.53</td>
</tr>
<tr>
<td>Self disclosure</td>
<td>5.73 + 2.01</td>
</tr>
<tr>
<td>Trust</td>
<td>13.86 + 2.02</td>
</tr>
<tr>
<td>Role functioning</td>
<td>8.00 + 2.49</td>
</tr>
<tr>
<td>Variables</td>
<td>Spouse ADS (N=30)</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td>Mean + SD</td>
</tr>
</tbody>
</table>

### Family environment

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohesion</td>
<td>24.23 + 1.79</td>
</tr>
<tr>
<td>Expressiveness</td>
<td>13.76 + 2.04</td>
</tr>
<tr>
<td>Conflict</td>
<td>11.23 + 2.51</td>
</tr>
<tr>
<td>Independence</td>
<td>20.40 + 2.22</td>
</tr>
<tr>
<td>Achievement Orientation</td>
<td>20.46 + 2.54</td>
</tr>
<tr>
<td>Intellectual Cultural Orientation</td>
<td>14.16 + 2.49</td>
</tr>
<tr>
<td>Active Recreational Orientation</td>
<td>11.40 + 2.42</td>
</tr>
<tr>
<td>Moral Religious Emphasis</td>
<td>20.66 + 2.29</td>
</tr>
<tr>
<td>Organization</td>
<td>21.60 + 1.88</td>
</tr>
<tr>
<td>Control</td>
<td>20.43 + 1.71</td>
</tr>
</tbody>
</table>

### WHO-Qol

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical health</td>
<td>66.00 + 8.28</td>
</tr>
<tr>
<td>Psychological</td>
<td>53.86 + 7.74</td>
</tr>
<tr>
<td>Social relationship</td>
<td>69.43 + 7.09</td>
</tr>
<tr>
<td>Physical health</td>
<td>66.00 + 8.28</td>
</tr>
</tbody>
</table>

Table 5: Comparison of Correlation of WHO-Quality of life with components of marital quality AND family environment of spouse of ADS (N=30)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Physical health</th>
<th>Psychological</th>
<th>Social relationship</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissolution potential</td>
<td>.082</td>
<td>.317</td>
<td>.240</td>
<td>.445*</td>
</tr>
<tr>
<td>Dominance</td>
<td>.025</td>
<td>-.291</td>
<td>-.374*</td>
<td>-.415*</td>
</tr>
<tr>
<td>Independence</td>
<td>.125</td>
<td>.009</td>
<td>.367*</td>
<td>.206</td>
</tr>
<tr>
<td>Active Recreational</td>
<td>.305</td>
<td>.329</td>
<td>.508**</td>
<td>.292</td>
</tr>
</tbody>
</table>

*Correlation is significant at < 0.05 level (2-tailed) **Correlation is significant at < 0.01 level (2-tailed).
### Table 6: Correlation of marital quality with components of family environment of spouses of ADS (N=30)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Understanding</th>
<th>Rejection</th>
<th>Satisfaction</th>
<th>Affection</th>
<th>Despair</th>
<th>Decision Making</th>
<th>Discontent</th>
<th>Dissolution Potential</th>
<th>Dominance</th>
<th>Self disclosure</th>
<th>Trust</th>
<th>Role Functioning</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient</td>
<td>-0.94</td>
<td>-0.13</td>
<td>-0.01</td>
<td>-0.02</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.04</td>
<td>-0.04</td>
<td>-0.18</td>
<td>-0.03</td>
<td>-0.12</td>
<td>-0.03</td>
<td>0.01</td>
</tr>
</tbody>
</table>

*Correlation is significant at 0.05 level (2-tailed) **Correlation is significant at 0.01 level (2-tailed)
CHANGES IN FRONTAL LOBE CIRCULATION AFTER ADMINISTRATION OF ANTIPSYCHOTIC MEDICATION IN PATIENTS OF SCHIZOPHRENIA

Abstract

The various psychotic symptoms associated with schizophrenia have been linked to over activity in different areas of brain. Studies done on metabolism and cerebral blood flow have largely supported these finding. Antipsychotics given to relieve these symptoms should produce a decrease in cerebral blood flow according to above hypothesis. However, there has been many discrepancies in results of studies on cerebral blood flow and metabolism due to effect of antipsychotics in previous studies. While some studies suggest an increased cerebral blood flow other have suggested decreased blood flow. In this study, we try to find out this change in blood flow after administration of antipsychotic for a period of 28 days.

Methods:

This hospital based study was conducted in patients of schizophrenia where cerebral blood flow was assessed using Trans Cranial Doppler (TCD) in Anterior Cerebral Artery (ACA) and Middle Cerebral Artery (MCA) of both left and right side. The patients were administered antipsychotics (either Risperidone 2-8mg or Olanzapine 5-20mg) until a period of 28 days. The blood flow in all the vessels were again measured. To determine the changes in the symptoms PANSS was administered on first day (day 0) and final day (day28) of the study.

Results:

The subjects have shown a significant improvement in the symptoms as suggested by the comparison of PANSS scores on day0 and day28. There is significant improvement in positive score (p value=0.001) and general psychopathology score (p value=0.003). The ACA of left side shows significant decrease in blood flow after 28 days with the use of antipsychotics (p = 0.047). The pulsatile index also shows a significant decrease in right MCA (p = 0.008) and left ACA (p = 0.028).

Conclusion:

Our study shows a decrease in cerebral blood flow especially in the left ACA after administration of antipsychotic medication for a period of 28 days.

Keywords:

frontal lobe, cerebral blood flow, antipsychotics, schizophrenia

Introduction:

Schizophrenia is a chronic debilitating psychiatric illness, conceptualized to cause progressive neurocognitive deterioration and has a lifetime prevalence of 1% in the general population across various geographical areas (Bilder et al., 2000; Keefe & Fenton, 2007 Lewis and Lieberman, 2000). Frontal cortex is involved in the etiology of schizophrenia, as studies involving various methods
including positron emission tomography (PET), xenon inhalation, and functional magnetic resonance imaging have shown changes in its metabolism in a basal or resting condition (Kurachi et al., 1985; Raine et al., 1992).

It is said frontal lobes have been a key to man's evolutionary supremacy. They lie anterior to the central (rolandic) sulcus and superior to the sylvian fissure and consist of several functionally different parts. Anterior cerebral arteries (ACA) supply the medial and superior parts of the frontal lobe and additional motor planning areas in the medial frontal lobe. Branches from the post communicating segment of the ACA supply the inferior surface of the frontal lobe (frontobasilar artery), the medial and parasagittal surfaces of the frontal lobe (callosomarginal artery). The middle cerebral artery (MCA) supply much of the lateral and inferior frontal lobe and often the anterior lateral parts of the parietal lobe. (Standring et al., 2008). Frontal lobe consists of several structurally and functionally distinct regions. The prefrontal cortex, defined as the cortex situated anteriorly to the premotor and motor cortices, can be subdivided into dorsolateral, medial, and orbital regions (Fuster, 1989). Although these areas show a fair degree of overlap, they have different subcortical and cortical connections and are believed to be differentially involved in behavior and cognition (Mesulam, 1990).

Studies conducted on activities of brain associated with psychotic symptoms have suggested that positive psychotic symptoms, such as delusions, hallucinations, and disorganisation phenomena are associated with over activity of the frontal and temporal cortex, thalamus, and basal ganglia. Delusions and hallucinations have been associated with over activity in the temporal lobe,(Liddle et. al., 1992; Musalek et. al., 1989) frontal cortex (Silberweig et. al., 1995) and ventral striatum while, disorganisation is associated with over activity of the medial frontal cortex (Yuasa et. al., 1995) and thalamus. However, other studies have concluded frontal and temporal lobe underactivity associated with psychotic phenomenon. (Ebmeier et. al., 1993; Andreasen et. al., 1997). Decreased frontal lobe activity has been associated with the severity of negative symptoms in schizophrenia patients (Schleapfer et. al., 1994; Turetsky et. al., 1995).

