A COMPARATIVE STUDY ON EVALUATION OF SEXUAL DYSFUNCTION IN PATIENTS TREATED WITH ATYPICAL ANTIPSYCHOTICS INVOLVING RISPERIDONE, OLANZAPINE, AND QUETIAPINE

Dissertation submitted to

THE TAMIL NADU DR. M. G. R. MEDICAL UNIVERSITY

In partial fulfillment of the regulations
for the award of the degree of

M. D. BRANCH - XVIII

M D. Psychiatry

INSTITUTE OF MENTAL HEALTH

MADRAS MEDICAL COLLEGE

CHENNAI, INDIA.

APRIL - 2016

CERTIFICATE

This is to certify that the dissertation entitled ***"A COMPARATIVE STUDY ON EVALUATION OF SEXUAL DYSFUNCTION IN PATIENTS TREATED WITH ATYPICAL ANTIPSYCHOTICS INVOLVING RISPERIDONE, OLANZAPINE AND QUETIAPINE"*** is the bonafide work of **Dr. SURESH BABU. P**, in partial fulfillment of the requirements for M. D. Branch – XVIII (Psychiatry) examination of The Tamilnadu Dr. M. G. R. Medical University, to be held in April 2016.

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CERTIFICATE OF GUIDE

This is to certify that this dissertation titled "**A COMPARATIVE STUDY ON EVALUATION OF SEXUAL DYSFUNCTION IN PATIENTS TREATED WITH ATYPICAL ANTIPSYCHOTICS INVOLVING RISPERIDONE, OLANZAPINE, AND QUETIAPINE.**" is the original work of **Dr SURESH BABU. P**, appearing for M.D. (Psychiatry) degree examination in April 2016, is an original bonafide record of work done in the year 2015 by her under my guidance and supervision in partial fulfilment of requirements of the Tamil Nadu Dr. M.G.R. Medical University, Chennai. I forward this to the Tamil Nadu Dr. M.G.R. Medical University, Chennai, Tamil Nadu, India.

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Professor of Psychiatry, Director
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Date :

DECLARATION

I, **Dr. SURESH BABU. P,** solemnly declare that the dissertation titled, **"A COMPARATIVE STUDY ON EVALUATION OF SEXUAL DYSFUNCTION IN PATIENTS TREATED WITH ATYPICAL ANTIPSYCHOTICS INVOLVING RISPERIDONE, OLANZAPINE, AND QUETIAPINE,** is a bonafide work done by me at Institute of mental health, Chennai, under the guidance and supervision of **Dr. R. JEYAPRAKASH**. M. D, D. P. M, Professor, Director, Institute of Mental Health, Madras Medical College, during the period from Jan 2015 – June 2015.

The dissertation is submitted to The Tamilnadu Dr. M. G. R. Medical University towards part fulfillment for M. D. Branch XVIII (Psychiatry) examination.

Place: **Dr. SURESH BABU. P.**

Date:

ACKNOWLEDGEMENTS

I sincerely thank **Professor. Dr R. VIMALA**, **M.D,** Dean, Madras Medical College for permitting me to do this study.

I thank Prof. **Dr. JEYAPRAKASH M.D**, Director IMH permitting to do this study.

I sincerely thank **Professor Dr. JEYAPRAKASH M.D,** Director, Institute of Mental Health, Chennai who has been a source of inspiration and motivation, and for his guidance and help.

I also thank Professors **Dr. KRISHNAN, Dr. SHANTHI NAMBI, Dr. P.P. KANNAN, Dr. SABITHA** for their Suggestions and help.

I would like to express my sincere thanks to **Professor, Dr. VENKATESH MADAN KUMAR, M.D,** who had guided me in literature search, developing protocol and helped me in completing this dissertation.

I would like to express my gratitude to **all my teachers at the Institute of Mental Health, Chennai** for their support and encouragement during this study.

I thank my statistician **Mr. MARIA KALSINGH** for his help.

I thank **Mr. Ramesh** for binding and designing this study

I thank all Patients who Participated in this study and for their cooperation.

INSTITUTIONAL ETHICS COMMITTEE
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CERTIFICATE OF APPROVAL

To
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Dear Dr.P.Suresh Babu,

The Institutional Ethics Committee has considered your request and approved your study titled **"Comparative study on evaluation of sexual dysfunction in patients treated with atypical anti psychotics involving risperidone, olanzapine and quetiapine" No.20052015.**

The following members of Ethics Committee were present in the meeting held on 12.05.2015 conducted at Madras Medical College, Chennai-3.

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We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

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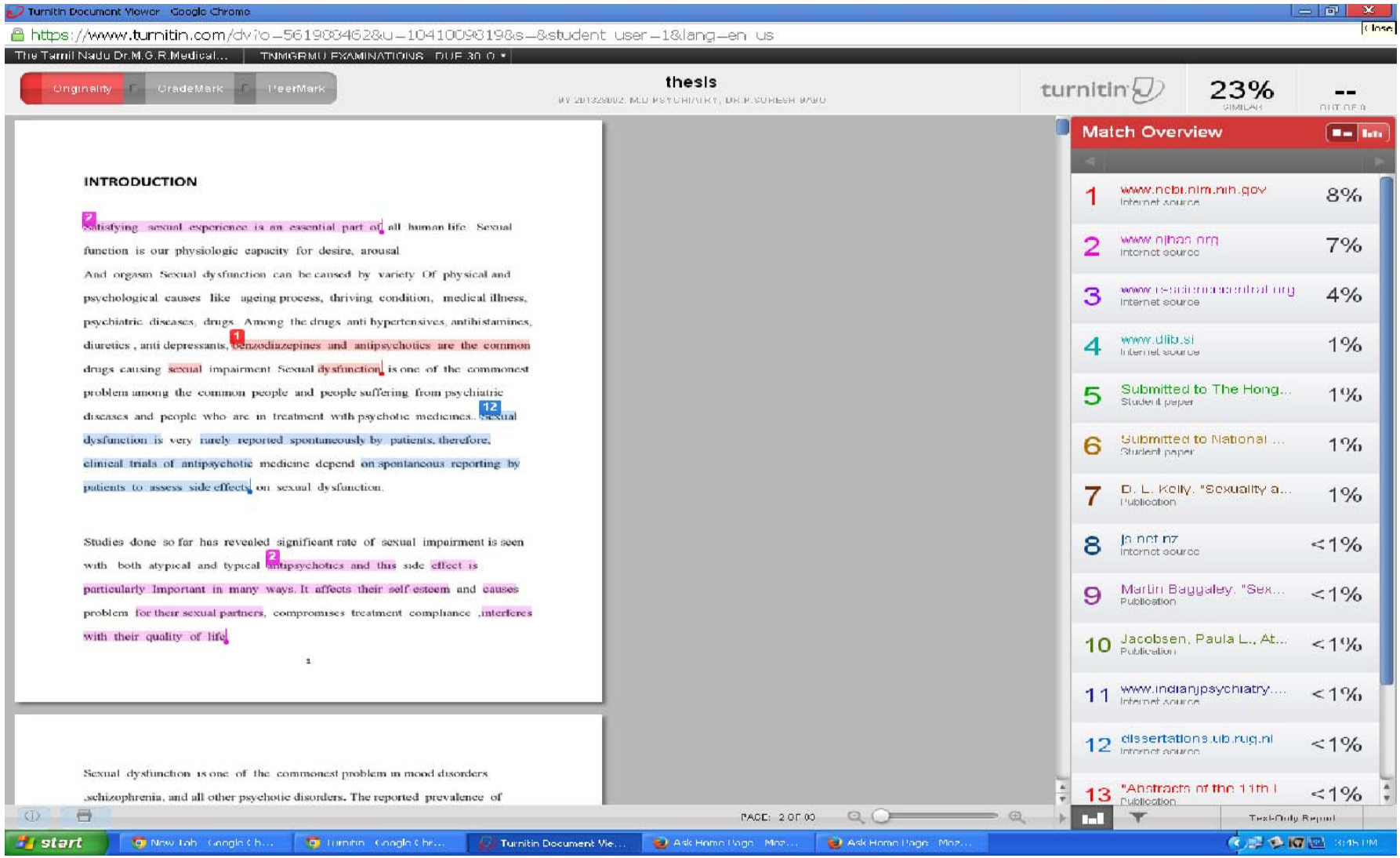
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INTRODUCTION
Satisfying sexual experience is an essential part of all human life. Sexual function is our physiologic capacity for desire, arousal
And orgasm. Sexual dysfunction can be caused by variety Of physical and psychological causes like ageing process, thriving condition, medical illness, psychiatric diseases, drugs. Among the drugs anti hypertensives, antihistamines, diuretics , anti depressants, benzodiazepines and antipsychotics are the common drugs causing sexual impairment. Sexual dysfunction is one of the commonest problem among the common people and people suffering from psychiatric diseases and people who are in treatment with psychotic medicines. Sexual dysfunction is very rarely reported spontaneously by patients, therefore, clinical trials of antipsychotic medicine depend on spontaneous reporting by patients to assess side effects on sexual dysfunction.
Studies done so far has revealed significant rate of sexual impairment is seen with both atypical and typical antipsychotics and this side effect is particularly important in many ways. It affects their self esteem and causes problem for their sexual partners, compromises treatment compliance ,interferes with their quality of life.
1
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File name:	md_psychiatry_thesis.docx
File size:	14.28K
Page count:	83
Word count:	9,778
Character count:	57,156
Submission date:	29-Sep-2015 09:00PM
Submission ID:	561988462

INTRODUCTION

Satisfying sexual experience is an essential part of all human life. Sexual function is our physiologic capacity for desire, arousal And orgasm. Sexual dysfunction can be caused by variety Of physical and psychological causes like ageing process, thriving condition, medical illness, psychiatric diseases, drugs. Among the drugs anti hypertensives, antihistamines, diuretics, anti depressants, benzodiazepines and antipsychotics are the common drugs causing sexual impairment. Sexual dysfunction is one of the commonest problem among the common people and people suffering from psychiatric diseases and people who are in treatment with psychotic medicines. Sexual dysfunction is very rarely reported spontaneously by patients, therefore, clinical trials of antipsychotic medicine depend on spontaneous reporting by patients to assess side effects on sexual dysfunction.

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1

CONTENTS

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Studies done so far has revealed significant rate of sexual impairment is seen with both atypical and typical antipsychotics and this side effect is particularly Important in many ways. It affects their self-esteem and causes problem for their sexual partners, compromises treatment compliance , interferes with their quality of life.

Sexual dysfunction is one of the commonest problem in mood disorders, schizophrenia, and all other psychotic disorders**.** The reported

prevalence of sexual dysfunction is 40 -80% in women and 45-85% in men.(3, 4, 5).

Atypical antipsychotics have been prescribed for treatment of schizophrenia now a days. The most common antipsychotics prescribed are risperidone, olanzapine, quetiapine, arpiprazole, ziprasidone, and amisulphride.

Atyical antipsychotics have wide range of action over positive, negative, affective, and cognitive symptoms of schizophrenia. When compared to typical antipsychotics, atypical antipsychotics produce less extra pyramidal symptoms like tremos, rigidity, tardive dyskinesia, dystonia, neuroleptic malignant syndrome and said to cause least sexual side effects.

Now a days atypical antipsychotics are prescribed not only for psychosis or schizophrenia, they are prescribed for mania, bipolar disorders, bipolar depression, atypical depression, to control the behavioural disturbances in disruptive disorders, mental retardation, and treatment resistant depression.

So inorder to get little sexual side effects as a psychiatrist we must get a clear cut knowledge about the sexual side effects produced by atypical antipsychotics and which is safe to administer to the patients.

The major impact produced on sexual functioning in schizophrenic patients is by antipsychotics.There are lot of studies that about sexual

Dysfunction caused by typical antipsychotics as well as there are studies that compared typical and atypical antipsychotic drugs. But, there are only a few studies that have compared different atypical antipsychotic agents for sexual impairment. There are only few studies in Indian population regarding this.,

Various aspects that make us difficult to assess the sexual function related to psychotrophic medications are

1. Selection of patients.
2. Procedures used for sexual assessment.(directly questioning, or self report.)
3. Subjective or objective measurements.
4. Lack of baseline assessment.
5. Gender differences.
6. Hard to differentiate effects of psychopathology and effects of psychotropic medications.

Although there are limitations and biases most of the studies had agreed the prevalence of sexual dysfunction in schizophrenic patients treated with antipsychotics ranging from 25% to 60%.(1, 2).

So far, researches done into psychotropic-induced sexual side-effects suffers from substantial methodologic limitations. Patients tend not to talk with their clinician about their sexual life. Psychiatrists and other doctors need to take the initiative to talk about the patient's sexual life in order to become informed about potential medication-induced sexual difficulties.

REVIEW OF LITERATURE

Sexual dysfunction

Sexual dysfunction prevalence rate has been increasing in both men and women. On psychological perspective , According to kaplon and master Johnson 4 stages of sexual function is desire, arousal, orgasm finaly resolution phase. Alteration in one of this phase leads to sexual dysfunction. Sexual dysfunction has significant impact on one's mood, inter personal functioning self esteem, and life satisfaction.{6}.

It can take many forms –sexual dysfunction means not only limited to loss of desire i.e loss of libido. It also includes experiencing pain during intercourse., difficulty in maintaining sustained erection, inability to experience orgasm.

Sexual dysfunction in women may be due to vaginal dryness(due to low desire, anticipatory anxiety about sex, pain during, intercourse), lower libido, and

Difficulty in achieving orgasm.

Etiology and pathogenesis

Sexual dysfunctions are more common but very rarely diagnosed and identified by primary care physicians. When we analyse the causes

for sexual dysfunction we can broadly classify them as organic and psychogenic.

Organic causes include any chronic illness, pharmacological drugs, harmonal imbalances and endocrinological problems, pregnancy, chronic hypertension, diabetes mellitus and host of other traumatic, medical, or surgical factors.(7).

Psychogenic causes includes

1. Iindividual factors (depression, anxiety, fear, frustrations, intra psychic conflict, guilt hypo chondriosis).
2. Iinter personal and relation ship factors, (decreased trust, bad communication, relationship conflict, family conflict).
3. Sexual enactment factors (unrealistic performance expectations, knowledge and skill deficits).
4. Psycho sexual factors (performance anxiety, negative learning and attitudes, previous sexual trauma, restrictive religiosity, intellectual defenses.).(7).

Psychiatric disorders and sexual dysfunction.

Sexual problems are highly and commonly seen among in patients with psychiatric disorders. It may be due to psychopathology and also as

adverse effect of pharmacotherapy. Patients with both positive and negative symptoms of schizophrenia, mood disorders exhibit dysfunction in desire. arousal and orgasimic phases of sexual cycle. Both typical and atypical antipsychotics also cause sexual dysfunction.Patients with personality disorders and eating disorders also exhibit sexual dysfuction.{8, 9}.

Sex and schizophrenia

Sexual functioning has obtained only poor attention as an essential aspect of patient care for those suffering from psychiatric disorders such as schizophrenia.

It is one of the essential factor leading to non compliance of antipsychotic drugs and is registered by people suffering from schizophrenia to be one of the areas of treatment with the most unmet needs.(10).