There has been many discrepancies in results of studies on cerebral blood flow and metabolism due to effect of antipsychotics in previous studies. While some studies suggest an increased cerebral blood flow (Corson et. al., 2002; Molina et. al., 2003; Molina et. al., 2005) other have suggested decreased blood flow (Lahti et. al., 2003; Ngan et. al., 2002) in response to antipsychotics. Several studies have reported that sensitivity to change in regional metabolism after administration of antipsychotic drugs is correlated with treatment responsiveness. (Raichle et. al., 2001; Tregellas et. al., 2009) Treatments with typical and atypical antipsychotics produce different cerebral metabolic effects which has not been taken into consideration in this study (Holcomb et. al., 1996; Cohen et. al., 1997). The effect of antipsychotic drugs on cerebral metabolism and the blood flow associated with psychotic symptoms suggest that the mechanism of antipsychotic action should produce a reduction in frontal lobe circulation as suggested by most studies. In this study, we try to find out this change in blood flow after administration of antipsychotic for a period of 28 days.
Materials and Methods

Aims & Objectives:

The aim of this study is to compare blood circulation of frontal lobe in schizophrenia patients before and after treatment with antipsychotic medication. In this study we tried to find the changes in mean velocity in middle and anterior cerebral artery after medication in patients of schizophrenia.

Methodology:

This study was conducted at Central Institute of Psychiatry, Kanke, Ranchi. It was a hospital based, prospective, open label study for 28 days. The subjects were recruited for the study by purposive sampling technique. The sample consisted of 28 subjects meeting ICD-10 DCR diagnostic criteria for schizophrenia.

Inclusion Criteria:

1. Diagnosis of schizophrenia according to ICD 10 DCR (WHO, 1993)
2. Age range of 18-60 years.
3. Patient willing to give informed consent
4. Patient off medication for atleast last 1 month

Exclusion Criteria:

1. Schizophrenic patient having concomitant neurological and medical illness.
2. Patients with history of acquired brain injury.
3. Patients having co-morbid substance use except nicotine and caffeine.
4. Mental retardation.
5. Depression and dementia.
6. Those who do not give written informed consent.
7. Patients uncooperative for testing.

Tools:

1. The Calgary Depression Scale for Schizophrenia (CDSS) (Addington et al. 1990)
2. Positive and negative syndrome scale (PANSS) (Kay et al. 1987)
3. Functional Trans Cranial Doppler – (fTCD) measurement was carried out with a multi-dop T x 4 TCD instrument, Germany. 2-MHz transducer was used to direct sound waves to particular vessels through the temporal bone window. The MCA was insonated at a depth of 48-55 mm and ACA at depth of 60-70 mm.

Procedure:

After meeting the inclusion and exclusion criteria the patients' socio-demographic and clinical data sheets were filled up. The CDSS was used to rule out depression and PANSS was applied to score the severity of psychotic symptoms. The mean flow velocity, the pulsatile index and resistance were assessed in MCA and ACA of both left and right side of the brain. This test was again repeated after 28 days during which they received antipsychotic medications (Risperidone 2mg to 8mg or Olanzapine 5mg to 20mg).

The analysis was done with SPSS 20v. Table 1 shows the various sociodemographic characteristics of the subjects. All the subjects were male, however most of them were educated below matric, were unmarried, and belonged to rural background. Though most of the subjects employed their monthly income was below Rs 5000 per month. The mean age of the subjects was 29.46 years with a SD of 5.89 years. The mean duration of illness was 6.36 years ± SD 3.22 years which shows that these patients suffered from the illness chronically [Table 2]. The diagnosis of 71.4% of the subject was paranoid schizophrenia which is the most common type as shown in table 3.
Results:

Table 1. Socio-demographic characteristics of the subjects

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>28(100%)</td>
</tr>
<tr>
<td>Female</td>
<td>0(0%)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
</tr>
<tr>
<td>Below matric</td>
<td>18(64.2%)</td>
</tr>
<tr>
<td>Above matric</td>
<td>10(35.8%)</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>6(21.4%)</td>
</tr>
<tr>
<td>Employed</td>
<td>22(78.6%)</td>
</tr>
<tr>
<td><strong>Domicile</strong></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>23(82.2%)</td>
</tr>
<tr>
<td>Urban</td>
<td>5(17.8%)</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
</tr>
<tr>
<td>Below 5,000</td>
<td>24(85.8%)</td>
</tr>
<tr>
<td>Above 5,000</td>
<td>4(14.2%)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
</tr>
<tr>
<td>married</td>
<td>12(42.8%)</td>
</tr>
<tr>
<td>unmarried</td>
<td>16(56.8%)</td>
</tr>
</tbody>
</table>

Table 2. Age and mean duration of illness of the subjects

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean (years) ± SD [N=28]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>29.46±5.89</td>
</tr>
<tr>
<td>Duration of illness</td>
<td>6.36±3.22</td>
</tr>
</tbody>
</table>

Table 3. Type of schizophrenia diagnosed in the subjects

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paranoid</td>
<td>20(71.4%)</td>
</tr>
<tr>
<td>Undifferentiated</td>
<td>6(21.4%)</td>
</tr>
<tr>
<td>Unspecified</td>
<td>2(7.2%)</td>
</tr>
</tbody>
</table>
Table 4. Comparision of PANSS scores on Day0 and on Day 28

<table>
<thead>
<tr>
<th>Variables</th>
<th>Day 0(N=28)</th>
<th>Day28(N=28)</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive score</td>
<td>17.64±4.36</td>
<td>15.32±4.25</td>
<td>3.84</td>
<td>27</td>
<td>.001**</td>
</tr>
<tr>
<td>Negative score</td>
<td>15.82±4.53</td>
<td>15.93±4.47</td>
<td>0.29</td>
<td>27</td>
<td>.776</td>
</tr>
<tr>
<td>General psychopath. score</td>
<td>34.75±4.84</td>
<td>30.96±6.63</td>
<td>3.33</td>
<td>27</td>
<td>.003**</td>
</tr>
</tbody>
</table>

Calgary depression rating scale score was 1.71±0.98 depicted that schizophrenia with comorbid depression was not significant. The subjects have shown a significant improvement in the symptoms as suggested by the comparison of PANSS scores on day0 and day28. There is significant improvement in positive score (p value=0.001) and general psychopathology score (p value=0.003) as shown in table 4. Though negative score (p value=0.776) shows higher score, the results are not significant.

Discussion:

Subjects were selected randomly, not taking into account the ICD-10 schizophrenia subtype. There were 5 drop outs, out of which 1 subject was planned for Electro-convulsive therapy, 2 withdrew their consent and 2 others had to be discharged for medical reasons. The socio-demographic variables including age, sex, marital status, religion, education, occupation, family income and domicile were taken. As very few female patients with schizophrenia gave consent for this study, they were not included in the study sample. The mean age of subjects was 29.46±5.89 years. As the population that we deal with at this institute, belong to this very socio-cultural background, it was expected to find such a result as far as socio-demographic profile of our study subjects was concerned.