In early 1900s some of the researchers believed that excessive sexual acts and thoughts could be one of the reason for insanity.(11).

Recently in 1970s psychiatric researchers believed that sexual activity could contribute to the development of psychiatric disorders such as schizophrenia.(12).

Sexual function is affected both qualitatively and quantitatively in patients suffering from schizophrenia when compared to the normal individuals.

Schizophrenic patients can also have sexual dysfunction which may not be related to drugs and drug effects.

Studies have proved that even in untreated patients with schizophrenia had exhibited sexual dysfunction in the form loss of desire for sex. Although their arousal and ejaculatory functions remains intact. Especially in females when compared to males but after getting their psycho trophic medications They are loosing their arousal and ejaculatory functions. (13, 14).

In studies they have shown that about 50% of schizophrenic patients on treatment with conventional antipsychotics reported sexual dysfunction.(15, 16).

And recent studies have reported 80-90% of sexual dysfunction in patients of schizophrenia treated with antipsychotics in both sexes.(17).

Patho physiology of antipsychotic induced sexual dysfunction

The mechanism by which antipsychotics cause sexual dysfunction is as follows;

Dopamine receptor antagonism, Histamine receptor antagonism, Dopamine2 receptor antagonism, Cholinergic receptor antagonism. Alpha adrenergic receptor antagonism {18}.

By binding to histamine receptors antipsychotics impair arousal by causing sedation.

By blocking D2 receptors in tubero infundibular pathway, by increasing the prolactin level causes impairment in desire, arousal, and orgasm indirectly.

Cholinergic receptor antagonism may cause erectile dysfunction by decreasing peripheral vasodilation.

Alpha-adrenergic alpha receptor antagonism can decrease peripheral vasodilation, resulting in decreased lubrication in women and erectile dysfunction in men.

Role of dopamine on sexual function.

The dopaminergic structures responsible for sexual motivation are the nucleus accumbens, a part of the mesolimbic pathway and the medial pre optic region of the hypothalamus.

Activation of dopaminergic receptors of the paraventricular nucleus in the hypothalamus is essential for causing erection.

Dopamine is the most important hypothalamic prolactin (PRL)-inhibiting factor. Blocking dopamine secretion leads to hyperprolactinemia, which can inhibit sexual function, mainly erection and libido by elevating opioids and GABA levels.{19}.

Dopamine has an inhibiting influence on PRL secretion mainly via two pathways: the tuberoinfundibular dopaminergic (TIDA) system and the tuberohypophysial pathway.

Dopamine released into the blood reaches the lactotroph cells and binds to the D_2R on the membrane of these cells. D_2R stimulation inhibits the synthesis and release of PROLACTIN, as well as lactotroph proliferation.

PRL regulates tyrosine hydroxylase activity, the rate-limiting enzyme in dopamine synthesis. A blockade of D_2R counteracts the tonic

inhibitory effect on PRL secretion. So, the stronger the dopamine blockade, the higher the increase in PRL.{18, 20}.

ANTI PSYCHOTICS AND HYPERPROLACTENEMIA

The prolactin is secreted from the anterior pituitary in Pulsatile manner and is regulated by inhibitory and stimulatory influences from the hypothalamus. There are 12 to 13 peaks per day with an inter pulse interval of about 90 min.

The normal reference values of PRL in the blood are 10–25 ng/mL in wo men and 10–20 ng/mL in men.{21} PRL secretion increases during sleep and is at its maximum during REM stage sleep. PRL levels increase to 30 ng/mL between 4 and 6 in morning. LATEST STUDIES HAVE SHOWN that galactorrhea, impotence, azoospermia, and lack of libido are noticed when PRL levels are >60 ng/mL.{22} Antipsychotics have a D_2-blocking effect and can therefore increase PRL secretion.

Hyperprolactinemia can also cause reduced blood testosterone levels and can indirectly lead to reduced sexual activity{19, 20}.

In females, increased prolactin levels can result in alteration of pulse released GnRH and deficiency of estrogen, which results in inhibition of menstrual cycle (amenorrhoea). It also causes

gynaecomastia, galactorrhoea, and various types of sexual dysfunction, especially loss of sexual desire.{23, 24, }.

A lot of studies on antipsychotic induced sexual dysfunction have incorporated the procedure of measuring prolactin level. And most of them have found a positive association between hyperprolactinemia and sexual impairment. (8, 21, 23, 25, 26, 27, 28, 29).

When it comes to the proportion of cases where hyperprolactinemia was associated with sexual dysfunction, studies infer it to be 25-40%. (28, 30).

On the basis of blocking of dopamine D2 receptors, , risperidone, haloperidol and amisulpride are classified as prolactin-elevating antipsychotics, while clozapine, quetiapine, ziprasidone, olanzapine and aripiprazole are classified as prolactin-sparing drugs.**{18}.**

The influence of serotonin and noradrenaline on sexual function.

Serotonin mainly inhibits sexual function by stimulating postsynaptic 5-HT_{2A} and 5-HT_{2C} receptors, while the stimulation of presynaptic 5-HT_{1A} autoreceptors increases sexual activity, reducing serotonin secretion from the nerve termini.{25, 31, }.

Noradrenaline, another neurotransmitter, increases the ability for arousal through its influence on central receptors and inhibits erection by binding with peripheral α1 receptors.{32}.

Peripheral influence of antipsychotic drugs

Adrenergic system is the one of the most important peripheral system which have its influence on penile erection beta 2 adrenergic activation over sympathetic activation is essential for blood to flow in penile and cavernous arteries to produce vaso dialatation and erection. (33). Priapism that is prolonged painful erection is also one type of sexual disorder reported by patients on atypical antipsychotics. It is caused due to blockage of alpha1 adrenegic receptors by atypical antipsychotics. studies have shown that olanzapine, risperidone and amisulphride can cause priapism.(34).

A study done by jagadeesan et al have reported irreversible priapism in a patient started with olanzapine 5mg per day on the sixth day of starting treatment.(35).

Reversible priapism cases also have been reported in treatment with risperidone and ziprasidone.

Sedative influence by antipsychotics

We know that antipsychotics produce sedation by blocking H1 receptors (histaminic), 5HT2A receptors, anticholinergec effects, sedation

decreases sexual desire and sexual performance and sexual activity.this mechanism play a major role in producing sexual dysfunction. So the drug must be administered by knowing their pharmacokinetics and the time 6 hours before going to bed should be administered.

Newer drugs like arpiprazole, ziprasidone, amisulphride do not block histaminergic and cholinergic receptors, so they don't produce sedation and also cause only little sexual dysfunction. (36).

Studies of sexual dysfunction due to antipsychotics in schizophrenia

The important study done by Kotin and co-workers is one of the first studies in this aspect. They studied sexual impairment in eighty seven schizophrenic patients. 57 of them were on thioridazine and another thirty were on other antipsychotics like chlorpromazine, haloperidol trifluperazine, fluphenazine, and thiothixene. Sixty percent of thioridazine group reported sexual impairment and twenty five percent of those on other groups reported sexual dysfunction. (37).

Ghadirian and his team studied about sexual impairment and prolactin levels in fifty five schizophrenic patients of which 29 were females and 26 males. Most of them were taking fluphenazine. Fifty four percent of males and thirty percent of females reported sexual dysfunction. No placebo controls in this study.(16)

In the study done on 20 patients receiving haloperidol or fluphenazine in men with schizophrenia, by Burke and his team, 50% reported erectile dysfunction. They were receiving either haloperidol or fluphenazine.(38).

Smith and his team studied sexual dysfunction among 101 patients diagnosed as schizophrenia and who are on typical antipsychotics (flupenthixol, fluphenazine, thioridazine, trifluoperazine, haloperidol, pimozide), 57 normal controls and 55 controls attending a sexual dysfunction clinic. They were Assessed on a sexual functioning questionnaire designed by smith et al, 45% of patients and 61% of controls attending the sexual dysfunction clinic reported sexual dysfunction. This study has also compared different typical antipsychotics for sexual impairment among both men and women. (39).

Kockott and Pfeiffer studied sexual disorders in mixed population of non acute psychiatric outpatients which included 100 patients of schizophrenia, 58 patients of affective Psychosis and 30 patients receiving skin treatment, as control group. They were Rated on a sexuality questionnaire, 49% of schizophrenics, 36.2% of those with mood disorder and 13.3% of controls had a sexual dysfunction.(40).

Studies comparing sexual dysfunction due to typical & atypical antipsychotics.

A study by Hummer and his team compared sexual dysfunction among schizophrenics on haloperidol with those on clozapine. Fifty three patients on halopeidol patients and 100 patients on clozapine (including men and women) were selected and they were rated on UKU side effect rating scale. interestingly there was no statistically significant difference between clozapine and haloperidol with regard to their ability to cause sexual impairment.(41).

A study done by aizenberg and his team compared sexual dysfunction only in male schizophrenics on clozapine (N = 30) with those on other typical antipsychotics (N = 30) including depot preparation of fluphenazine and haloperidol and oral perphenazine. Rated on a sexual function questionnaire, significant difference was found in frequency of libido, arousal, erections and number of orgasms per month, inferring that maintenance therapy with clozapine may be associated with a lesser degree of sexual dysfunction than the typical antipsychotics.(42).

Wirshing and co compared atypical and typical antipsychotics for sexual dysfunction in 25 males suffering from schizophrenia and who are on treatment with three groups clozapine, risperidone and haloperidol / fluphenazine combination, they were Assessed on a sexual functioning

questionnaire developed by Burke et al.(1994), the majority of risperidone (71%) and haloperidol / fluphenazine (61%) treated subjects showed sexual dysfunction but less of clozapine (40%) treated subjects.(26)

Bobes and colleagues studied cross-sectionally sexual dysfunction with risperidone, olanzapine, quetiapine and haloperidol among 636 patients of schizophrenia; assessing them on UKU side effect rating scale. Patients selected were on a single antipsychotic drug only. Frequency of sexual dysfunction was 35.3% on olanzepine, 43.2% on risperidone, 38% on haloperidol and 18.2% on quetiapine group (43).

Studies comparing different atypical antipsychotics for sexual dysfunction

Knegtering and associates studied about sexual dysfunction on 49 patients of schizophrenia and other psychotic disorders due to quetiapine (200-1200 mg/day) (n=25) and risperidone (1-6 mg/daunctiony) (n=24) in a randomized open label study. Assessed on a sexual functioning questionnaire, concluded that sexual dysfunction is significantly less common in quetiapine than risperidone. (24)

Melkersson studied cross-sectionally the degree and frequency of prolactin elevation and related symptoms of galactorrhea, amenorrhoea , sterility and decreased sexual desire in patients with schizophrenia, schizophreniform and schizoaffective disorders who are on clozapine (n=28), olanzapine (n=29) and risperidone (n=18). Increased prolactin level was found in eighty nine percent of those on risperidone, twenty four percent of those on olanzapine and none among those on clozapine. Overall, clozapine was found to be the superior agent when compared to risperidone and olanzapine, with respect to sexual functioning.(45).

Montejo and colleagues studied on quetiapine alone, in an open-label, on 82 patients with a diagnosis of schizophrenia or schizophreniform disorder, on quetiapine in a real practice setting, on 'Psychotropic-Related Sexual Dysfunction Questionnaire'. The authors concluded that quetiapine shows a low frequency of sexual dysfunction during prolonged treatment.(46).

Atmaca and co-workers studied sexual dysfunction caused by quetiapine alone.They evaluated 36 schizophrenic patients on quetiapine for 4 weeks and concluded that even quetiapine causes significant sexual impairment.(47).

Another recent study compared risperidone, olanzapine and quetiapine for sexual dysfunction using the questionnaire, Arizona Sexual Experience Scale (ASEX). It was a cross-sectional study with a sample size of 238 (quetiapine-57, olanzapine-94, risperidone-87). The mean scores on ASEX were relatively low in quetiapine group compared to olanzapine and risperidone group.(48).

Indian study done by anil kumar nagaraj and nagesh p.bai A comparative study of sexual dysfunction involving risperidone, quetiapine, and olanzapine, among 102 patients of schizophrenia found there was statistically no significant difference across the study groups although it was relatively less with quetiapine.(49).

Risperidone

Risperidone is a atypical antipsychotic drug with a high probability of causing prolactin elevation. As per cross sectional studies and clinical trials, risperidone elevates the serum prolactin up to a level of 30~60 ng/ml when used at therapeutic doses in a dose dependent manner(50).

A prospective 5 year observational study evaluating 90wo men and 128 men reported that risperidone induces a higher prolactin elevation when compared to other atypical antipsychotics(51)

Evidence from a large prospective observational study showed that 67.8% of men and women receiving risperidone for over 1 year reported sexual dysfunction.(30).Reduced sexual desire is the most frequently reported disturbance. few patients report erectile dysfunction/sexual dysfunction and amenorrhea. The rate of sexual dysfunction is significantly high as compared with patients those who were receiving olanzapine.

According to a cross-sectional study studying males and females separately total sample of 131, 37.8% of males reported decreased libido, 32.1% complained erectile and arousal dysfunction, and 32.6% reported ejaculatory and orgasmic disorder. In female patients, 40.5% reported decreased libido, 19.0% reported arousal disorder, and 15% reported vagina l dryness(43).

A small scale study have shown galactorrhea, gynaecomastia and priapism in male patients. Further, female patients were reported to experience galactorrhea and amenorhoea.(44).

Olanzapine

Olanzapine does not increase the prolactin level permanently. Moreover, in many cases, the elevated prolactin level returns to a normal level. (52).

A 28 week double blind control study done by Hamilton and his team among 339 patients and aimed at the efficacy of olanzapine, olanzapine produces a low incidence of sexual dysfunction in men as compared to men treated with risperidone.(53).

A 6-month observational study done on first time treated schizophrenic patients evaluating sexual functioning among showed that the loss of sexual desire was significantly less common in the olanzapine group when compared to the risperidone and haloperidol group(54).

In a randomized open-label comparison of the impact of olanzapine versus risperidone on sexual functioning, less sexual dysfunction occurred in the group treated with olanzapine (n=20) than the risperidone group (n=19),.(27).

Quetiapine

In a large population study they have proved that when we use quetiapine in a therapeutic dose it was found not associated with the increase in prolactin levels.(52).

In an open-label study, among the patients with schizophrenia or a related psychotic illness who were randomized to quetiapine (200~1200 mg/day) or risperidone (1~6 mg/day) for 6 weeks, sexual dysfunction was lower in patients treated with quetiapine (n=25) compared to those treated

with risperidone (n=26). Specifically, there was a significant difference in decreased libido and impaired arousal(27).

People with treatment-resistant schizophrenia participated in a randomized double-blind 12-week trial of risperidone (4 mg/day), quetiapine (400 mg/day), or fluphenazine (12.5 mg/day). Among them only quetiapine was found associated with the normalization of prolactin levels and had the greatest benefits among these drugs regarding sexual functioning; in particular,.(44) Thus, it appears that quetiapine is associated with a lower sexual dysfunction rate than risperidone and haloperidol.

COMPARATIVE STUDY ON EVALUATION OF SEXUAL DYSFUNCTION IN PATIENTS TREATED WITH ATYPICAL ANTIPSYCHOTICS INVOLVING RISPERIDONE, OLANZAPINE AND QUETIAPINE.

AIM OF THE STUDY

1. To determine the frequency of sexual dysfunction associated with risperidone, olanzapine, and quetiapine.
2. To compare the frequency of sexual dysfunction associated with risperidone, olanzapine, and quetiapine, among patients with clinically stable schizophrenia.
3. To assess the duration of drug intake and its effect on sexual function.

Null hypothesis

There is no difference in the frequency of sexual dysfunction in patients treated with atypical antipsychotics like risperidone, olanzapine, and quetiapine.

Study design

It is a cross sectional study.

Patients are selected through purposive sampling technique.

Done in 6 months duration from january2015 to june 2015.

CONSENT APPROVAL

Apart from history, both patients and informants were explained about the details of the study and the informed conset was obtained both from the patient and the informants in the prescribed format. The institutional ethical comiteee's approval was obtained prior to the study and the protocols were followed throughout the study.

Study centre

Out patient department, institute of mental health.chennai.

INCLUSION CRITERIA

Male and female patients between 18-40 years of age.

Sexually active.

On regular treatment with stable doses of risperidone, quetiapine, or olanzapine for atleast six weeks after achieving clinical stability**.**

EXCLUSION CRITERIA

Patients having comorbid medical illness.

Patients with comorbid psychiatric illness.

Patients with primary sexual dysfunction.

Those who are on more than one antipsychotic drug or other drug affecting sexual function like antidepressants and anti hypertensives. Substance abuse.

MATERIALS AND METHODS

the sample for this study is selected from out patient department, psychiatry, institute of mental health, chennai. it consists of 75 patients of schizophrenia meeting icd 10 criteria and who have attained clinical stability. and also 25 healthy volunteers from the care givers of the patient and staff of the hospital who were willing to partcipate in the study.so the total number of sample is 100.

This is cross sectional, hospital based study after getting the clearance from the local ethical committee clearance, the subjects were recruited for the study during january 2015 to june 2015 by purposive sampling technique. The sample was divided into four groups.

group1-----25 healthy volunteers

group2----25 patients on olanzapine.

group3----25 patients on quetiapine.

group4---25 patients on risperidone.

none of these drugs were not administered for the purpose of the study.after getting written consent, the patie nts who were maintaining remission with one of these tablets in the oral form of tablets were

enrolled into the study during their regular follow up.study related assessments were done on the same day of selecting the patients.

sample consists of both male and female patients between 18-40 years of age.

TOOLS USED;

1. Socio demographic data.
2. Clinical information sheet.
3. Brief psychiatric rating scale.
4. Changes in sexual functioning questionare.(csfq—male version)
5. Changes in sexual functionin g questionare.(csfq—female version).

Socio demographic data

Name

Age

Sex

Marital status

Education

Employment status

Monthly income

Type of family

Family history

Past history.

Clinical information sheet.

Diagnosis made, duration of illness, type of drug in which the patient is currently on, years maintaining clinical stability, daily dosage of drugs.

Brief psychiatric rating scale.

First published in 1962 as a 16-construct tool by Drs. John Overall and Donald

Gorham, the developers added two additional items, resulting in the 18-item scale used widely today to assess the effectiveness of treatment.

The Brief Psychiatric Rating Scale (BPRS) is a widely used instrument for assessing the positive, negative, and affective symptoms of individuals who have psychotic disorders, especially schizophrenia. It has proven particularly valuable for documenting the efficacy of treatment in patients who have moderate to severe disease.

The BPRS consists of 18 symptom constructs and takes 20-30 minutes for the interview and scoring. The rater should enter a number ranging from 1 (not present) to 7 (extremely severe). 0 is entered if the item is not assessed.

Remisson that is patient maintaining the clinical stability is defined as the patients scoring less than 4 in all items of BPRS.

CHANGES IN SEXUAL FUNCTIONING QUESTIONARE.

Changes in sexual functioning questionare (CSFQ) was developed with specific versions for males and females to assess sexual functioning in all domains of sexual response cycle.it was developed to be used in research and clinical settings.

Csfq-14 version for male and female has 14 items each.scoring is done by 0-5 marks per each item and adding the total score.

For males cut off point to measure sexual dysfunction is at or below 47.for females the cut off point is at or below 41.

This scale has good internal consistency, reliability.the response time for csfq-m and csfq-f is 5-10 minutes only.the alpha coefficient for csfq-f is 90 and for csfq-m is 89.over 85 studies have been done so far with csfq.ove 50 linguistic validated translations were available.

Statistical analysis.

1. **S**pss software session version 22.
2. Descriptive statistical analytic study.
3. Krusakal wallis test.
4. Chi square tests.

Ethical issues

1. Written informed consent was taken from all subjects and their care givers.only those subjects who agreed to be included after full explanation of the requirements of the study were recruited.
2. The information gathered during the course of the study was kept confidential but was shared with treating team if deemed beneficial for management of the patient.
3. All subjects had the right to withdraw from study at any point of time as per their will.
4. The treatment of the patients who refused to participate in the study or withdrew from the study after getting enrolled was not compromised.

RESULTS

Table-1

Total no of sample-100

Groups	Male	Female
Control group(G1)	13	12
Olanzapine(G2)	14	11
Quetiapine(G3)	16	9
Risperidone(G4)	15	10
TOTAL	58	42

TABLE-1 SHOWS THE TOTAL NO OF PERSONS PARTICIPATED IN THIS STUDY.OUT OF WHICH 25 ARE VOLUNTEER HEALTHY CONTROLS AND 75 PATIENTS OF SCHIZOPHRENIA, OUT OF WHICH 58 MALES AND 42 MALES.IN QUETIAPINE GROUP LEAST NUMBER OF FEMALES PARTICIPATED.

TABLE-2

Subtype of schizophrenia across the THREE drug groups.(N=75).

			DIAGNOSIS					
			CATATONIC SCHIZOPHRENIA	HEBEPHRENIC SCHIZOPHRENIA	PARANOID SCHIZOPHRENIA	SIMPLE-SCHIZOPHRENIA	UNDIFFERENTIATED SCHIZOPHRENIA	UNSPECIFIED
GROUP	CONTROL	25	0	0	0	0	0	0
	OLANZAPINE	25	4	1	12	0	4	4
	QUETIAPIN	25	3	1	12	2	2	5
	RISPERIDONE	25	4	1	11	0	5	4

FIG-1

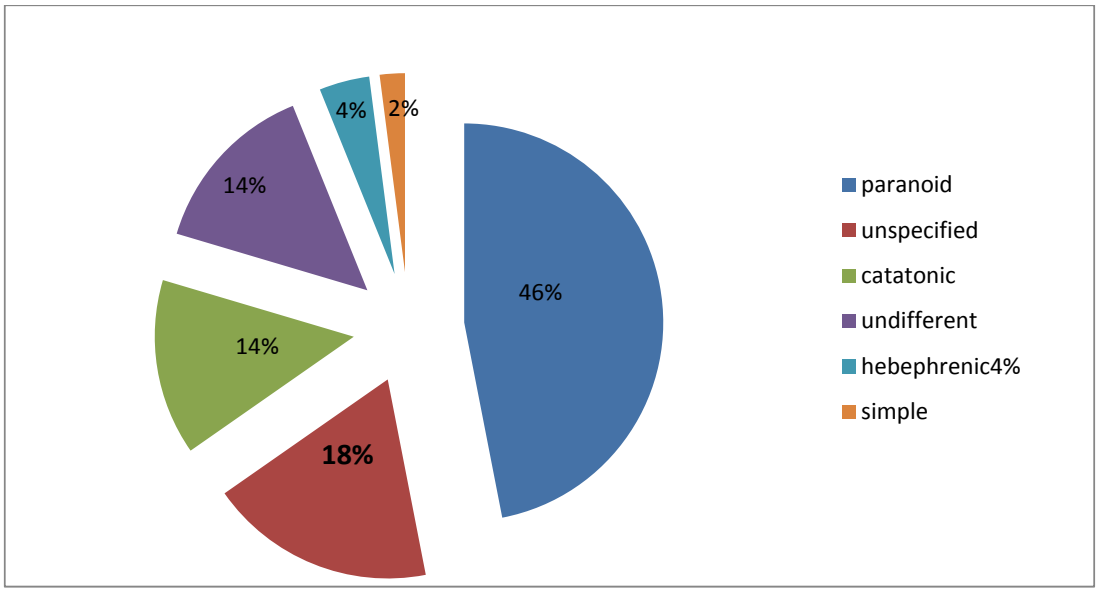


Table 2 and fig-1 shows distribution of diagnosis and subtypes of schizophrenia among the study sample, across three different groups. paranoid schizophrenia is top among the subtypes(46%).

Table-3

AGE DISTRIBUTION AMONG THE SAMPLE(N=100).

	AGE GROUP	NO OF PERSONS	PERCENTAGE %
AGE	20 TO 25	10	10.00%
	26 TO 30	22	22.00%
	31 TO 35	25	25.00%
	36 TO 40	43	43.00%

Fig- 2.

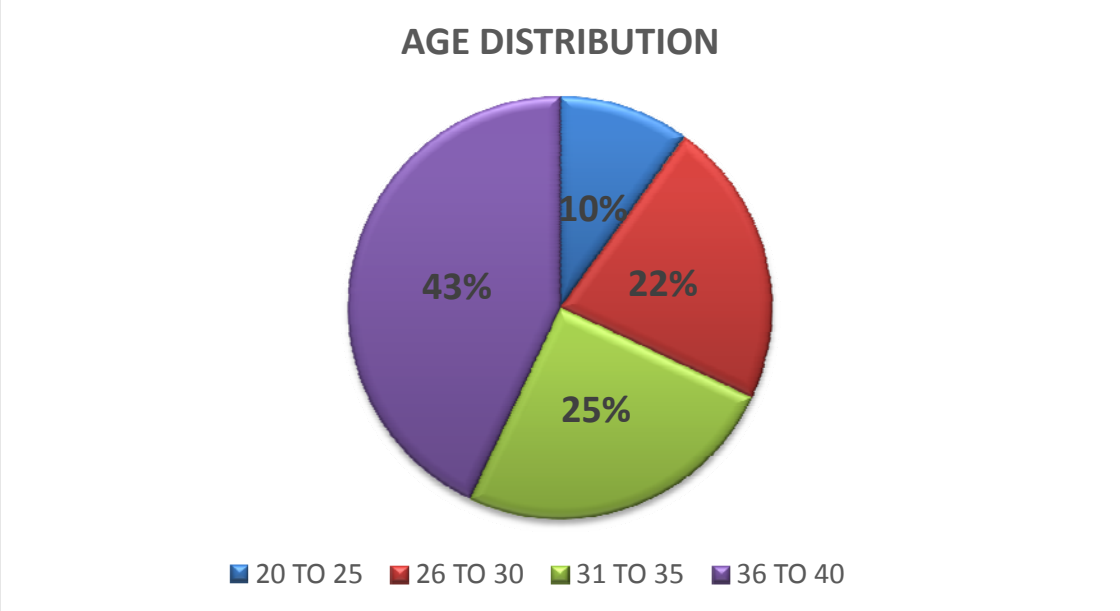


TABLE 3 and FIG2 SHOWS THE AGE DISTRIBUTION AMONG THE STUDY SAMPLE.(N=100).MOST OF THEM (43%) FALLS AGE GROUP BETWEEN 36-40.ONLY 10% OF THEM ARE AMON AGE GROUP 20 TO 25

TABLE -4

SEX DISTRIBUTION AMONG THE SAMPLE (N=100).

SEX DISTRIBUTION							
			GROUP				Total
			CONTROL G1	OLANZAPINE G2	QUETIAPIN G3	RISPERIDONE G4	
SEX	Male	Count	13	14	16	15	58
		% within SEX	22.4%	24.1%	27.6%	25.9%	100.0%
	Female	Count	12	11	9	10	42
		% within SEX	28.6%	26.2%	21.4%	23.8%	100.0%
Total		Count	25	25	25	25	100
		% within SEX	25.0%	25.0%	25.0%	25.0%	100.0%

FIG-3

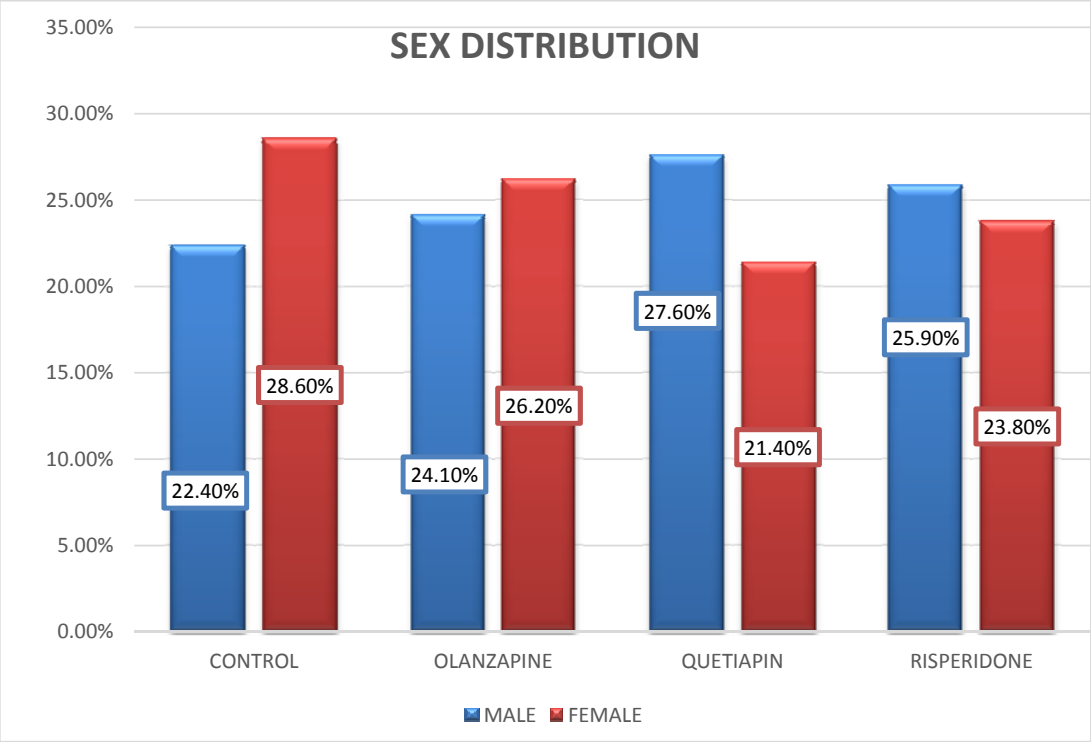
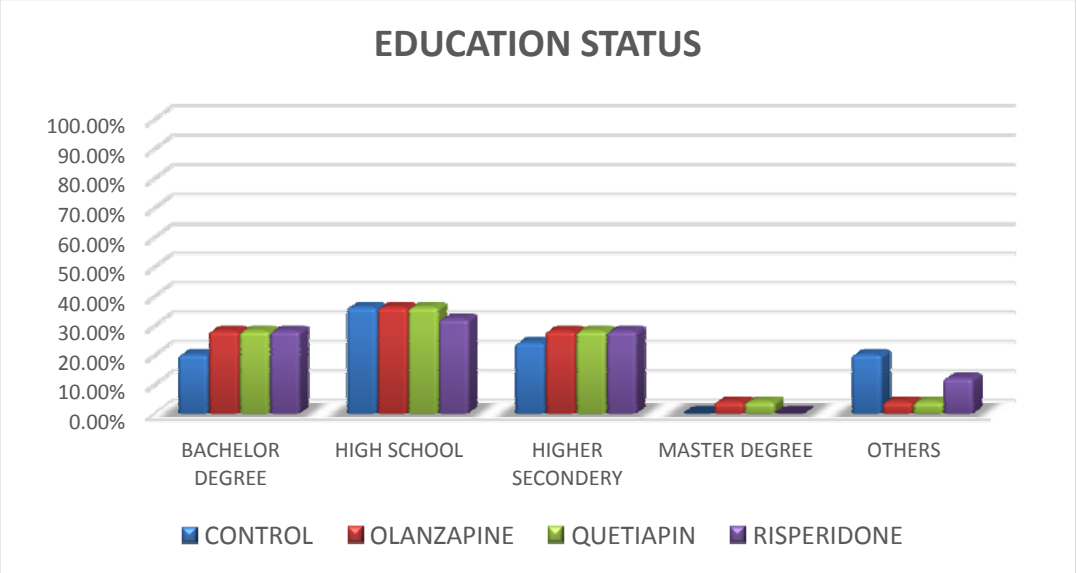


TABLE 5 LITERACY LEVEL

		EDUCATION				
		BACHELOR DEGREE (26%)	HIGH SCHOOL (35%)	HIGHER SECONDERY (27%)	MASTER DEGREE (2%)	OTHERS (10%).
GROUP	CONTROL	5	9	6	0	5
	OLANZAPINE	7	9	7	1	1
	QUETIAPIN	7	9	7	1	1
	RISPERIDONE	7	8	7	0	3

FIG-4.