Severity of psychopathology was rated using PANSS (Kay et al., 1987) on both day 0 and day 28. In this study, most of the subjects were found to have higher positive scores as compared to negative during initial assessment. This was largely due to the fact that subjects with prominent negative symptoms could not be taken up for the study as they were not able to cooperate for the assessment. The subjects have shown improvement in positive score and general psychopathology score which are statistically significant and shows that these symptoms have responded well to antipsychotic treatment like risperidone and olanzapine. Previous studies have shown response to atypical antipsychotics within first four weeks (Chouinard et. al., 1993; Tollefson et. al., 1997; Ho et. al., 1999). The score for negative symptoms is mildly elevated though not statistically significant.
Table 5. Comparison of blood flow using trans cranial Doppler among subjects with schizophrenia on day 0 & day 28

<table>
<thead>
<tr>
<th>Variables</th>
<th>Day 0(N=28) Mean±SD</th>
<th>Day 28(N=28) Mean±SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCA(rt)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MV(cm/s)</td>
<td>41.68±8.91</td>
<td>42.07±9.06</td>
<td></td>
<td></td>
<td>0.360</td>
</tr>
<tr>
<td>PI</td>
<td>0.95±0.18</td>
<td>0.92±0.16</td>
<td>2.867</td>
<td>27</td>
<td>0.008**</td>
</tr>
<tr>
<td>RI</td>
<td>0.58±0.07</td>
<td>0.58±0.06</td>
<td>0.616</td>
<td>27</td>
<td>0.543</td>
</tr>
<tr>
<td>MCA(lt)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MV(cm/s)</td>
<td>41.96±8.49</td>
<td>40.68±10.57</td>
<td></td>
<td></td>
<td>0.214</td>
</tr>
<tr>
<td>PI</td>
<td>0.95±0.15</td>
<td>0.93±0.16</td>
<td>1.193</td>
<td>27</td>
<td>0.243</td>
</tr>
<tr>
<td>RI</td>
<td>0.58±0.07</td>
<td>0.58±0.06</td>
<td>0.000</td>
<td>27</td>
<td>1.000</td>
</tr>
<tr>
<td>ACA(rt)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MV(cm/s)</td>
<td>22.96±4.76</td>
<td>22.68±4.34</td>
<td></td>
<td></td>
<td>0.499</td>
</tr>
<tr>
<td>PI</td>
<td>1.00±0.30</td>
<td>1.00±0.23</td>
<td>0.036</td>
<td>27</td>
<td>0.971</td>
</tr>
<tr>
<td>RI</td>
<td>0.64±0.14</td>
<td>0.64±0.13</td>
<td>0.680</td>
<td>27</td>
<td>0.502</td>
</tr>
<tr>
<td>ACA(lt)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MV(cm/s)</td>
<td>25.64±5.76</td>
<td>24.50±4.83</td>
<td></td>
<td></td>
<td>0.047*</td>
</tr>
<tr>
<td>PI</td>
<td>0.97±0.24</td>
<td>0.95±0.23</td>
<td>2.328</td>
<td>27</td>
<td>0.028*</td>
</tr>
<tr>
<td>RI</td>
<td>0.58±0.10</td>
<td>0.58±0.11</td>
<td>0.527</td>
<td>27</td>
<td>0.602</td>
</tr>
</tbody>
</table>

Table 5 shows the comparison of the blood flow to MCA and ACA on day 0 and on day 28. The mean velocity in all the blood vessel have shown decrease in blood flow except in MCA of right side where there is increase, however the findings are not significant. Only the ACA of left side shows significant decrease in blood flow after 28 days with the use of antipsychotics (p = 0.047). The pulsatile index also shows a significant decrease in right MCA (p = 0.008) and left ACA (p = 0.028).
This may be due to side effect of antipsychotics or course of the illness is difficult to determine. However, the duration of treatment is insufficient to label that these antipsychotics had no response to negative symptoms. Studied done earlier have shown response to antipsychotic treatment to negative symptoms but duration of treatment was longer. (Davis et. al., 2002; Kopelwicz et. al., 2000)

The frontal circulation assessment was carried out with a multi-dop Tx4 functional transcranial Doppler instrument, Germany. The mean flow velocity, pulsatile index and resistance index were assessed in ACA and MCA. Previous studies have used fTCD for assessment of cerebral hemodynamics. We opted for TCD because TCD assessment is non-invasive, economical, and rapid (Sloan et al., 2004). Because TCD is a test that is easily available in clinical neurology settings, it allows for easy replication, unlike some of the more expensive imaging techniques. PET scan and fMRI have been used in similar studies previously (Ragland et al., 2001).

Table 5 shows comparison in cerebral blood flow in subjects of schizophrenia and findings suggest the blood flow is less in this group after a period of 28 days mainly in terms of pulsatile index in right MCA, mean velocity and pulsatile index in left ACA.

Decrease in cerebral metabolism is postulated in many studies in response to antipsychotics which may contribute to decreased cerebral blood flow especially in frontal lobes. Risperidone produces decreases in metabolism in the frontal cortex, consistent with previous findings (Berman et. al., 1996). This reduction was found in both the medial and the lateral frontal cortex. In prior studies it has been found that medial prefrontal over activity was associated with severity of disorganisation (Liddle et. al., 1992; Ebmeier et. al., 1993) and with hallucinations, (Silbersweig et. al., 1995) and the decrease in medial frontal cortex metabolism is related to alleviation of positive symptoms. These studies also showed that baseline metabolism is correlated with baseline severity of symptoms. (Liddle et. al., 2000) Some studies depicted diminished activation of the frontal lobe during a demanding tasks than less demanding baseline condition in schizophrenic patient with PET scan. Also, these patients exhibited recovery of the normal increase in activation in dorsolateral prefrontal cortex during a demanding motor task, as symptoms resolved during treatment (Spence et. al., 1998) another longitudinal study reported an initial decrease of subcortical metabolism, followed by a decrease in frontal activity after 6 weeks. (Liddle et. al., 2000) Studies which compared the effects of haloperidol and risperidone found a greater increase in subcortical perfusion and decrease in prefrontal perfusion with haloperidol as opposed to risperidone after 3 weeks of treatment in medication naïve patients. (Miller et. al., 2001)

Few literatures show an increase in cerebral blood flow after a period of 8-10 weeks of antipsychotic medication (Novak et al., 2005; Brewer et al., 2007). However they could not clearly say whether this increase in frontal circulation is due to symptom stabilization per se, or the effects of medication, or a lack of neurophysiological 'learning' with experience/practice, or a combination of these factors.

Hence to conclude, our study shows a decrease in cerebral blood flow especially in the left ACA after administration of antipsychotic medication for a period of 28 days. But it is difficult to determine whether this change is due effect of antipsychotics or symptom reduction or natural course of illness due to absence of control group.
Some of the limitations of this study were small sample size, absence of control, no female patients included and dose of antipsychotics not fixed. Similar study can be done in future after administration of both atypical and typical antipsychotics for a longer duration which may be helpful for us to know more about mechanism of antipsychotics action on cerebral blood flow.

Conflicts of Interest: NIL

Acknowledgements:

We are greatly obliged to Prof. (Dr.) C. R. J. Khess (In charge of Deaddiction Centre, CIP, Ranchi) Dr. Sanjay Kumar Munda (Associate Professor, CIP, Ranchi) for their constant guidance in this study.

References:


Biol Psychiatry, 52(9), 855-862.


METHODS OF SUICIDAL ATTEMPTS IN PATIENTS WITH BIPOLAR DISORDER

<table>
<thead>
<tr>
<th>Dr. Chandrima Chowdhury</th>
<th>MD Neuropsychiatry, Senior resident institute of psychiatry, centre of excellence, IPGME &amp; R and SSKM hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Shobit Garg*</td>
<td>Assistant professor, Dept. of Psychiatry, Sri Guru Ram Rai Institute of Medical &amp; Health Sciences, Dehradun, Uttarakhand, India (Corresponding Author)</td>
</tr>
<tr>
<td>Dr. Sanjay Gupta</td>
<td>Professor, Dept. of Psychiatry, IMS-BHU</td>
</tr>
<tr>
<td>Dr. Vijay</td>
<td>Consultant Psychiatrist, OMAN, <a href="mailto:vizzy1234@rediffmail.com">vizzy1234@rediffmail.com</a></td>
</tr>
</tbody>
</table>

Abstract:

This study was conducted with the to find out a method of suicidal attempt in patients with bipolar disorder in phases of mania and depression.

Method:

Cases were collected from psychiatric outdoor and indoor of SS Hospital BHU on basis of screening for bipolar disorder according to ICD 10 DCR criteria. The patients were further screened for a suicidal attempt in recent episode of bipolar disorder in phases of mania and depression. A total of 100 cases were included. Their data were collected by self-made semi-structured socio-demographic and clinical proforma. The suicidal attempt was analyzed by self-made semi-structured suicide questionnaire. Data were analyzed by SSPS 70 version for windows.

Result:

48 (48%) attempted suicide by hanging, 10 (10%) by strangulation, 10 (10%) by slashing wrist, 1 (1%) by consuming vermilion (sindoor), 1 (1%) by consuming sleeping pills, 30 (30%) by jumping from a high place. It implies the majority, less than half of suicide attempt occurred by hanging, it further implies hanging is an easily accessible method for a suicide attempt.

Introduction:

Several risk factors for suicidal behaviour have been identified, including mental disorder, history of suicidal behaviour, aggression or impulsivity, family history of suicidal behaviour, social isolation, marital problems, work problems, and poor physical health (Hawton et al 2002, Mann et al 2002, Maris et al 2002, Tidemalm et al 2008, Waern et al 2002). Anderson and Smith (2003) found 60% of 24672 patients attempted suicide by firearm in bipolar disorder. In a case-control study in India, it was found among other methods of attempted suicide poisoning 36.6%, hanging 32.1%, self-immolation 7.9% are the major causes of bipolar disorder (Vijaykumar et al, 1999).

Methodology:

The present study is a hospital-based cross-sectional study to analyze suicidal attempts in patients with Bipolar Disorder in phases of depression and mania.

Material:

ICD 10 DCR.
Semistructured proforma for sociodemographic and clinical variables.
Kuppuswami's socio-economic status (SES) scale revised 2012.
Beck's suicidal Intent Scale.
Suicide questionnaire as self-designed semi-structured Questionnaire.
Written consent form in patients' language.

INCLUSION CRITERIA:

Age (18-60) Years.
Diagnosed Bipolar I Disorder in mania or depression according to ICD 10 DCR Criteria.

EXCLUSION CRITERIA:

Dysthymia.
• Cyclothymia.
• Euthymia.
• Drug-induced mood Disorder.
• Organic cases (Significant head injury, stroke, and degenerative diseases).
• Other mental disorder.

SAMPLE SIZE:
Cases were collected from psychiatric outdoor and indoor on basis of screening for bipolar disorder according to ICD 10 DCR criteria, the patients were further screened for a suicidal attempt in recent episode of bipolar disorder in phases of mania and depression. A total of 100 cases were included.

METHOD:
1. All outdoor prescription were screened for Bipolar disorder according to ICD 10 DCR criteria. All indoor patients were also screened for Bipolar disorder according to ICD 10 DCR criteria.
2. Out of bipolar cases, those who attempted suicide were screened and selected for the study. A total 100 cases were included.
3. Written informed Consent was taken from the participants.
4. Socio-demographic and clinical variables were collected through semi-structured proforma.
5. Socioeconomic status was calculated by Kuppuswami’s socioeconomic status (SES) scale-revised 2012.
6. Suicidal intent severity was assessed by Beck’s suicidal intent scale.
7. Analysis of suicidal attempt was done by the self-made semi-structured suicide questionnaire.
8. Data were collected and analyzed by SSPS 70 for Windows.

RESULT:

<table>
<thead>
<tr>
<th>TABLE 1: SOCIOECONOMIC STATUS (SE STATUS)</th>
<th>SE Status</th>
<th>No. and Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>upper class</td>
<td>5 %</td>
<td></td>
</tr>
<tr>
<td>upper middle class</td>
<td>7 (7%)</td>
<td></td>
</tr>
<tr>
<td>were in lower Class</td>
<td>46 (46%)</td>
<td></td>
</tr>
<tr>
<td>were in upper lower class</td>
<td>32 (32%)</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: It implies majority (more than one third) of patients attempting suicide were in lower socioeconomic class.

<table>
<thead>
<tr>
<th>TABLE 2: SE STATUS OF DEPRESSION AND MANIA PATIENTS</th>
<th>SE Status</th>
<th>No. and Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>upper Class</td>
<td>5 (8.1%)</td>
<td></td>
</tr>
<tr>
<td>upper middle class</td>
<td>1 (1.6%)</td>
<td></td>
</tr>
<tr>
<td>lower middle class</td>
<td>4 (4.65%)</td>
<td></td>
</tr>
<tr>
<td>upper lower</td>
<td>28 (45.2 %)</td>
<td></td>
</tr>
<tr>
<td>lower class</td>
<td>24 (38.7 %)</td>
<td></td>
</tr>
<tr>
<td>Mania</td>
<td></td>
<td></td>
</tr>
<tr>
<td>upper middle</td>
<td>6 (15.8%)</td>
<td></td>
</tr>
<tr>
<td>upper lower</td>
<td>4 (10.5%)</td>
<td></td>
</tr>
<tr>
<td>lower Class</td>
<td>22 (57.9%)</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 3: PHASE OF ILLNESS

<table>
<thead>
<tr>
<th>Phase</th>
<th>No. and Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>62 (62%)</td>
</tr>
<tr>
<td>Mania</td>
<td>38 (38%)</td>
</tr>
</tbody>
</table>

**Remarks**

It implies in a phase of depression there is more, more than half chance of attempted suicide.

### TABLE 4: BECKS SCALE SCORE

<table>
<thead>
<tr>
<th>Cases of Suicidal</th>
<th>No. and Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>More than 45 of 57 (57%)</td>
</tr>
<tr>
<td>Mania</td>
<td>Less than 35 in 43 (43%) patients</td>
</tr>
</tbody>
</table>

**Remarks**

It implies suicidal intent was higher in a phase of depression than in mania.

### TABLE 5: BECKS SCALE SCORE IN MANIA AND DEPRESSION

<table>
<thead>
<tr>
<th>BECKS SCALE SCORE</th>
<th>No. and Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td></td>
</tr>
<tr>
<td>more than 45</td>
<td>45 (75.8%)</td>
</tr>
<tr>
<td>more than 35</td>
<td>15 (24.2%)</td>
</tr>
<tr>
<td>Mania</td>
<td></td>
</tr>
<tr>
<td>more than 45</td>
<td>10 (26.3%)</td>
</tr>
<tr>
<td>less than 35</td>
<td>28 (73.7%)</td>
</tr>
</tbody>
</table>

**Remarks**

It implies suicidal intent was higher in the phase of depression than in mania.

### TABLE 6: METHOD

<table>
<thead>
<tr>
<th>Methods</th>
<th>No. and Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>By hanging</td>
<td>48 (48%)</td>
</tr>
<tr>
<td>By jumping high place</td>
<td>30 (30%)</td>
</tr>
<tr>
<td>By slashing wrist</td>
<td>10 (10%)</td>
</tr>
<tr>
<td>Strangulation</td>
<td>10 (10%)</td>
</tr>
<tr>
<td>By sindoor consuming</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>By consuming sleeping pills</td>
<td>1 (1%)</td>
</tr>
</tbody>
</table>

**Remarks**

It implies the majority, less than half of suicide attempt occurred by hanging. It further implies hanging is an easily accessible method for the suicide attempt.
TABLE 7: METHOD IN DEPRESSION AND MANIA