Results shows out of 100 persons participated in the study 75 persons are suffering from schizophrenia.25 persons are volunteer healthy controls. totally 58 males and 42 females participated in this study.(table-1).among 75 schizophrenic patients, 35 patients were diagnosed as paranoid schizophrenia.3 hebephrenic and 2 simple schizophrenia patients also participated in the current study.(table-2.).

Table-3 shows age distribution of persons participated in this study.43% of persons participated in this study belong to age group of 36-40.10% 0f the sample belongs to age group 20-25.all other belong to age group of 25 –35.

Table-4 and fig-3 shows sex distribution among the sample.totally 58 males amd 42 females participated in this study.in olanzapine group about 11 females and quetiapine 9 females and in risperidone group about 10 females participated in our study.

Table -5 and fig-4 shows the literacy level of study groups.most of them had finished high school level (35%).27% have crossed higher secondary level.others(10%)include those below 10^{th} std.

Table - 6

DOMICILLIARY STATUS AMONG THE GROUPS

RESIDENCE	RURAL		URBAN	
	Count	N %	Count	N %
CONTROL	11	44.00%	14	56.00%
OLANZAPINE	13	52.00%	12	48.00%
QUETIAPIN	16	64.00%	9	36.00%
RISPERIDONE	12	48.00%	13	52.00%

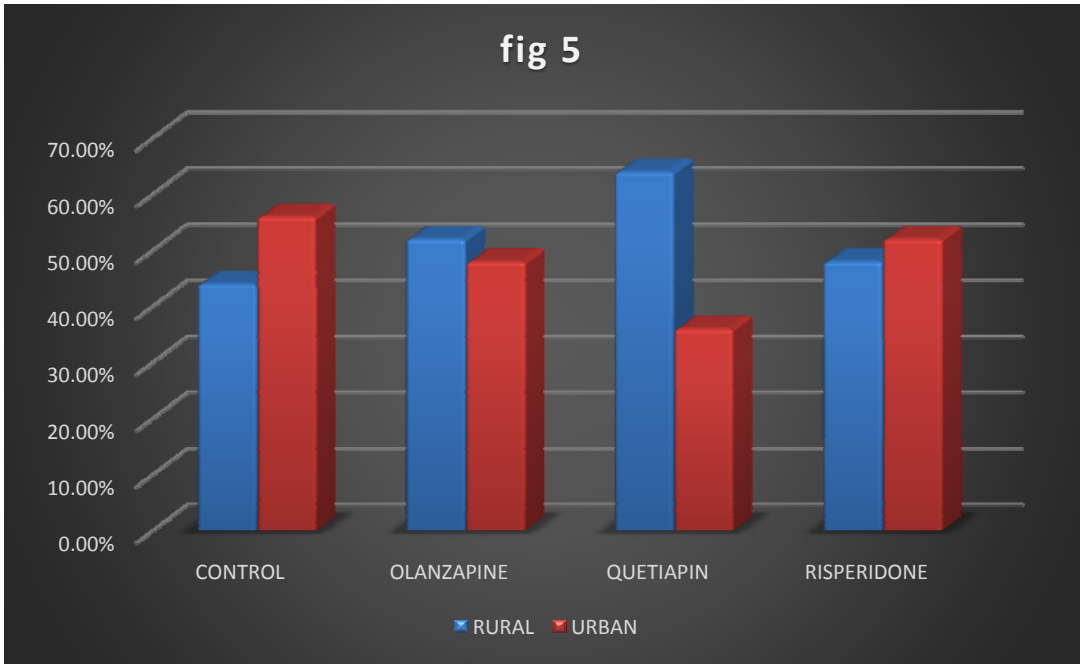


TABLE 6 AND CHART 5 SHOWS THE DISTRIBUTION OF THE PLACE OF RESIDENCE OF THE SAMPLE STUDIED.MORE OR LESS EQUALLY DISTRIBUTED.MORE SAMPLE FROM RURAL AREA (52%) AND OTHERS FROM URBAN AREA (48%)

TABLE -7 TYPE OF FAMILY (N=100)

NUCLEAR	JOINT	LIVING ALONE
61%	36%	3%

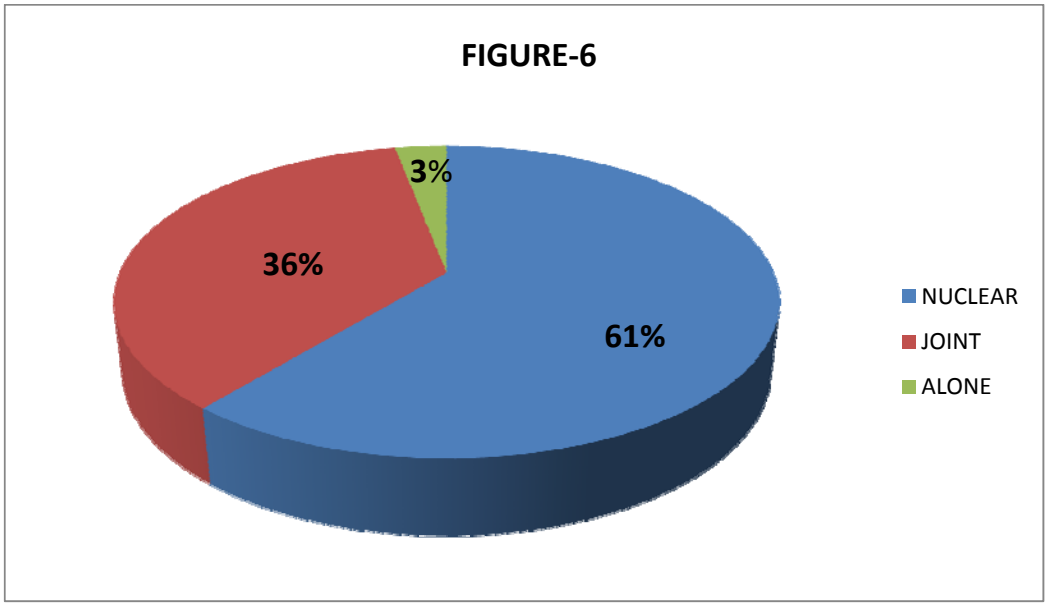


TABLE -7 SHOWS THE DISTIBUTION OF TYPE OF FAMILY AMONG THE STUDY SAMPLE. MOST OF THE SUBJECTS WERE FROM A NUCLEAR FAMILY. 3% OF THE SAMPLE WERE LIVING ALONE.

TABLE - 8

INCOME DISTRIBUTION AMONG STUDY SAMPLE(N=100)

		Count	N %
MONTHLY INCOME	LESS THEN 5000	29	29.00%
	5001 to 10000	57	57.00%
	10001 toO 15000	7	7.00%
	MORE THEN 15000	7	7.00%

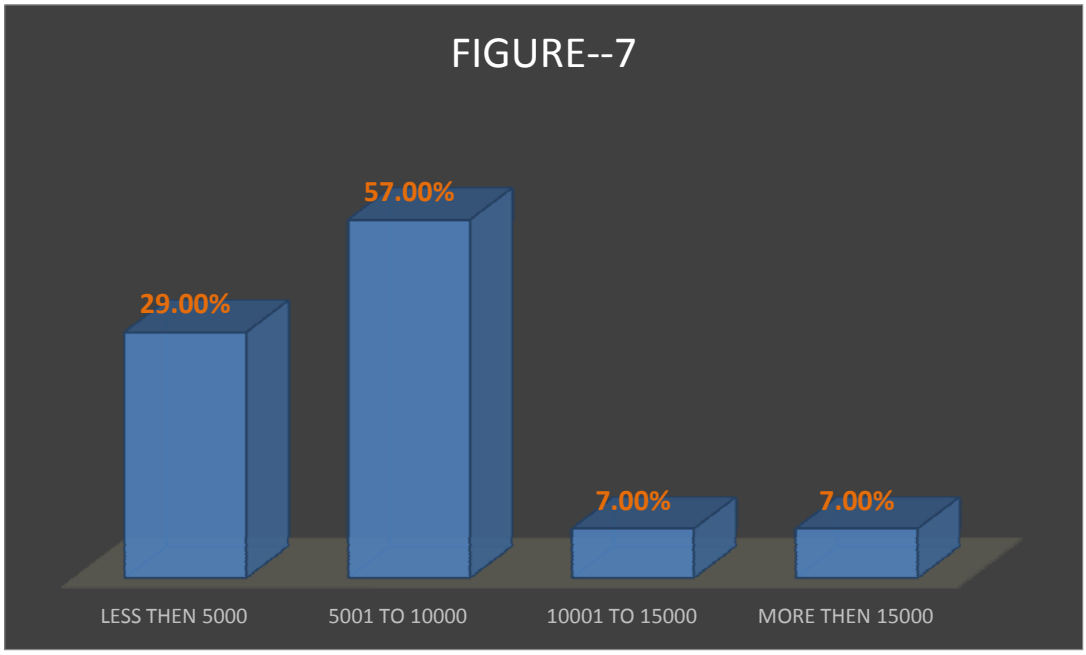


TABLE -8 AND FIGURE -7 SHOWS THE INCOME DISTRIBUTION OF THE SAMPLE.MOST OF THE SUBJECTS WERE IN THE MIDDLE INCOME GROUP.29% OF THE STUDY SAMPLE EARNED LESS THAN 5000 PER MONTH.

TABLE-9

CURRENT EMPLOYMENT STATUS AMONG STUDY GROUP (N=100)

EMPLOYMENT STATUS	NIL		YES	
	Count	N %	Count	N %
CONTROL	11	44.00%	14	56.00%
OLANZAPINE	14	56.00%	11	44.00%
QUETIAPIN	10	40.00%	15	60.00%
RISPERIDONE	12	48.00%	13	52.00%

FIG—8

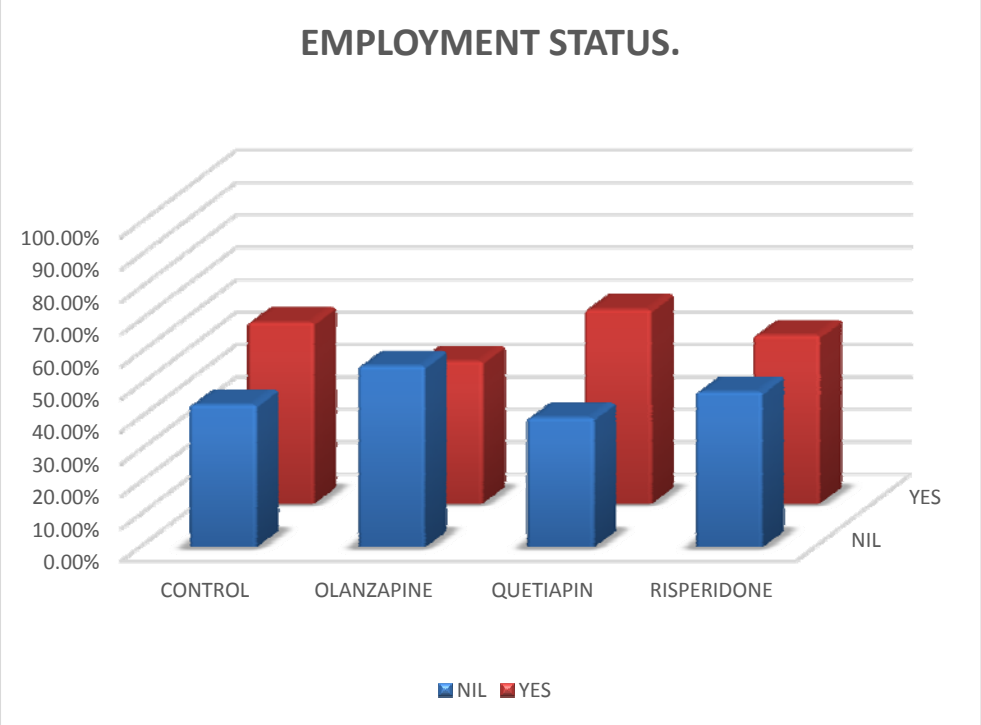


TABLE-10

FAMILY HISTORY OF PSYCHIATRIC ILLNESS

YES	NO
25%	75%

25% OF SAMPLE HAD FAMILY HISTORY OF PSYCHIATRIC ILLNESS.