<table>
<thead>
<tr>
<th></th>
<th>Methods</th>
<th>No. and Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>By hanging</td>
<td>40 (64.5%)</td>
</tr>
<tr>
<td>Depression</td>
<td>By strangulation</td>
<td>9 (14.5%)</td>
</tr>
<tr>
<td></td>
<td>By slashing wrist</td>
<td>10 (16.1%)</td>
</tr>
<tr>
<td></td>
<td>By jumping from a high place.</td>
<td>1 (1.6%)</td>
</tr>
<tr>
<td></td>
<td>By sindoor consuming</td>
<td>1 (1.6%)</td>
</tr>
<tr>
<td></td>
<td>By consuming pills</td>
<td>1 (1.6%)</td>
</tr>
<tr>
<td>Mania</td>
<td>Tried by hanging</td>
<td>8 (21.1%)</td>
</tr>
<tr>
<td></td>
<td>By strangulation</td>
<td>1 (2.6%)</td>
</tr>
<tr>
<td></td>
<td>Tried by jumping on a high place.</td>
<td>29 (76.3%)</td>
</tr>
</tbody>
</table>

Discussion:

In a study by WHO (2004), it was found 80% suicide in mental disorder like depression, resides in low socioeconomic countries. In our study, we found majority 46(46 %) attempting suicide belonged to lower class which replicates previous findings. Majority 28 (45.2%) of depressive phase attempting suicide were in the upper lower class. Majority 22 (57.9%) in mania phase attempting suicide were also in the lower class. So, we can conclude low socioeconomic status is a risk factor for suicide attempt in bipolar disorder. This asks for focus on low socioeconomic status for prevention strategies of the suicide attempt. Beck's suicidal intent score was high (>29) for all participants, was higher (>45) for patients attempting suicide in depressive phase than in patients attempting suicide in manic phase of whom score was mostly <35. It implies patients attempting suicide in depressive phase had higher intent for suicide than patients attempting suicide in the manic phase.

36.6% hanging 32.1% self-immolation 7.9% as the major methods in cases of bipolar disorder (Vijaykumar et al, 1999). In our study, we found majority 48(48%) of the study population in bipolar disorder attempted suicide by hanging which is very close to data of the previous study. As firearm use is very rare in our country especially in rural background suicide by firearm is not expected so commonly. Majority 40 (64.5%) of participants in depressive phase attempted suicide by hanging, whereas majority 29 (76.3%) in manic phase attempted by jumping from the high place. Jumping from the high place can be an indicator of impaired judgment and impulsivity of participants in manic phase.

Limitations:

Current study also has its limitations:

Small sample size of only 100 impedes formulation of any hypothesis. As only cases with suicidal attempt were included in the study, we could not calculate the
prevalence of suicide in Bipolar Disorder. Cross sectional design of the study is another limitation of the study, for which we could not calculate the incidence of suicide attempt in socioeconomic status.

Bibliography
A STUDY TO IMPROVE BASIC PSYCHIATRIC CARE IN A SUBURBAN MUNICIPAL HOSPITAL

Abstract
Introduction:
Improving access to mental health services has become an important goal for public health agencies in the recent years. This requires a critical appraisal of the currently available general hospital psychiatric services with respect to factors like the culture, attitude and organization of these setups. Based on the above consideration, an attempt was made to improve basic psychiatric care/services available to patients through a general hospital psychiatry unit in a municipality run hospital located in the western suburbs of the metropolitan city.

Materials & Methods:
- Basic free emergency medications were made available in the casualty from inpatient ward
- Saturdays were chosen as days for child guidance clinic
- Daily schedule for occupational therapy of inpatients was prepared.

Results and Discussion:
- Effective and faster management of emergency psychiatric patients
- Special time and focus on children which is essential in their management
- Better time management and initiation of patients back to their routine social life

Keywords:
Mental health, psychiatric service, general hospital psychiatry unit, GHPU, emergency medications, child guidance clinic, occupational therapy.

INTRODUCTION
Mental illnesses have been recognized and treated by traditional Indian medical systems like Ayurveda and Unani since much before the discovery of modern tranquilizers. Although India has progressively developed its health services, the area of mental health and well-being was relegated to the background until recent times. These developmental goals were first highlighted in the landmark report by Sir Joseph Bhore and have since been reiterated by similar documents that followed it. After the 1950s our focus has shifted to an integrated health service approach. The delivery of mental health services has been happening through the general hospital psychiatry units (GHPUs) over the last five decades. GHPUs have also begun striving to make these services more accessible to larger populations for a greater variety of mental illnesses. Additionally, there is an increasing demand to provide preventive and rehabilitative care in this sector.

It might be believed that urbanization would
benefit the population by improving the proximity to mental health facilities. However, the urban poor do not enjoy efficient service delivery probably due to poor public health delivery systems. Urbanization is found to be associated with increasing mental health problems associated with poverty, change of family structure and environmental adversities. Poverty is also found to increase vulnerability to mental illnesses. It is predicted that a disproportionately large increase in health care burden is likely to occur in developing countries due to increase in mental illnesses. The numbers are expected to increase by more than 300% in India, China and other South Asian and Western Pacific countries. Urban women are found to be more anxious and depressed compared to men in the poor neighbourhoods. Discussing the scenario in India, a meta-analysis by Reddy and Chandrashekhar reported that prevalence of mental illnesses was 80.6% in urban areas compared to 48.9% in rural areas. A large number of the urban populace consists of daily-wagers, thus complicating matters. Slum communities in urban Mumbai have high rates of alcoholism and domestic abuse of women. In order to understand the relationship between mental illnesses and urbanization, we first need to assess the population with respect to contextual cultural factors.

**Emergency psychotropic drugs**

The Interagency Emergency Health Kit (IEHK) designed by the World Health Organization (WHO) comprise of essential medical supplies that would meet the primary healthcare needs of people exposed to humanitarian emergencies. Until recently, this kit was not addressing mental and neurological requirements of the people, as medical care was given the first priority. In accordance to the WHO Model List of essential medications, the IEHK has included amitriptyline, haloperidol, diazepam, biperiden and phenobarbital. These each belong to different classes of psychotropics. India's own list of essential medications, the National List of Essential Medicines (NELM), was last updated in 2015. Our study was conducted prior to this, hence, we followed the then-available guidelines from 2011. The NLEM 2011 contained 348 essential medications and the list of psychotropics is provided in Table 1. The recently updated list excludes chlorpromazine, olanzapine, imipramine, alprazolam, diazepam and injectable depot haloperidol.

**History of Child Guidance Clinic in India**

India's first child guidance clinic (CGC) was established in 1937. Until 2003, the National Institute of Public Cooperation and Child Development located 164 such clinics and all were in metro and mega-cities. All of these were initiated and sustained by non-governmental organizations (NGOs). Approximately 10% of the child population in India is need of special care and only 1% of this group receives it. The remaining children in need do not have the required facilities even in urban areas. GHPUs provide an excellent opportunity for addressing this issue. Effective children's mental health services have the potential to bring about a constructive change in adult mental health as well.

**Occupational Therapy (OT)**

Occupational therapy is designed to facilitate learning of skills essential for adaptation to disability and reduce or even reverse pathology. It promotes health and its maintenance via performance of well-designed and specific sensorimotor and cognitive tasks and activities. The ultimate goal of OT is to allow clients to perform activities of daily living, occupation and leisure to the best of his/her abilities. It has an important role in vocational rehabilitation of those suffering from mental illness. Among the problems
faced by them are little to no work experience, cognitive problems and difficulty in adjusting to work environment. OT promotes smoother transition to the work-place.

With this broad framework in consideration, we went about with this study to utilize/maximize existing facilities/personnel in the department of psychiatry attached to a suburban municipal hospital of a metropolitan city located in western Maharashtra.

MATERIALS AND METHODS

Emergency psychotropic drugs

In order to make available the minimal essential psychotropic drugs in casualty/emergency services, the following criteria were used:

- Antipsychotic (Table 1)
  Injection haloperidol was available within schedule of all municipality hospitals in the city. Tablet haloperidol was also available (although not enlisted in NLEM 2011). During emergency situations, injection haloperidol with injection lorazepam combination is generally preferred in view of their tranquilizing, calming and sedating properties. Also, the availability of tablet form of haloperidol makes cross-titration easier. All other freely available antipsychotics in municipality hospitals, like trifluoperazine, olanzapine and risperidone are available only in tablet formulation. Taking this into consideration, the decision of making injection haloperidol as the sole antipsychotic for emergency purposes was made.