FIG-9

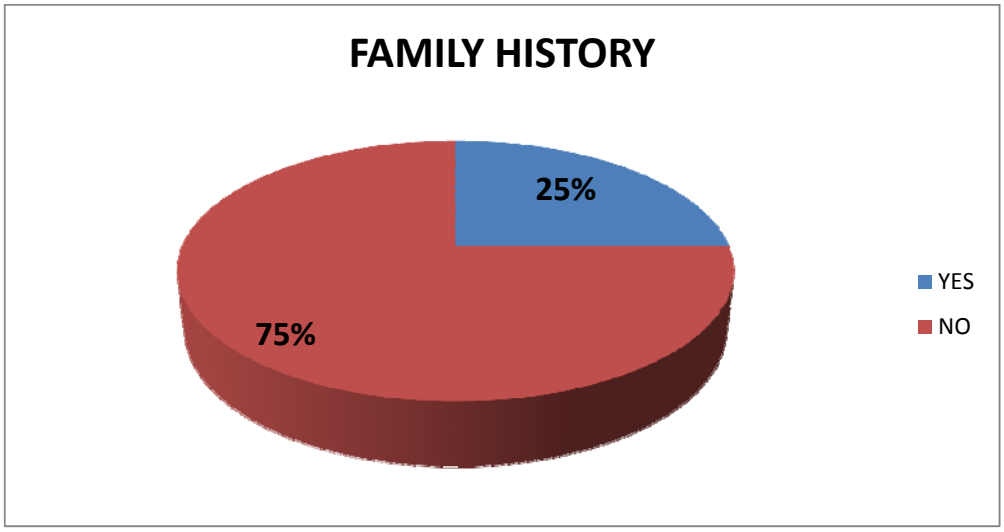


TABLE-10 SHOWS AND FIG-9. 25% OF SAMPLE HAD PSYCHIATRIC ILLNESS.75% OF SAMPLE DID NOT SHOW ANY PSYCHIATRIC ILLNESS

Table-11

MEAN AGE OF FOUR GROUPS

CONTROL GROUP MEAN AND SD	OLANZAPINE GROUP MEAN AND SD	QUETIAPINE GROUP MEAN AND SD	RISPERIDONE GROUP MEAN AND SD
31.5 ± 5.3	**33.4 ± 5.5**	**34.0 ± 5.9**	**33.9 ± 5.2**

OVER ALL MEAN FOR AGE-- 33.2 + 5.4

THE MEAN AGE IS 33.2 IN OUR STUDY, AS SAMPLE CONTAINS THE AGE GROUP OF 18 TO 40.AND ALL OF THEM ARE MARRIED AND WHO ARE SEXUALLY ACTIVE.

TABLE 12--MEAN DAIL Y DOSES OF THE THREE DRUGS

OLANZAPINE (MG)	QUETIAPINE(MG)	RISPERIDONE(MG)
12.8 ± 4.8	**112 ± 43.4**	**5.6 ± 2.0**

THE MEAN DAILY DOSES OF THREE DRUGS WERE FOUND TO BE 12.8(4.8) MG, 112(43.4) MG, AND 5.6(2.0) MG FOR OLANZAPINE, QUETIAPINE, AND RISPERIDONE, RESPECTIVELY. THEIR MEAN CHLORPROMAZI NE EQUIVALENT DOSES WERE 256 MG, 149.3MG, AND 280MG FOR OLANZAPINE, QUETIAPINE AND RISPERIDONE RESPECTIVELY.

TABLE—13. MEAN CHLORPROMAZINE EQUIVALENT DOSES FOR THREE DRUGS

OLANZAPINE	QUETIAPINE	RISPERIDONE
256MG	149.3MG	280MG

TABLE—14. SEXUAL DYSFUNCTION IN DESIRE DOMAIN ACROSS STUDY GROUPS

DESIRE * GROUP							
			GROUP				Total
			CONTROL	OLANZAPINE	QUETIAPIN	RISPERIDONE	
DESIRE	YES	Count	7	16	12	18	53
		% within DESIRE	13.2%	30.2%	22.6%	34.0%	100.0%
		% within GROUP	**28.0%**	**64.0%**	**48.0%**	**72.0%**	53.0%
	NO	Count	18	9	13	7	47
		% within DESIRE	38.3%	19.1%	27.7%	14.9%	100.0%
		% within GROUP	72.0%	36.0%	52.0%	28.0%	47.0%
Total		Count	25	25	25	25	100
		% within DESIRE	25.0%	25.0%	25.0%	25.0%	100.0%
		% within GROUP	100.0%	100.0%	100.0%	100.0%	100.0%

Table - 15

Chi-Square Tests			
	Value	df	p VALUE
Pearson Chi-Square	11.361[a]	3	0.010

Table-16 - AROUSAL/ERECTION DYSFUNCTION

ERECTILE/AROUSAL DYSFUNCTION		GROUP				Total
		CONTROL G1	OLANZAPINE G2	QUETIAPIN G3	RISPERIDONE G4	
YES	Count	6	14	11	16	47
	% within ERECTION	12.2%	28.6%	22.4%	34.04.%	100.0%
	% within GROUP	**24.0%**	**56.0%**	**44.0%**	**64.0%**	49.0%
NO	Count	19	11	14	7	51
	% within ERECTION	37.3%	21.6%	27.5%	13.7%	100.0%
	% within GROUP	76.0%	44.0%	56.0%	28.0%	51.0%
Total	Count	25	25	25	25	100
	% within ERECTION	25.0%	25.0%	25.0%	25.0%	100.0%
	% within GROUP	100.0%	100.0%	100.0%	100.0%	100.0%

Table - 17

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.856	3	.0125

Table-14 and 15 shows the comparison of impairment of sexual desire on four groups, among the drug groups, more impairment in desire is seen in risperidone group(72%). And olanzapine(G2) shows 64% impairment in sexual desire.and 48% of patients in quetiapine group had shown impairment in libido.among the control group 28% showed impairment in libido. We got a significant pvalue of 0, 006 in this chisquare test.

Table 15 and 16 shows impairment in erection and arousal among the study group taking atypical antipsychotics like risperidone, olanzapine and quetiapine, among the groups more dysfunction is seen in risperidone group (64%) and olanzapine showing 56% impairment in arousal and erection domain of sexual stages.quetiapine shown less imapairment when compared to olanzapine and risperidone.it showed about 44% impairment in arousals.among the control group, we found about 24% impairment.

Table—18 impairment in ejaculation /

orgasm among the study groups

EJECULATION / 0RGASM* GROUP			GROUP				Total
			CONTROL	OLANZAPINE	QUETIAPIN	RISPERIDONE	
EJACULATION	YES	Count	5	11	8	11	35
		% within EJACULATION	14.3%	31.4%	22.9%	31.4%	100.0%
		% within GROUP	20.0%	44.0%	32.0%	44.0%	35.0%
	NO	Count	20	14	17	14	65
		% within EJACULATION	30.8%	21.5%	26.2%	21.5%	100.0%
		% within GROUP	80.0%	56.0%	68.0%	56.0%	65.0%
Total		Count	25	25	25	25	100
		% within EJACULATION	25.0%	25.0%	25.0%	25.0%	100.0%
		% within GROUP	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE-19

Chi-Square Tests			
	Value	df	p VALUE
Pearson Chi-Square	4.352[a]	3	0.226

TABLE 20. Impairment in Sexual Pleasure

PLEASURE * GROUP							
			GROUP				Total
			CONTROL	OLANZAPINE	QUETIAPIN	RISPERIDONE	
PLEASURE	YES	Count	6	14	14	17	51
		% within PLEASURE	11.8%	27.5%	27.5%	33.3%	100.0 %
		% within GROUP	24.0%	56.0%	56.0%	68.0%	51.0%
	NO	Count	19	11	11	8	49
		% within PLEASURE	38.8%	22.4%	22.4%	16.3%	100.0 %
		% within GROUP	76.0%	44.0%	44.0%	32.0%	49.0%
Total		Count	25	25	25	25	100
		% within PLEASURE	25.0%	25.0%	25.0%	25.0%	100.0 %
		% within GROUP	100.0%	100.0%	100.0%	100.0%	100.0 %

TABLE-21

Chi-Square Tests			
	Value	df	p VALUE
Pearson Chi-Square	10.684[a]	3	0.014

TABLE-22 Over all sexual impairment among study groups

SEXUAL DYSFUNCTION * GROUP							
			GROUP				Total
			CONTROL	OLANZAPINE	QUETIAPIN	RISPERIDONE	
SEXUAL DYSFUNCTION	YES	Count	5	13	12	15	45
		% within TOTAL SCORE	11.1%	28.9%	26.7%	33.3%	100.0%
		% within GROUP	20.0%	52.0%	48.0%	60.0%	45.0%
	NO	Count	20	12	13	10	55
		% within TOTAL SCORE	36.4%	21.8%	23.6%	18.2%	100.0%
		% within GROUP	80.0%	48.0%	52.0%	40.0%	55.0%
Total		Count	25	25	25	25	100
		% within TOTAL SCORE	25.0%	25.0%	25.0%	25.0%	100.0%
		% within GROUP	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE-23

Chi-Square Tests			
	Value	**df**	**p VALUE**
Pearson Chi-Square	9.172[a]	3	0.027

Table - 24

comparison of sexual dysfunction among both sexes

CONTROL GP (G1)		OLANZAPINE (G2)		QUETIAPINE (G3)		RISPERIDONE (G4).	
MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
15.38 %	25.00 %	57.14 %	45.45 %	50.00 %	44.44 %	66.67 %	50.00 %

Table-18 shows impairment of ejaculation and orgasm among the four study groups.more impairment of ejaculation is seen in both olanzapine and risperidone group.quetiapine and control group shares 32% and 20% respectively.as other domains risperidone causes more impairment in this domain also. We got a pvalue of 0.226 which is not significant.

Table—20 shows about the impairment in sexual pleasure among the study groups.68% imapairment is seen in risperidone group where as quetiapine and olanzapine causes equal impairment(56%) in causing imapairment in patients seeking sexual pleasure with a significant pvalue.(0.014).

Table-22 and 23 shows comparison of overall sexual impairment among the study groups, risperidone (60%) being the top among the sexual impairment causing drug among the study groups and quetiapine being the least(48%) olanzapine causes 52% impairment among its patients. Among the controls we got 20% overall impairment.p value 0.027 which is significant.

TABLE -24 shows comparison of overall impairment or sexual dysfunction among the four groups across both sexes among the control group females showed more sexual impairment(25%) when compared to males.(15.38%).among the risperidone(G4) group males showed 66.67% and females 50% impairment.among the quetiapine group(G3), males showed 50% impairment and females 44.44% impairment in overall sexual impairment. Olanzapine (G1) group showed 57.14% impairment in males and 45.45% impairment in females.

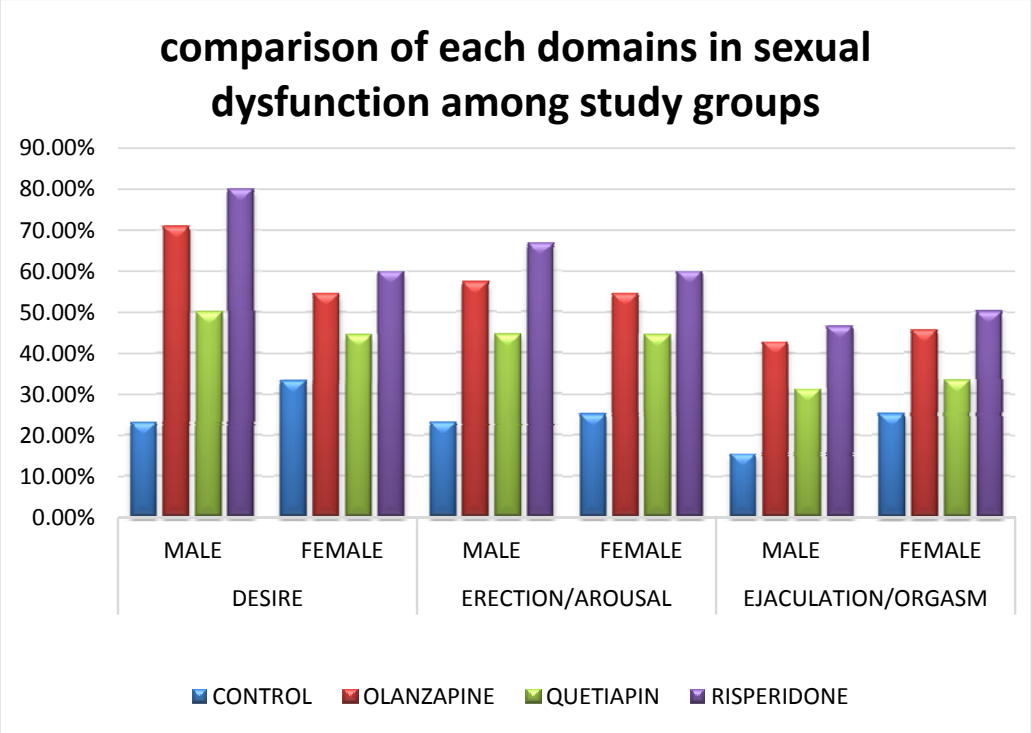
Table-25 shows comparison of sexual dysfunction in each domains on both sexs across four study groups.80% of males on treatment with risperidone has lost the desire for sex.60% of females on same group(G4) had lost the libido.i.e loss of sexual desire.in olanzapine group (g2) 71.0% of males and 54.54% of females reported loss of sexual desire. In quetiapine group (g3) 50% of males and 44.44% of females reported loss of desire.in control group(g1) 23.03% of males and 33% of females

reported loss of libido.in erection or arousal domain risperidone group(g4) reported more impairment in arousal.males(66.66%) and 60% in females. In quetiapine group(g3) 43.75% of males and 44.35% of females complained loss of arousal. Among olanzapine group(g2) 57.14% of males and 54.54% of females reported loss of arousal.in ejaculation risperidone and olanzapine shared almost equal impairment where as quetiapine showed least.

Table-25 comparison among each domains across both sexs

GROUP	**IMPAIRMENT IN** DESIRE/LIBIDO		**IMPAIRMENT IN** ERECTION/AROUSAL		**IMPAIRMENT IN** EJACULATION/ORGASM	
CONTROL G1	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
	23.07% (3)	33.33% (4)	23.03% (3)	25.00% (3)	15.38% (2)	25.00% (3)
OLANZAPINE G2	71.0% (11)	54.54% (5)	57.14% (8)	54.54% (6)	42.85% (6)	45.45% (5)
QUETIAPINE G3	50.00% (8)	44.44% (4)	43.75% (7)	44.43% (4)	31.25% (5)	33.33% (3)
RISPERIDONE G4	80.00% (12)	60.00% (6)	66.66% (10)	60.00% (6)	46.66% (7)	50.00% (5).

Fig--10



DESIRE: The chi-square statistic is 1.6099. The *p*-value is.657157. The result is *not* significant at $p<.05$

ERCTION: The chi-square statistic is 0.3516. The *p*-value is.950052. The result is *not* significant at $p<.05$

EJACULATION: The chi-square statistic is 0.6883. The *p*-value is.875953. The result is *not* significant at $p<.05$.

Table-27—comparison of percentage of patients maintaining clinical stability among three groups

DURATION OF TREATMENT/CLINICAL STABILITY	OLANZAPINE	QUETIAPINE	RISPERIDONE
0-6 MONTHS	7 (28%)	9 (36%)	9 (36%)
6MONTHS- 1 YR	12(48%)	13 (52%)	10 (40%)
1YR—1 1/2 YR	3(12%)	1 (4%)	3(12%)
2 YRS	3(12%)	2 (8%)	3 (12%).

Table-27 shows that 48% of patients are maintaining clinical stability for the period of 6 months to 1 year in olanzapine group.52% of patients fom quetiapine group falls in 6months to 1 year. Only 6 patients in risperidone group. 3patients in quetiapine group and 6 patients olanzapine group are maintaining clinical stability beyond 1 year.