- Antidepressant (Table 1)
  Treatment of choice for a variety of depressive disorders are Selective Serotonin Reuptake Inhibitors (SSRIs). Amongst the antidepressants available in municipality hospitals, escitalopram is the only SSRI (although not available as per NLEM 2011 list). Other drugs available are Tricyclic Antidepressants (TCAs) which include imipramine and amitriptyline. SSRIs, especially escitalopram, are preferred in patients with medical comorbidities, the elderly and in suicidal individuals in view of their favorable side-effect profile. Hence it was decided to make escitalopram available in casualty as it would be relatively safer for most of the patients.

- Sedative/Hypnotic (Table 1)
  Lorazepam and diazepam were the two drugs available in this category in our hospital. Lorazepam was the preferred choice in view of better intramuscular absorption as compared to diazepam. It also has a wider applicability in a variety of neuro-psychiatric conditions like alcohol/benzodiazepine withdrawal, seizure termination, sedating aggressive patients, anxiety and sleep disorders.

Child guidance clinic (CGC)

Our hospital had fixed 3 days a week for OPD (Out Patient Department) patients, i.e. Tuesdays, Wednesdays and Saturdays. Saturday was chosen as the day for CGC in view of convenience for children and their parents- schools mostly have either a half working day or a holiday on Saturdays and most working parents too have holidays on Saturdays. These two points helped ensure that children along with their parents were able to follow up regularly to OPD which is the first and foremost step in ensuring compliance to treatment which in turn will ensure a better outcome. Parents form an essential part of the treatment of their children. Their active participation in the therapeutic process is required for their children’s betterment. Bearing in mind the important role played by paramedical staff like the psychiatric social worker, clinical psychologist and the occupational therapist, they were also included in the CGC. This helped provide collaborative care to our young clients and their families.
Table 1 – NLEM 2011 list of psychotherapeutic drugs and the drugs utilized for emergency services for the purpose of this study

<table>
<thead>
<tr>
<th>Class of Drugs</th>
<th>NLEM 2011 list of drugs</th>
<th>Drug made available in emergency services for the purpose of this study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-psychotic</td>
<td>Chlorpromazine (Tablet, Syrup, Injection)</td>
<td>Haloperidol (Injection)</td>
</tr>
<tr>
<td></td>
<td>Haloperidol (Injection)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Olanzapine (Tablet)</td>
<td></td>
</tr>
<tr>
<td>Anti-depressants</td>
<td>Amitriptyline (Tablet)</td>
<td>Escitalopram (Tablet)</td>
</tr>
<tr>
<td></td>
<td>Fluoxetine (Capsule)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Imipramine (Tablet)</td>
<td></td>
</tr>
<tr>
<td>Mood Stabilizers</td>
<td>Lithium (Tablet)</td>
<td>Not Utilized</td>
</tr>
<tr>
<td></td>
<td>Sodium Valproate (Tablet, Syrup, Injection)</td>
<td></td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>Alprazolam (Tablet)</td>
<td>Lorazepam (Injection)</td>
</tr>
<tr>
<td></td>
<td>Diazepam (Tablet, Injection)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lorazepam (Injection)</td>
<td></td>
</tr>
</tbody>
</table>
Occupational Therapy (OT)

A detailed schedule was worked out for OT of psychiatric inpatients and outpatients as outlined below.

For inpatients
- Daily OT assessment
- Daily list of activities
- Cognitive exercises
- Vocational assessment
- Group therapy and assessment
- Play therapy

Therapist was asked to provide at least 2 OT assessment reports during the stay of patients within ward noting performed activities, involvement in group and daily activities. This gave an objective assessment of the patients' performance during the period of stay, his/her improvement and level of insight.

For outpatients
- Seven day continuous O.T. assessment for work fitness
- Day care activities for unemployed chronic patients
- Learning Disability assessment in children
- Disability evaluation for chronic patients.

RESULTS AND DISCUSSION

Emergency Psychiatric Services

Emergency psychiatry is the clinical application of psychiatry in emergency settings. Conditions requiring psychiatric interventions include attempted suicide, substance use disorders, depression, psychosis, violence or other acute changes in behavior. Interventions called for in these settings usually revolve around crisis management to avert potentially life-threatening situations associated with acute or chronic mental illnesses. After stabilization many patients are transferred to wards or to a setting which can provide long-term psychiatric rehabilitation. Prescribed treatments within the emergency service setting vary dependent upon the patient's condition. Different forms of psychiatric medication and psychotherapy may be used in the emergency setting. Many emergency psychiatric services offer electroconvulsive therapy for patients. But our setup didn't have this provision. With time as a critical aspect of emergency psychiatry, the rapidity of effect is an important consideration. Pharmacokinetics is the movement of drugs through the body with time and is at least partially reliant upon the route of administration. Generally, the onset of action of medications administered parenterally (intramuscular or intravascular) is relatively fast and can occur within several minutes which makes the availability of injectables (like haloperidol and lorazepam) an absolute necessity in the emergency setting. As an example, physicians usually expect to see an effect thirty minutes after haloperidol, an antipsychotic, is administered intramuscularly.

Child Guidance Clinic

Child guidance clinics attempt to benefit the community as a whole by providing necessary care for distressed children. The team that manages such children includes a psychiatrist, social worker, psychologist and occupational therapist. There are multiple aspects of care which include physical, intellectual, educational, emotional, social and economic. Each of these is evaluated and addressed by an appropriate member of the team. This team-work allows holistic management of the various problems faced by children to bring about a lasting benefit.

The various treatment options instituted in our CGC include:
Treatment of child
- Pharmacotherapy
- Psychotherapy
- Behavior therapy
- Play therapy
- Foster home/institutional placement

Family attitude as a focus of treatment
- Cognitive therapy for parents
- Psycho-education
- Treatment of caregiver burden
- Concomitant treatment of mental illness in parents.

Thus the establishment of CGC in our municipality hospital would henceforth help dealing with the child and adolescent problems which are all-too prevalent in today's age of rapid changes in social structure and values and intense competition.

Occupational Therapy
OT plays an important role in identification of functional disabilities and occupational therapists help in overcoming these to the maximum possible extent. They make use of behavioral techniques to decrease the adverse impacts of disease condition. Their role in helping individuals with illnesses perform activities of daily living (ADLs) satisfactorily, and live more fulfilling lives in personal and professional spaces.

The following OT activities were started in the department of psychiatry in our hospital:
- Therapeutic use of exercises and activities
- Training in self-care, self-management, health management and maintenance, home management, community/work reintegration, and school activities and work performance
- Therapeutic use of self, including one's personality, insights, perceptions, and judgments as part of the therapeutic process
- Education and training of individuals, including family members and caregivers
- Modification of environments (home, work, school) and adaptation of processes, including the application of ergonomic principles
- Facilitating the occupational performance of patients through the modification of environments and the adaptation of processes.

CONCLUSION
Thus by establishing and enforcing the above in the department of psychiatry, we hoped to provide the full-fledged services of mental health care to all. The benefits of community based psychiatry care are certainly multiple. GHPUs contribute substantially to the success of community based care. Besides these, opportunities abound in the general hospital for more proactive efforts to collaborate with other clinicians. Offering our contribution to the management of a greater range of problems is a key move. Many patients in general hospitals have under-diagnosed and under-treated psychiatric disorders. We hope to catch them early so as to avoid/diminish complications. We also hope that adequate psychiatric facilities within our hospital would attain the following results on a long term and continuous basis:
- Shortened hospital stays
- Improved the quality of recovery and outcomes
- Prevent needless treatment expenses
- Relieve state hospital overcrowding
- Improve public satisfaction with hospitals and thus improve the mental health and overall general community health

We hope this successful attempt of ours will be taken as a model for others, encouraging/stimulating them to take the initiative to utilize/maximize resources
at hand ultimately contributing to the betterment of the society.