Table-28 shows effects of duration of treatment and sexual dysfunction

	olanzapine	quetiapine	Risperidone
0-6 months	14%	33.3%	44.4%
6months -1yr	50%	53.8%	60%
More than 1 yr	100%	66%	83.3%

The chi-square statistic is 3.6216. The p-value is.459633. The result is not significant at p <.0

Table- 28 shows the effect of duration of treatment on sexual dysfunction. Patients on treatment more than 1 year among three groups showed 66% to 100% sexual impairment. More the years on drugs showed more sexual dysfunction.although among the groups p value is not significant sexual dysfunction more dependent on duration of treatment.

DISCUSSION

We cannot make absolutely a person is suffering from sexual dysfunction**.** it may vary from person to person, time to time. Even a normal person can exhibit occasional dysfunction moment. They may show some variablity in frequency of sexual desire and activity.

Sexual functioning also depends upon the progression of age because of harmonal changes most of the previous studies have included the age criteria of the sample as 50 and also to 60 in some studies.as far as our study is concerned we have set the age criteria upto the age of 40 only. and also we have included females also in this study as the previous study selected the scale suitable for only males. so we have selected a appropriate scale for assesing the sexual dysfunction in females too.

As far as the scale is concerned we have selected csfq (changes in sexual functioning questionare) seperately has 14 items for males and 14 items for females.

It has good reliablity and internal consistency the previous study done by nagaraj and team(49) have used sexual functioning questionare which has mostly true or false questions and some questions may not be suitable for females of our culture. proper scoring cannot also be done

from this sfq.so we have decided to give csfq which has proper scoring by giving grading marks from 1 to 5.

It has been clearly given the scoring for each domains like pleasure, desire, erection or arousal, ejaculation or orgasm with cut off values as we know women of our culture cannot speak openly about sexual issues, we used female nursing staffs and post graduates to assess their sexual function.

Assesment of sexual dysfunction.there are various scales to measure the sexual activity various studies have utilised various scales for measuring sexual activity in various domains like desire, pleasure, arousal and erection, ejaculation and orgasm.

The various scales used in various studies are

Self rating questionare having 6 items for men, 6 items for women have been used in the study done by Ghadirian et al. 1982 (16).

Sexual functioning questionare used by burke et al, 1994 (38) and wirshing et al 2002(26) had 15 items that too only for men, so they studied sexual dysfunction only in men.

Modified sexual functioning questionare was the other one used by smith et al2002 (39).which had separate 22 items for men 26 items for women.

Sexual behavior questionare having 11 items for men and 12 items for women have been used by mc.donald team(17).

There are other various scales that have been used in various studies.

Clayton 2002(55) describes criteria for selecting scales for assessment of sexual dysfunction arizona sexual experience scale is the one which had only 5 items he also says that changes in sexual functioning questionare is the appropriate scale which has good internal consistency and good reliability even treatment resistance patients can be questioned with help of this scale for assessing sexual dysfunction.(Kelly et al 2003).(44).

Csfq -14 has been used in this study which has separate 14 questions for men and 14 questions for women.

When we see the socidemographic profile of this study, most of them have crossed high school level, and illeterates constituted only less

than 9 %.family income of most of them fell between rs.5000 to 10, 000. (about57%).most of them occupation are agricultural farming and self employed.all of them are married about 43%of the study falls in the age group of 36 to 40.

Among 100 samples, 25 of them are healthy volunteers and 75 schizophrenic patients totally we had 58 males and 42 females…among the patients we had 32 females and 43 males majority of them are diagnosed as paranoid schizophrenia (46%).out of 75 patients 15 patients were maintaining clinical stability beyond one year. Rest of them are maintaining stability less than one year. They were assessed by rating with bprs scale. Remission was defined by less than score of 4 in all items.

When we compare the sample size to the previous studies, the total sample size in our study is 100, where as the study done by anilkumar.nagaraj and team it was 102, and there was no significant difference in total sample size.we have divided into four groups as it was done in same study.

When we go to previous studies, the total sample in study done by knegtering et.al(27) they have selected only 49 patients with schizophrenia and study done by melkersson et al(45) they have done their study on 75 patients with schizophrenia.

Montejo and colleagues (46) had done their study on 82 patients with schizophrenia or schizophrenifom disorders, but they have studied only the sexual.

Side effects of quetipine alone.

A large sample size was taken and studied by Byerly MJ, Nakonezny PA, Bettcher BM, during 2006(28)

They have studied in a total sample of 238 patients with schizophrenia and studied the sexual side effects of risperidone.quetipine and olanzapine. It was also

A cross sectional study.

Overall sexual impairment

Over all impairment includes those who have scored less than or at cut off level 47 for males and less than or at cut off point 41 for females.

Study done by hallward and Ellison (56) have that 10-15% of western normal population also suffer from sexual dysfunction.

In our study overall sexual impairment is seen in 20% of healthy volunteers I, e control group.15.38% of males from control group scored below cut off points and they showed over all sexual impairment.and

interestingly 25% of females too showed overall sexual impairment because mostly we say sexual dysfunction is common in men than women.

Study done by smith et al (39) with sexual functioning questionare recognised sexual dysfunction in 17% of the normal population i.e people without any illness or on any drugs.

In another study done by anil kumar nagaraj and his team(49), they have found 23% of healthy volunteers were suffering from sexual dysfunction.

So comparing other studies the sexual dysfunction amon g the healthy volunteers remain more or less same as that of previous studies.

In our study it has been found that risperidone is associated with most frequent overall sexual impairment (60%). Compared to olanzapine (52%) and quetiapine(48%) and it was found statistically significant.

Risperidone was found associated with 60% of overall sexual impairment, in males 66.67% and in females it is around 50%.

Olanzapine has constituted 52% of overall sexual impairment, , 57.14% of males showed sexual impairment with olanzapine and 45.45% of females who are taking olanzapine showed sexual dysfunction.

In our study, quetiapine had shown less overall sexual dysfunction when compared to other drugs. It had caused 48% of sexual dysfunction. 50% of males taking quetiapine showed sexual dysfunction and 44.44% females showed overall sexual impairment.

Melkersonn studied about the prolactin elevation due to atypical antipsychotics.he concluded that 89% percent of patients showed elevated prolactin and showed over all sexual dysfunction.(45). And 24% patients on olanzapine also showed prolactin elevation and sexual dysfunction.

The study done by Kelly DL and conley 2006(44) showed over all sexual impairment 42% percent on patients treated with risperidone and 50% patients treated with quetiapine this study used the same scale csfq used in the current study interesting feature in this study is quetiapine had overtaken risperidone in the frequency of sexual dysfunction. this showed or proved that only prolactin elevation is not the cause for sexual dysfunction, there are also other mechanisms driven by antipsychotics for causing sexual dysfunction.

Another recent study done by byerly and his team(28), it was a large study done with Arizona sexual experience scale for assessing sexual function have shown similar type of overall sexual impairment compared to our study. It compared same quetiapine, olanzapine, and risperidone and showed that quetiapine group showed a slight lesser

degree of sexual dysfunction although it differed significantly only with olanzapine group.

Knegtring and his team (27) has studied in 49 patients with schizophrenia comparing sexual function with risperidone and quetiapine and has shown that

50% of sexual dysfunction with risperidone and only 16% of patients on quetiapine showed sexual dysfunction.the scale sexual functioning questionare was used by him for his study.

Bobes and colleagues (43) had done their study during 2003 over 636 patients with schizophrenia.he had done his study with four drugs including haloperidol along with quetiapine, risperidone, and olanzapine.he reported that 18.3%percent of patients on quetiapine, 43.2% patients on risperidone showed sexual dysfunction and 35.3% patients on olanzapine showed sexual dysfunction. Lesser sexual side effects due to quetiapine was presumed to be due to shortterm treatment.

In the study done by wirshing (26) comparing typical and atypical antipsychotics reported 71% sexual dysfunction is caused by risperidone.

The recent study done by anilkumar nagaraj and his team (49) done on 102 patients with schizophrenia assessed with sexual functioning questionare used by burke et al team, and they reported sexual

dysfunction 96% in patients treated with risperidone and olanzapine group showed 90% sexual dysfunction and 88% with quetiapine. This study was only done on male patients and age criteria also play important role they have included upto age group of 50.it also does not studied extensively about the effect of duration of treatment on sexual dysfunction.

But in our study, we have taken both males and females and included the samples restricted to the age group upto 40 only to avoid biases.and also studied about the effect of duration of drug intake and their effect on sexual dysfunction.

In our study we have got significant change with quetiapine showed less sexual dysfunction when compared with olanzapine and risperidone.when compared with females, males showed more sexual dysfunction over females in all three study groups.

DESIRE

Impairment in desire is one of the commonest reported sexual dysfunction among all medication groups in the current study**.**

It is very difficult to assess the changes in libido caused by psychotrophic medications. Because several factors has influence over libido.

Even during the course of psychiatric illness the patient may have significant reduction in sexual interest. In symptomatic cases of schizophrenia with predominant negative symptoms, the frequency of sexual fantasy is much reduced to masturbation.(56).every stages in sexual activity has influence over other stages failure of erection affects a person' desire. A patient's socio economic status and quality of life also influence his libido.

In a study conducted by melkersson(45).he has reported that libido was the most frequently complained symptom of sexual dysfunction with both haloperidol(58%) and clozapine(50%).

In another study done by atmaca et al(47), they have reported that impaired libido (44%) was the most common sexual dysfunction caused by risperidone he also concluded that quetiapine causes impairment of libido in 31.6% of males and 28.6% in females

Gharidian and collegues (16) also have reported sexual dysfunction caused by neuroleptics especially impaired sexual desire, significant amount of loss of libido has been reported caused by risperidone and quetiapine.

Anilkumar nagaraj team (49) has reported that impaired libido is seen in patients treated with risperidone (80%)., 72% with quetiapine, and 78% of impaired libido in quetiapine group.

In our study more impairment in desire is seen with risperidone group(72%), and olanzapine group showed 64% of loss of desire, while quetiapine group showed 48% impairment in desire. Out of which 80% of males, 60% of females of risperidone group complained loss of desire.71% of males.54.54% of females in olanzapine group complained impairment in libido.and 50% of males in quetiapine group and 44.44% of females reported loss of desire in same group.at the same time 28% of control group, 23.07% of males and 33.33% of females from healthy volunteers also reported loss of sexual desire.

We get a significant p value of 0.010 as far as desire is concerned, we get significant less complaints about loss of desire in quetiapine compared to risperidone and olanzapine.our study show results more or less comparable to previous studies. It is always difficult to say that the drugs alone are responsible for higher rate of impaired sexual desire in this study.we cannot exclude the role of illness also playing important role in impairment of libido experienced by the patients. Elevated prolactin by antipsychotics also play important role in causing loss of sexual desire.

Arousal /erection

Erectile dysfunction was the second most common sexual adverse effect complained by patients on psychotrophic medications next to loss of libido.among the three drugs again risperidone was found associated with erectile difficulties.about 64%of patients complained erectile dysfunction, among which males about 66.66% and females about 60% complained arousal problems.

In olanzapine group erectile /arousal difficulties were seen in 56% of patients.among which 57.14% of males and 54.54% of females reported erectile dysfunction and arousal difficulties.among the control group, 23.03% of males and 25% of females complained arousal and erectile dysfunction.

Many studies have reported desire to be the most common sexual side effect due to antipsychotics.some studies also have inferred that erectile dysfunction also has equal common side effect compared to libido.because of availability of procedures like measuring nocturnal tumescence and penile plethysmography it had become easier to measure and quantify erectile dysfunction compared to libido.further more, it was easier for the patient to appreciate and complain his erectile difficulties compared to diminished libido.we got a significant p value of 0.006

comparing three atypical antipsychotics.quetiapine differed significantly from both risperidone and olanzapine.

In study done anilkumar.nagaraj(49) and his team have reported 50% erectile dysfunction due to olanzapine, 40% with risperidone and quetiapine showing 36% of arousal problems.and found it was not statistically significant.comparing our study with this study we have found little increase in quetiapine and olanzapine group but gross difference with risperidone, as it showed 72% of arousal and erectile problems.although patients had significant erection they are not able to maintain the erection so that they have pleasure in sex.because of this problems most of them complained they are not able to achieve sexual pleasure as previously before starting the psychotropic medications.

Study done by mc Donald(17) he has concluded that 52% arousal difficulties in both males and females.it was conducted as nithdsale schizophrenic survey conducted in schizophrenic patients on typical and atypical antipsychotics.he found no difference between them.

Gharidian and colleagues (16) have reported 41% patients of schizophrenia reporting erectile difficulties. And study done by scherbaum (4c) have reported 47% of erectile dysfunction by atypical antipsychotics.

Another study done on Indian population done by nagaraj a, k and his team(57), have reported erectile dysfunction 53% with typical antipsychotics and 31% with atypical antipsychotics and it differed significantly(p=0.025).however in this study no comprehensive questionare was used.the tool used in this study for assessment is UKU rating scale.when comparing erectile dysfunction with other studies we have found in respect with quetiapine and olanzapine it falls in the range that was reported in earlier studies but with risperidone it was found higher.

EJACULATION/ORGASM.

In majority of the studies orgasmic and ejaculatory adverse effects were less commonly reported when compared to erection and libido problems caused by antipsychotics that too especially with atypical antipsychotics.all most each sexual stage depends upon other stages of sexual stages.mostly ejaculation problems are associated with erection problems so it makes us difficult to assess the ejaculatory problems.even though a person's orgasmic capacity is intact, he may not ejaculate and experience orgasmic joy as he cannot achieve complete erection.this limitation could not be explained in our study too.

When compared to libido and erectile dysfunction, ejaculatory imapairment was found less in our study.about 44% patients belonging to risperidone group, and 44% on olanzapine group, 32% in quetiapine group and 20% belonging to control group showed ejaculatory and orgasmic difficulties.no significant value was obtained between the groups.

Among olanzapine group, 42.85% 0f males and 45.45% of females reported ejaculatory or orgasmic qualities.females were found slightly higher than males.

In quetiapine group, 31.25% of males and33.35% of females exhibited orgasmic and ejaculatory problems.

Among the control group, 15.38% of males and 25% of females exhibited orgasmic difficulties.when we see in all four groups ejaculation and orgasmic problems were noted slightly higher in female groups than males.

Quetiapine caused less problems when compared to risperidone and olanzapine., both have caused almost equal problems.

In the study done by anilkumar.nagaraj team(49), they have reported ejaculation impairment in 32% of patients on risperidoneand

quetipine and 27% in olanzapine group, when compared to present study this values were found lesser.

Wirsching and his team(26) had reported ejaculatory difficulties in 86% of patients on risperidone compared to clozapine 20%.but the sample size was too small and a type2 error was clearly evident.

Kelly and his team(44) have reported that patients on quetiapine had less impairment in orgasmic and ejaculation qualities compared to risperidone and fluphenazine.but the patients were receiving drugs only for 12 weeks.

Sexual pleasure

When we inquired about the sexual pleasure obtained before and after taking antipsychotics, 68% patients on risperidone group have reported that their sexual pleasure has decreased to a extent after consuming drugs, and 56% in both olanzapine and quetiapine group have reported that they are not able to achieve sexual pleasure which they got previously before taking drugs.

Effects of duration of treatment.

About 28% patients maintaining clinical stability for 6 months in olanzapine group, and 36% in both quetiapine and risperidone groups participated in this study. About 48% in olanzapine group.and 52%in quetiapine group and 40% in risperidone goup were maintaining clinical stability for 6 months to 1 year.