**Limitations**
- No objective tools were used to assess the impact of the changes made in the above attempt
- Subjective opinion of patients could also have been taken for a better perspective and their suggestions could have been incorporated for a wholesome and satisfying experience.

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**Competing Interests:** None to declare

**References**


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THE PHENOMENOLOGICAL EXPERIENCE OF GENDER DYSPHORIA THROUGH RORSCHACH

Dr. Radha Kushwaha  
M.Phil. Clinical Psychology Trainee, Institute of Mental Health and Hospital,  
Agra – 282002, Uttar Pradesh (India)

Dr. Preeti Singh*  
Clinical Psychologist, Department of Psychiatry, Pt. Jawahar Lal Nehru  
Memorial Medical Collage, Raipur - 492001, Chhattisgarh (India). 
Email id: preeti.c.psychologist@gmail.com (Corresponding Author)

Dr. Narendra Nath Samantaray  
Clinical Psychologist, Mental Health Institute, SCB Medical Collage,  
Cuttack – 753001, Orissa (India). Email id: narendra.samantaray@gmail.com

Dr. Amrit Patjoshi  
Professor, Department of Psychiatry, HITECH, Bhubneswar, Orissa (India).

Abstract

Gender dysphoria refers dysphoric feeling and thinking about one's own assigned gender role. Present paper explores the phenomenological experiences through Rorschach responses of a client suffering with gender dysphoric condition. The quantitative, qualitative and thematic interpretation of responses obtained on each Rorschach card reveals clients strong feeling of suffocation to assigned gender role, strong conflict between personal and familial expectations and having sexual orientation towards females. The thematic interpretation of Rorschach responses also reveals the multidimensional aspects of development and maintenance client's gender dysphoric condition. The obtained findings could be facilitative for psychotherapeutic intervention.

Keyword:
Gender Dysphoria, Rorschach Inkblot Test

Gender is denotes biologically assigned and publically lived role as boy or girl, man or woman. The Gender Identity is a kind of social identity that refers an individual's identification as male, female or occasionally some other category other than male or female. The dissonance between physically assigned gender role or identity and feeling or thinking about own gender is called Gender Dysphoria (GD). Person suffering with GD have affective and cognitive discontent about assigned physical and social gender role. DSM-5 first time used the term Gender Dysphoria before that it was termed as Gender Identity Disorder. DSM-5 stated that individuals with gender dysphoria have a marked incongruence between the gender they have been assigned to and their experience or expressed gender. There must also be evidence of distress about this incongruence. This distress is not limited to desire to be of the other gender, but may include a desire to be of an alternative gender, provided that it differs from the person's assigned gender.

The GD have several psychiatry comorbidities such as depression, anxiety, suicidal ideation, self-mutilation, adjustment disorder and substance abuse (Hoshiai M, et al., 2010; Cole C.M. et al., 1997). The intervention of psychiatric comorbidity is the first line treatment to prevent suicide and adjustment problems of GD. The intensive psychological assessment helps to find out the multidimensional aspect of problem to intervene. Rorschach test is one of the psychological assessment.
tool provides the extensive information about an individual's inner feeling and needs through projective responses on unstructured inkblot designs. Rorschach interpretations focus on the psychological organization and functioning of the person. The Rorschach test gives greater emphasis to the psychological structure of the personality of the individual rather than to the behaviors of the person (Exner, 2001). Present Rorschach protocol was very unique presentation of true and elaborative projection of client's feeling, emotions, needs, expectations, defenses, limited coping ability, deprivation, disturbed object relation with her husband and other relatives (persecution). The thematic interpretation of each card responses also done in addition to quantitative interpretation of the present case for better communication of client's internal and external resources and needs.

CASE SUMMARY

Index client X, 28 years old, married female, educated upto 12th standard, belongs to rural area of Mathura, Uttar Pradesh (India). She is third child among four siblings. The client got married at the age of 22 years and soon after marriage her problems related to gender dysphoria started as she has to perform like a female but she herself thought and raised as a boy by her parents. She accepted the fact that she was lived like a boy child since her birth, she worn boy's cloths, made friends of boys in her school time, rode bike, take responsibility like a boy. The parents were also comfortable and facilitative for such appearance and behavior. But after marriage she has to live like a female which was against her previous lifestyle and thought about herself as a male. She could not adjust with her husband and in-law's because of intense gender dysphoric feelings. The worst situation appears when she got pregnant within a year of marriage and her bodily changes lead her further dissonance about forced lived female gender. Gradually she becomes irritate easily and used to fight with her husband for making her pregnant. She felt very awkward and uncomfortable whenever her husband sexual oriented towards her. The birth of child was extremely stressful for her and she left in-laws house, also starts psychiatric medication for severe depression. After that she never visited to her in-laws home and got divorced with the help of her parents. Again she starts living her usual life like a boy and her child was taking cared by her mother. Everything was normal until she fall in love with her brother's sister in-law and approached her for sexual relationship. This leads significant fight and conflict between family and she was admitted in IMHH Agra for psychiatric intervention.
RORSCHACH INKBLOT TEST FINDING

Structural Summary

<table>
<thead>
<tr>
<th>Location Features</th>
<th>Determinants</th>
<th>Contents</th>
<th>S-Constellation</th>
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<tbody>
<tr>
<td>ZF = 3</td>
<td>F.m</td>
<td>H = 0</td>
<td>Col/Shd Blends &gt; 0</td>
</tr>
<tr>
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<td>F.M</td>
<td>F = 0</td>
<td>Ego &lt; 31 or &gt; 44</td>
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<td>F.M</td>
<td>M = 0</td>
<td>MOR &gt; 3</td>
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<tr>
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<td>F.M</td>
<td>M = 0</td>
<td>Zd &gt; ±3.5</td>
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<tr>
<td>D = 14</td>
<td>F.M</td>
<td>M = 0</td>
<td>es &gt; EA</td>
</tr>
<tr>
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<td>F.M</td>
<td>M = 0</td>
<td>CF + C &gt; FC</td>
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DQ

(FQ-)

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<tr>
<th>(FQ-)</th>
<th>+ = 0</th>
<th>o = 14 (4)</th>
<th>v (+) = 0 (0)</th>
<th>v = 8 (2)</th>
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Form Quality

<table>
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<tr>
<th>FQx</th>
<th>MQual</th>
<th>W+D</th>
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<tbody>
<tr>
<td>+</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>o</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>u</td>
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<td>6</td>
<td>1</td>
</tr>
<tr>
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</table>

RATIOS, PERCENTAGES AND DERIVATIONS

R = 22

L = 0.47

EB = 3 : 0.0

EA = 3.0

EBPer = N/A

eb = 6 : 1

es = 7

D = -1

Adj es = 7

Adj D = -1

FM = 5

SumC' = 1

SumT = 0

m = 1

SumV = 0

SumY = 0

**AFFECT**

FC = 0.5

CF = 0

C = 0

F = 0

V = 0

FV = 0

VF = 0

NY = 1

FX = 0

Z = 0

**INTERPERSONAL**

COP = 0

AG = 0

GHR.PHR = 1 : 2

a = 8 : 1

Food = 0

SumT = 0

Human Content = 3

Pure H = 0

PER = 0

Isolation Index = 0.27

**IDEATION**

a/p = 8 : 1

Sum6 = 0

Ma:Mp = 3 : 0

Lvl-2 = 0

2AB+(Art+Ay) = 8

WSum6 = 0

MOR = 0

M- = 1

M none = 0

**MEDIATION**

X% = 0.50

Zf = 3

WDA% = 0.58

W:DD: = 5:14:3

X- = 0.27

M = 5 : 3

S- = 2

Zd = -0.5

P = 2

PSV = 0

X% = 0.23

DQ+ = 0

Xu% = 0.27

DQv = 8

**PROCESSING**

3r+(2)/R = 0.14

Fr+R = 0

SumV = 0

FD = 0

Aa+Xy = 0

MOR = 0

H(H)+Hd+(Hd) = 0 : 3

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Interpretive Search Strategy

<table>
<thead>
<tr>
<th>Positive Key Variable(s)</th>
<th>Interpretive Search Strategy</th>
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</thead>
<tbody>
<tr>
<td>1. CDI &gt; 3 and EA Low</td>
<td>Controls &gt; Affect &gt; Self-Perception &gt; Interpersonal Perception &gt; Processing &gt; Mediation &gt; Ideation</td>
</tr>
</tbody>
</table>

Capacity for Control and Tolerance for Stress

She appears to be working very hard to keep emotions out of her life. Her determination to avoid affect could constitute a defensive effort on her part, intended to keep her feelings to herself and to provide insulation against the feelings of others, or it could reflect a basic incapacity to experience and express feelings adaptively. She may also suffer from low stress tolerance and limited self-control.