About 6% of patient in olanzapine group and 3% in quetiapine group and 6% in risperidone were maintaining clinical stability.no statistically significant value got on effect of duration of treatment on sexual dysfunction.among the groups there were no difference found.but clinically more the duration of treatment more the sexual impairment were seen.among 70 to 80% of patients who were on treatment for more than 1 year have exhibited more sexual dysfunction.

Only 14% of patients on 0- 6 months treatment on olanzapine showed sexual dysfunction.but 100% of patients on olanzapine more than 1year showed sexual impairment.

Only 33.3% of quetiapine group showed sexual dysfunction within 6 months of treatment but 66% of patients on quetiapine for more than

1yr treatment showed sexual dysfunction.almost it doubled within 1 year .

treatment.in case of risperidone 44.4% showed impairment within 6 months but 83% showed whentreatment goes beyond 1 year. So more the duration of treatment more the sexual dysfunction is. No previous studies had extensively studied about the durational effect on sexual dysfunction.

CONCLUSION

The results of this study allow some conclusion to be made as to which atypical antipsychotics is markedly and significantly safer than other as far as sexual side effects are concerned.

Comparing to risperidone and olanzapine, quetiapine showed significant lower sexual side effects males in this study have shown slightly higher sexual side effects when compared to females as it also Did not differ significantly.

As each stage of sexual function depends upon other stages, it is difficult to say certainly this drug can cause impairment in certain domain of sexual stage. Desire is the commonest sexual side effect to get impaired in treatment with atypical antipsychotics.

As there are only very limited studies in Indian culture, however in future, such a research with similar methodology should be done an attempt should also be made to compare individual drugs at higher and lower doses a study of prolactin levels is also a useful complimentary procedure also higher the sample size, better the inference the cause for less sexual impairment by quetiapine may be due to its minimal effect on prolactin level.

So although there are many mechanism by which antipsychotics cause sexual dysfunction, this study proves that hyperprolactinemia plays important role in causing sexual impairment.

Risperidone being the drug causing hyperprolactenemia markedly,it causes more impairment in sexual dysfunction in both males and females.in this study impairment in ejaculation and orgasm had been more when compared to other studies done so far.

LIMITATIONS OF THE STUDY

1. This is single contact hospital –based study done to test the hypothesis formulated, based on the available literature, and aimed at assessing the frequency of sexual dysfunction involving risperidone, olanzapine and quetiapine and comparing them. Although a cross sectional design is not always the best design for such studies, the problem of attrition seen in the prospective studies is not an issue here.

2. This study did not incorporate the determination of biological markers like the serum prolactin level, unlike other studies Such an estimation could have further strengthened it.

3. Only the clinically stable patients were incorporated with a careful assessment on BPRS, as the patients' account is less reliable during the symptomatic phase. However, full remission is rarely achieved in schizophrenia, especially with respect to negative and cognitive symptoms.

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Brief Psychiatric Rating Scale (BPRS)

Patient Name _____ Today's Date _____

Please enter the score for the term that best describes the patient's condition.

0 = Not assessed, 1 = Not present, 2 = Very mild, 3 = Mild, 4 = Moderate, 5 = Moderately severe, 6 = Severe, 7 = Extremely severe

Score		
☐	1.	**SOMATIC CONCERN** Preoccupation with physical health, fear of physical illness, hypochondriasis.
☐	2.	**ANXIETY** Worry, fear, over-concern for present or future, uneasiness.
☐	3.	**EMOTIONAL WITHDRAWAL** Lack of spontaneous interaction, isolation deficiency in relating to others.
☐	4.	**CONCEPTUAL DISORGANIZATION** Thought processes confused, disconnected, disorganized, disrupted.
☐	5.	**GUILT FEELINGS** Self-blame, shame, remorse for past behavior.
☐	6.	**TENSION** Physical and motor manifestations of nervousness, over-activation.
☐	7.	**MANNERISMS AND POSTURING** Peculiar, bizarre, unnatural motor behavior (not including tic).
☐	8.	**GRANDIOSITY** Exaggerated self-opinion, arrogance, conviction of unusual power or abilities.
☐	9.	**DEPRESSIVE MOOD** Sorrow, sadness, despondency, pessimism.
☐	10.	**HOSTILITY** Animosity, contempt, belligerence, disdain for others.
☐	11.	**SUSPICIOUSNESS** Mistrust, belief others harbor malicious or discriminatory intent.
☐	12.	**HALLUCINATORY BEHAVIOR** Perceptions without normal external stimulus correspondence.
☐	13.	**MOTOR RETARDATION** Slowed, weakened movements or speech, reduced body tone.
☐	14.	**UNCOOPERATIVENESS** Resistance, guardedness, rejection of authority.
☐	15.	**UNUSUAL THOUGHT CONTENT** Unusual, odd, strange, bizarre thought content.
☐	16.	**BLUNTED AFFECT** Reduced emotional tone, reduction in formal intensity of feelings, flatness.
☐	17.	**EXCITEMENT** Heightened emotional tone, agitation, increased reactivity.
☐	18.	**DISORIENTATION** Confusion or lack of proper association for person, place or time.

BRIEF PSYCHIATRIC RATING SCALE (BPRS)

Instructions for the Clinician:

The Brief Psychiatric Rating Scale (BPRS) is a widely used instrument for assessing the positive, negative, and affective symptoms of individuals who have psychotic disorders, especially schizophrenia. It has proven particularly valuable for documenting the efficacy of treatment in patients who have moderate to severe disease.

It should be administered by a clinician who is knowledgeable concerning psychotic disorders and able to interpret the constructs used in the assessment. Also considered is the individual's behavior over the previous 2-3 days and this can be reported by the patient's family.

The BPRS consists of 18 symptom constructs and takes 20-30 minutes for the interview and scoring. The rater should enter a number ranging from 1 (not present) to 7 (extremely severe). 0 is entered if the item is not assessed.

First published in 1962 as a 16-construct tool by Drs. John Overall and Donald Gorham, the developers added two additional items, resulting in the 18-item scale used widely today to assess the effectiveness of treatment.

BPRS Scoring Instructions:

Sum the scores from the 18 items. Record the total score and compare the total score from one evaluation to the next as the measure of response to treatment.

Overall, JE, Gorham DR: The Brief Psychiatric Rating Scale (BPRS): recent developments in ascertainment and scaling. *Psychopharmacology Bulletin* 24:97-99, 1988.

CHANGES IN SEXUAL FUNCTIONING QUESTIONNAIRE (CSFQ-F-C)

Patient Name _____ Today's Date _____

NOTE: This is a questionnaire about sexual activity and sexual function. By sexual activity, we mean sexual intercourse, masturbation, sexual fantasies and other activity.

1. Compared with the most enjoyable it has ever been, how enjoyable or pleasurable is your sexual life right now?
☐ 1-No enjoyment or pleasure
☐ 2-Little enjoyment or pleasure
☐ 3-Some enjoyment or pleasure
☐ 4-Much enjoyment or pleasure
☐ 5-Great enjoyment or pleasure

2. How frequently do you engage in sexual activity (sexual intercourse, masturbation, etc.) now?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

3. How often do you desire to engage in sexual activity?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

4. How frequently do you engage in sexual thoughts (thinking about sex, sexual fantasies) now?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

5. Do you enjoy books, movies, music or artwork with sexual content?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

6. How much pleasure or enjoyment do you get from thinking about and fantasizing about sex?
☐ 1-No enjoyment or pleasure
☐ 2-Little enjoyment or pleasure
☐ 3-Some enjoyment or pleasure
☐ 4-Much enjoyment or pleasure
☐ 5-Great enjoyment or pleasure

7. How often do you become sexually aroused?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

8. Are you easily aroused?
☐ 1-Never
☐ 2-Rarely (much less than half the time)
☐ 3-Sometimes (about half the time)
☐ 4-Often (much more than half the time)
☐ 5-Always

9. Do you have adequate vaginal lubrication during sexual activity?
☐ 1-Never
☐ 2-Rarely (much less than half the time)
☐ 3-Sometimes (about half the time)
☐ 4-Often (much more than half the time)
☐ 5-Always

10. How often do you become aroused and then lose interest?
☐ 5-Never
☐ 4-Rarely (much less than half the time)
☐ 3-Sometimes (about half the time)
☐ 2-Often (much more than half the time)
☐ 1-Always

11. How often do you experience an orgasm?
☐ 1-Never
☐ 2-Rarely (much less than half the time)
☐ 3-Sometimes (about half the time)
☐ 4-Often (much more than half the time)
☐ 5-Always

12. Are you able to have an orgasm when you want to?
☐ 1-Never
☐ 2-Rarely (much less than half the time)
☐ 3-Sometimes (about half the time)
☐ 4-Often (much more than half the time)
☐ 5-Always

13. How much pleasure or enjoyment do you get from your orgasms?
☐ 1-No enjoyment or pleasure
☐ 2-Little enjoyment or pleasure
☐ 3-Some enjoyment or pleasure
☐ 4-Much enjoyment or pleasure
☐ 5-Great enjoyment or pleasure

14. How often do you have painful orgasm?
☐ 5-Never
☐ 4-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 2-Often (more than twice a week)
☐ 1-Every day

____ = Pleasure (Item 1)
____ = Desire/Frequency (Item 2 + Item 3)
____ = Desire/Interest (Item 4 + Item 5 + Item 6)
____ = Arousal/Excitement (Item 7 + Item 8 + Item 9)
____ = Orgasm/Completion (Item 11 + Item 12 + Item 13)
____ = **Total CSFQ Score** (Items 1 to 14)

CHANGES IN SEXUAL FUNCTIONING QUESTIONNAIRE (CSFQ-M-C)

Patient Name _____ Today's Date _____

NOTE: This is a questionnaire about sexual activity and sexual function. By sexual activity, we mean sexual intercourse, masturbation, sexual fantasies and other activity.

1. Compared with the most enjoyable it has ever been, how enjoyable or pleasurable is your sexual life right now?
☐ 1-No enjoyment or pleasure
☐ 2-Little enjoyment or pleasure
☐ 3-Some enjoyment or pleasure
☐ 4-Much enjoyment or pleasure
☐ 5-Great enjoyment or pleasure

2. How frequently do you engage in sexual activity (sexual intercourse, masturbation, etc.) now?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

3. How often do you desire to engage in sexual activity?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

4. How frequently do you engage in sexual thoughts (thinking about sex, sexual fantasies) now?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

5. Do you enjoy books, movies, music or artwork with sexual content?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

6. How much pleasure or enjoyment do you get from thinking about and fantasizing about sex?
☐ 1-No enjoyment or pleasure
☐ 2-Little enjoyment or pleasure
☐ 3-Some enjoyment or pleasure
☐ 4-Much enjoyment or pleasure
☐ 5-Great enjoyment or pleasure

7. How often do you have an erection related or unrelated to sexual activity?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

8. Do you get an erection easily?
☐ 1-Never
☐ 2-Rarely (much less than half the time)
☐ 3-Sometimes (about half the time)
☐ 4-Often (much more than half the time)
☐ 5-Always

9. Are you able to maintain an erection?
☐ 1-Never
☐ 2-Rarely (much less than half the time)
☐ 3-Sometimes (about half the time)
☐ 4-Often (much more than half the time)
☐ 5-Always

10. How often do you experience painful, prolonged erections?
☐ 5-Never
☐ 4-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 2-Often (more than twice a week)
☐ 1-Every day

11. How often do you have an ejaculation?
☐ 1-Never
☐ 2-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 4-Often (more than twice a week)
☐ 5-Every day

12. Are you able to ejaculate when you want to?
☐ 1-Never
☐ 2-Rarely (much less than half the time)
☐ 3-Sometimes (about half the time)
☐ 4-Often (much more than half the time)
☐ 5-Always

13. How much pleasure or enjoyment do you get from your orgasms?
☐ 1-No enjoyment or pleasure
☐ 2-Little enjoyment or pleasure
☐ 3-Some enjoyment or pleasure
☐ 4-Much enjoyment or pleasure
☐ 5-Great enjoyment or pleasure

14. How often do you have painful orgasm?
☐ 5-Never
☐ 4-Rarely (once a month or less)
☐ 3-Sometimes (more than once a month, up to twice a week)
☐ 2-Often (more than twice a week)
☐ 1-Every day

____ = Pleasure (Item 1)
____ = Desire/Frequency (Item 2 + Item 3)
____ = Desire/Interest (Item 4 + Item 5 + Item 6)
____ = Arousal/Erection (Item 7 + Item 8 + Item 9)
____ = Orgasm/Ejaculation (Item 11 + Item 12 + Item 13)
____ = **Total CSFQ Score** (Items 1 to 14)

INSTRUCTIONS FOR COMPLETING AND SCORING THE CSFQ

Ask the patient to complete all 14 items on the clinical version of the CSFQ. The patient should place a check (✓) in the box corresponding to the response for that particular item. The patient should choose only one response per item.

To score items on the CSFQ, take the numerical value or weight indicated for a particular response. For example, in Item 1, a response of "some enjoyment or pleasure" has a numerical value of 3, whereas a response of "much enjoyment or pleasure" has a numerical value of 4. Some items have responses that are reverse-scored: for example, on Item 14 in the CSFQ-F-C version, a response of "never" has a numerical value of 5, whereas a response of "every day" has a value of 1.

To calculate the Total CSFQ score, add up the values of the responses for all 14 items. To calculate subscale scores, add up the values for only the items that correspond to a particular subscale (see shaded box on front side). To determine if sexual dysfunction is present, refer to the gender-specific scoring protocols below.

Scoring for CSFQ-F-C: (Female Clinical Version)

If the female patient obtains a score at or below the following cut-off points* on any of these scales, it is indicative of sexual dysfunction:

Total CSFQ score:	41.0 (range: 14 to 70)
Sexual Desire/Frequency score:	6.0 (range: 2 to 10)
Sexual Desire/Interest:	9.0 (range: 3 to 15)
Sexual Pleasure:	4.0 (range: 1 to 5)
Sexual Arousal/Excitement:	12.0 (range: 3 to 15)
Sexual Orgasm/Completion:	11.0 (range: 3 to 15)

Scoring for CSFQ-M-C: (Male Clinical Version)

If the male patient obtains a score at or below the following cut-off points* on any of these scales, it is indicative of sexual dysfunction:

Total CSFQ score:	47.0 (range: 14 to 70)
Sexual Desire/Frequency score:	8.0 (range: 2 to 10)
Sexual Desire/Interest:	11.0 (range: 3 to 15)
Sexual Pleasure:	4.0 (range: 1 to 5)
Sexual Arousal/Excitement:	13.0 (range: 3 to 15)
Sexual Orgasm/Completion:	13.0 (range: 3 to 15)

REFERENCES:

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Clayton, A.H., McGarvey, E.L., Clavet, G.J., & Piazza, L. (1997). Comparison of sexual functioning in clinical and non-clinical populations using the Changes in Sexual Functioning Questionnaire (CSFQ). *Psychopharmacology Bulletin, 33(4)*, 747-753.

Clayton, A.H., Owens, J.E., & McGarvey, E.L. (1995). Assessment of paroxetine-induced sexual dysfunction using the Changes in Sexual Functioning Questionnaire. *Psychopharmacology Bulletin, 31(2)*, 397-413.