Affect

She shows a potentially maladaptive style of experiencing and expressing affect in which she exerts much less control over her feelings than most adults. She is thus by nature an emotionally immature individual who tends to experience and express affect in an overly dramatic and overly intense manner and whose affects are often shallow and superficial. The quality of her interpersonal relationships is likely to be impaired by her being viewed by others as an impulsive and unpredictably labile individual. She gives evidence of some oppositional tendencies that are likely to be associated with underlying feelings of anger and resentment toward people or the world in general. These oppositional tendencies appear to constitute a generalized disposition toward negativity in dealing with her experience, rather than merely an antagonistic reaction to being examined.

Self-Perception

This person is not paying sufficient attention to herself and may even be purposefully avoiding self-focusing. She is likely to experience low self-esteem and may lack confidence in herself. This person does not appear to be as introspective as most people. Because of her lack of self-awareness, she is at risk for adjustment difficulties involving inadequate understanding of herself, insufficient appreciation of the impact she has on other people, and a limited capacity to examine herself in a critical fashion and then modify her behavior accordingly.

Interpersonal Perception

She appears to have limited ability to manage interpersonal relationships in a comfortable and rewarding manner. She is having inadequate social skills. She gives evidence of limited capacity to form close attachments to other people. Although she may not necessarily avoid interpersonal relationships, these relationships will tend to be distant and detached, rather than close and intimate; her friendship and love relationships are likely to be psychologically at arm's length rather than close and intimate. She also shows little interest in or expectation of engaging in collaborative or competitive relationships with other people. This person is more likely than most people to demonstrate ineffective or maladaptive interpersonal behavior.
Information Processing

She appears capable of attending to her experience in a reasonably open and flexible manner that constitutes a personality asset. She shows an adaptive balance between being able to deal with situations in a detached and uninvolved manner sometimes and, at other times, in a concerned and engaged manner.

Cognitive Mediation

She demonstrates an impairment of her reality testing capacity, whereby she tends to misperceive events and to form mistaken impressions of people and the significance of their actions. This adaptive liability is likely to result, at times, in instances of poor judgment in which she fails to anticipate the consequences of her actions and misconstrues what constitutes appropriate behavior.

Ideation

She tends to think about her experience in a highly inflexible manner that results in her clinging rigidly to previously held convictions and firmly resisting any reconsideration of her beliefs in light of new information. She is consequently quite likely to be a closed-minded individual who rarely changes her opinions and who seldom entertains the possibility of modifying her perspectives about herself or events in her life.

She displays an adaptive capacity to think logically and coherently. She is as capable as most people of coming to reasonable conclusions about relationships between events and of maintaining a connected flow of associations in which ideas follow each other in a comprehensible manner.

Thematic interpretation:

Thematic interpretation has been done on the basis of the responses given by the client on each card. It helps to understand the client's multidimensional aspect of the problem, will helpful in psychotherapeutic intervention. A brief thematic interpretation of each card responses were given below:

Card no. 1- This card responses reveal the client's underlying deep depressive feeling. She wants to cry because of her suffocation and frustration feeling with her living life and assigned physical gender role.

Card no. 2- She projected her emotional feelings on this card. She reveals her suffocated feeling towards her gender and severe depression through her responses. Her responses also reveal to overpower the assigned gender role by her wishing gender role. She projected her disgusting feeling about self-sexual body parts as filthy and dirty.

Card no. 3- On this card client's responses reveals her interpersonal interaction patterns with her parents and others. Client shows her desire to sexually orient with females but she does not do so because of social norms and pressure. As currently she stays at female ward of IMHH, Agra, which was surrounded by females, towards whom she is sexually oriented but she cannot express her feelings explicitly due to social norms and pressure. This feeling was explored by her response, “there is a sea filled with water and someone is thirsty can't take water because it was salty.

Card no. 4- Present card responses reveals her personal experiences and feelings related to her child and herself as parent. Her projection revealed that she sees herself as father of her child rather than mother and want to act as an authority figure in the family. She felt overburdened due to child's responsibility.

Card no. 5- On this card client reveals her depressive feeling because of her assigned gender role. She wants to change her gender but could not do so because of
family pressure and lack of economical support. On this card she projected her frustration, suffocation and depressive feeling to live as a female.

**Card no. 6-** Father and child relationship was projected in the present card responses. The projected Father was helpless to provide basic needs and protection to his children. This may be her own experiences about her father or she may be perceived herself as a father of her child. She also reveals her overburden feeling of taking responsibility her own child. She has a desire to take care of her child as a father but could not able to do it properly.

**Card no. 7-** On this card she projected her feeling of affection with her mother. The responses reveal her emotional attachment with her mother. She feels more relax and comfortable with her mother.

**Card no. 8-** She projected herself as a bear and her life as a painting. She reveals her depressive and aggressive feeling and emotion on this card. She perceives herself the destroyer of her own life.

**Card no. 9-** She projected her emotional feeling on this card. She wants to express her feeling to sexually orient towards females but she can't express her feeling because of society restrictions. She felt very frustrated and suffocated because she could not express her feelings explicitly.

**Card no. 10-** She projected her feeling of love and affection on this card. She reveals her desired and fluctuating love life as getting close with other females but soon disrupt the relationship due to sexual oriented expressions. She desired to break all social rules and regulations to follow her dream and desires related to love and affection.

**Discussion**

Gender dysphoria is very difficult to identify and treat. These peoples rarely comes to psychiatric set-up's to seek help for their adjustment problems and psychiatric comorbidities. Similar situation happened with present case as she was'nt bring for psychiatric help untill acts against social norms (sexually oriented towards brother's sister-in-law). The extensive understanding of problem behaviour is the key of good psychotherapeutic intervention and outcome. Which can be only achived by detail psychological assessment. The present case study discloses the multidimensional aspect of Gender Dysphoria as internal feelings, experiences and external expressions.

Present case study reveals client's feeling of incongruency between her desired and assigned gender leads significant personal, social conflict, aggressive outburst, severe depression, suicidal ideation, frustration and suffocatory feeling to trap in female body. Aray et. Al. (2010) also did the similar kind of case study with the findings of secondary depression and suicidal ideation were common psychiatric features in GD.

**Conclusion**

Present paper was an attempt to explore the structure of personality in detail by quantitative, qualitative and thematic interpretation. The outcome of thematic interpretation reveals client was depressed and desires to change her gender. She felt suffocated and trapped in female body. The obtained multidimensional psychological assessment findings of present GD can be helpful for present case intervention and also gives a better understanding of phenomenological aspects of clients suffering with GD.
References:
American Psychiatric Association, (2013). Gender Dysphoria. Diagnostic and Statistical Manual of Mental Disorder, (5th ed.).
Together for Life