* Based on comparisons of non-depressed participants and clinically depressed patients

S.NO	NAME	AGE	SEX	ADDRESS	EDUCATION	EDUCATION_A	EMPLOYED	MARRIED	RESIDENCE	OCCUPATION	CURRENTEMPLOYMENT	NOOFFAMILYMEMBERS	MONTHLYINCOME	PASTHISTORY	FAMILYHISTORY	FAMILYARRANGEMENT	DIAGNOSIS	CURRENTTREATMENT	DURATION	GROUP
1	SARAVANAN	###	1	AYANAVARAM	10	HIGH SCHOOL	YES	MARRIED	URBAN	AUTODRIVER	NIL	4.0	5000.0	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	4.0	4 MONTH	RISPERIDON
2	PRABHU	###	1	TRICHY	8	HIGH SCHOOL	NIL	MARRIED	RURAL	NIL	NIL	8.0	3000.0	NIL	NIL	JOINT	PARANOID SCHIZOPHRENIA	6.0	1 YEAR	RISPERIDON
3	KUMAR	###	1	CHENNAI	BSC	BACHELOR DEGREE	YES	MARRIED	URBAN	CLERK	YES	3.0	######	NIL	YES	NUCLEAR	PARANOID SCHIZOPHRENIA	4.0	6 MONTH	RISPERIDON
4	MANIKANDAN	###	1	PUDUKOTTAI	11	HIGHER SECONDER	YES	MARRIED	RURAL	COOLIE	YES	6.0	3000.0	NIL	YES	JOINT	UNDIFFERENTIATED SCHIZOPHR	8.0	5 MONTH	RISPERIDON
5	SETHUMADAVAN	###	1	PAPANASAM	12	HIGHER SECONDER	YES	MARRIED	RURAL	TAILOR	YES	2.0	6000.0	NIL	NIL	NUCLEAR	UNDIFFERENTIATED SCHIZOPHR	6.0	2 YEARS	RISPERIDON
6	RASU	###	1	SENGOTTAI	9	HIGH SCHOOL	NIL	MARRIED	RURAL	FARMER	NIL	5.0	7000.0	YES	NIL	JOINT	UNSPECIFIED	4.0	14 MONTH	RISPERIDON
7	PRATHAP	###	1	CHENNAI	B.E	BACHELOR DEGREE	YES	MARRIED	URBAN	ENGINEER	NIL	7.0	######	NIL	YES	JOINT	UNSPECIFIED	4.0	4 MONTH	RISPERIDON
8	MATHIVANAN	###	1	ARUPPUKOTTAI	12	HIGHER SECONDER	YES	MARRIED	RURAL	COOLIE	NIL	4.0	4000.0	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	10.0	8 MONTH	RISPERIDON
9	ASHAD	###	1	CHENNAI	B.A	BACHELOR DEGREE	YES	MARRIED	URBAN	MANAGER	YES	7.0	######	YES	NIL	JOINT	CATATONIC SCHIZOPHRENIA	6.0	6 MONTH	RISPERIDON
10	ROHIT	###	1	CHENNAI	BBA	BACHELOR DEGREE	NIL	MARRIED	URBAN	ACCOUNTANT	YES	4.0	######	NIL	NIL	NUCLEAR	UNSPECIFIED	8.0	2 YEARS	RISPERIDON
11	SENTHIL	###	1	ARAKKONAM	B.COM	BACHELOR DEGREE	YES	MARRIED	RURAL	ACCOUTANT	YES	8.0	######	NIL	NIL	JOINT	PARANOID SCHIZOPHRENIA	6.0	1 YEAR	RISPERIDON
12	MAHADEVAN	###	1	COIMBATORE	I.T.I	OTHERS	YES	MARRIED	URBAN	FITTER	YES	9.0	8000.0	YES	YES	JOINT	PARANOID SCHIZOPHRENIA	10.0	5 MONTH	RISPERIDON
13	MOHAMMED	###	1	TRICHY	B.E	BACHELOR DEGREE	YES	MARRIED	RURAL	ENGINEER	NIL	2.0	8000.0	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	4.0	1 YEAR	RISPERIDON
14	ALEXANDAR	###	1	VILLUPURAM	10	HIGH SCHOOL	NIL	MARRIED	RURAL	NIL	NIL	4.0	8500.0	NIL	YES	NUCLEAR	UNDIFFERENTIATED SCHIZOPHR	6.0	11 MONTH	RISPERIDON
15	ALBERT	###	1	TINDIVANAM	1.T.I	OTHERS	YES	MARRIED	RURAL	FITTER	YES	4.0	6000.0	NIL	NIL	NUCLEAR	CATATONIC SCHIZOPHRENIA	4.0	8 MONTH	RISPERIDON
16	ROHINI	###	2	CHENNAI	8	HIGH SCHOOL	NIL	MARRIED	URBAN	NIL	NIL	5.0	5000.0	NIL	YES	JOINT	PARANOID SCHIZOPHRENIA	4.0	6 MONTH	RISPERIDON
17	KAMALA	###	2	CHENGALPET	10	HIGH SCHOOL	NIL	MARRIED	RURAL	NIL	NIL	3.0	4000.0	NIL	NIL	NUCLEAR	UNDIFFERENTIATED SCHIZOPHR	6.0	2 YEARS	RISPERIDON
18	ROSE MARY	###	2	SALEM	D.PHARM	OTHERS	YES	MARRIED	RURAL	PHARMACIST	YES	3.0	7000.0	NIL	NIL	NUCLEAR	CATATONIC SCHIZOPHRENIA	2.0	10 MONTH	RISPERIDON
19	SALEEMA	###	2	CHENNAI	10	HIGH SCHOOL	NIL	MARRIED	URBAN	NIL	NIL	4.0	6000.0	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	4.0	2 YEARS	RISPERIDON
20	PRABHA	###	2	CHENNAI	11	HIGHER SECONDER	NIL	MARRIED	URBAN	NIL	NIL	7.0	######	NIL	YES	JOINT	HEBEPHRENIC SCHIZOPHRENIA	6.0	8 MONTH	RISPERIDON
21	PRAVEENA	###	2	CHENNAI	12	HIGHER SECONDER	NIL	MARRIED	URBAN	HOUSEWIFE	NIL	3.0	6000.0	NIL	NIL	NUCLE	UNDIFFERENTIATED SCHIZOPHR	4.0	5 MONTH	RISPERIDON
22	PRIYA	###	2	THIRUVANN	12	HIGHER SECONDER	NIL	MARRIED	URBAN	NIL	NIL	3.0	######	NIL	NIL	NUCLEAR	UNSPECIFIED	8.0	4 MONTH	RISPERIDON
23	BANU	###	2	SALEM	12	HIGHER SECONDER	NIL	MARRIED	URBAN	NIL	NIL	7.0	8000.0	NIL	NIL	JOINT	PARANOID SCHIZOPHRENIA	6.0	2 YEARS	RISPERIDON
24	RAJKUMARI	###	2	NEYVELI	8	HIGH SCHOOL	NIL	MARRIED	RURAL	NIL	NIL	###	######	NIL	YES	JOINT	CATATONIC SCHIZOPHRENIA	4.0	7 MONTH	RISPERIDON
25	revathi	###	2	chennai	bba	BACHELOR DEGREE	yes	MARRIED	urban	NIL	NIL	3.0	######	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	6.0	7 MONTH	RISPERIDON
26	SANTHANAM	###	1	ERODE	8	HIGH SCHOOL	YES	MARRIED	RURAL	COOLIE	YES		3000.0	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	10.0	8 MONTH	OLANZAPINE
27	ARUMUGAM	###	1	CHENNAI	12	HIGHER SECONDER	YES	MARRIED	URBAN	AUTODRIVER	YES		6000.0	NIL	NIL	NUCLEAR	UNDIFFERENTIATED SCHIZOPHR	15.0	1 YEAR	OLANZAPINE
28	SENTHIL	###	1	THIRUVARUR	B.A	BACHELOR DEGREE	NIL	MARRIED	RURAL	NIL	NIL		5000.0	NIL	YES	JOINT	UNSPECIFIED	10.0	6 MONTH	OLANZAPINE
29	KARIKALAN	###	1	TRICHY	10	HIGH SCHOOL	YES	MARRIED	RURAL	BUSINESS	NIL		7000.0	NIL	NIL	JOINT	PARANOID SCHIZOPHRENIA	5.0	1 YEAR	OLANZAPINE
30	PRABHU	###	1	SALEM	11	HIGHER SECONDER	YES	MARRIED	RURAL	BUSINESS	YES		6000.0	YES	YES	JOINT	PARANOID SCHIZOPHRENIA	10.0	9 MONTH	OLANZAPINE
31	MANOHAR	###	1	CHENNAI	6	HIGH SCHOOL	YES	MARRIED	URBAN	DRIVER	YES		5500.0	NIL	NIL	NUCLEAR	UNSPECIFIED	20.0	7 MONTH	OLANZAPINE
32	IBRAHIM	###	1	CHENNAI	B.B.A	BACHELOR DEGREE	NIL	MARRIED	URBAN	ACCOUNTANT	NIL		8000.0	NIL	NIL	JOINT	CATATONIC SCHIZOPHRENIA	10.0	6 MONTH	OLANZAPINE
33	RAMESH	###	1	CHENNAI	B.SC	BACHELOR DEGREE	YES	MARRIED	URBAN	CLERK	YES		######	NIL	NIL	NUCLEAR	UNDIFFERENTIATED SCHIZOPHR	10.0	2 YEARS	OLANZAPINE
34	RAJSEKAR	###	1	chennai	B.COM	BACHELOR DEGREE	YES	MARRIED	URBAN	COOLIE	YES		7000.0	NIL	YES	NUCLEAR	PARANOID SCHIZOPHRENIA	15.0	14 MONTH	OLANZAPINE
35	SUBRAMANI	###	1	VILLUPURAM	12	HIGHER SECONDER	NIL	MARRIED	RURAL	COOLIE	NIL		2000.0	NIL	NIL	JOINT	UNDIFFERENTIATED SCHIZOPHR	5.0	4 MONT	OLANZAPINE

36	PANDIAN	###	1	CHENNAI	10	HIGH SCHOOL	NIL	MARRIED	RURAL	NIL	NIL		3000.0	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	10.0	2 YEARS	OLANZAPINE
37	SAKTHIVEL	###	1	CHENNAI	12	HIGHER SECONDER	NIL	MARRIED	URBAN	NIL	NIL		4000.0	NIL	NIL	JOINT	HEBEPHRENIC SCHIZOPHRENIA	15.0	1 YEAR	OLANZAPINE
38	RAMAR	###	1	CHIDAMBARAM	7	HIGH SCHOOL	NIL	MARRIED	RURAL	BUSINESS	NIL		5000.0	NIL	NIL	NUCLEAR	UNSPECIFIED	20.0	16 MONTH	OLANZAPINE
39	MANI	###	1	CHENNAI	10	HIGH SCHOOL	YES	MARRIED	URBAN	PHARMACY	NIL		######	NIL	YES	NUCLEAR	PARANOID SCHIZOPHRENIA	15.0	8 MONT	OLANZAPINE
40	PRIYADARSHINI	###	2	CHENNAI	M.SC	MASTER DEGREE	YES	MARRIED	URBAN	NIL	YES		######	YES	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	20.0	7 MONT	OLANZAPINE
41	REVATHY	###	2	TRICHY	10	HIGH SCHOOL	NIL	MARRIED	URBAN	NIL	NIL		5000.0	YES	YES	NUCLEAR	CATATONIC SCHIZOPHRENIA	10.0	4 MONT	OLANZAPINE
42	ARCHANA	###	2	CHENNAI	11	HIGHER SECONDER	NIL	MARRIED	RURAL	NIL	NIL		3000.0	NIL	NIL	JOINT	UNDIFFERENTIATED SCHIZOPHR	5.0	3 MONT	OLANZAPINE
43	PANDIAMMAL	###	2	CHENNAI	1O	HIGH SCHOOL	NIL	MARRIED	URBAN	NIL	NIL		7000.0	NIL	NIL	JOINT	UNSPECIFIED	15.0	2 YEARS	OLANZAPINE
44	PARVATHY	###	2	NEYVELI	12	HIGHER SECONDER	NIL	MARRIED	RURAL	TEACHER	NIL		8000.0	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	10.0	18 MONTH	OLANZAPINE
45	SELV I	###	2	MADURAI	B.A	BACHELOR DEGREE	YES	MARRIED	URBAN	TEACHER	YES		######	YES	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	20.0	1 YEAR	OLANZAPINE
46	CHANDRA	###	2	VELLORE	B.SC	BACHELOR DEGREE	YES	MARRIED	RURAL	NIL	YES		6000.0	NIL	NIL	NUCLEAR	CATATONIC SCHIZOPHRENIA	15.0	6 MONTH	OLANZAPINE
47	VELLAMAL	###	2	VELLORE	D.TED	OTHERS	NIL	MARRIED	RURAL	NIL	NIL		6000.0	NIL	YES	NUCEAR	PARANOID SCHIZOPHRENIA	15.0	1 YEAR	OLANZAPINE
48	KALA	###	2	CHENNAI	B.COM	BACHELOR DEGREE	NIL	MARRIED	RURAL	NIL	NIL		######	NIL	NIL	JOINT	PARANOID SCHIZOPHRENIA	10.0	8 MONTH	OLANZAPINE
49	PARVATHY	###	2	TRICHY	10	HIGH SCHOOL	NIL	MARRIED	RURAL	NIL	NIL		6000.0	NIL	NIL	JOINT	CATATONIC SCHIZOPHRENIA	10.0	6 MONTH	OLANZAPINE
50	ANDAAL	###	2	CHENNAI	12	HIGHER SECONDER	NIL	MARRIED	URBAN	NIL	NIL		7000.0	NIL	NIL	JOINT	PARANOID SCHIZOPHRENIA	20.0	8 MONTH	OLANZAPINE
51	VIGNESH	###	1	CHENNAI	BE	BACHELOR DEGREE	YES	MARRIED	URBAN		YES		######	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	50.0	6 MONTH	QUETIAPIN
52	VICTOR	###	1	CHENNAI	12	HIGHER SECONDER	YES	MARRIED	URBAN		YES		5000.0	NIL	NIL	JOINT	PARANOID SCHIZOPHRENIA	100.0	8 MONTH	QUETIAPIN
53	PAULRAJ	###	1	ARIYALUR	8	HIGH SCHOOL	YES	MARRIED	RURAL		NIL		2000.0	NIL	YES	NUCLEAR	CATATONIC SCHIZOPHRENIA	125.0	5 MONTH	QUETIAPIN
54	KARTHIKEYAN	###	1	CHENNAI	B.COM	BACHELOR DEGREE	YES	MARRIED	URBAN		YES		######	NIL	YES	NUCLEAR	PARANOID SCHIZOPHRENIA	100.0	1 YEAR	QUETIAPIN
55	MANIKANDAN	###	1	TRINELVELI	10	HIGH SCHOOL	YES	MARRIED	RURAL		NIL		5000.0	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	50.0	9 MONTH	QUETIAPIN
56	RAJARAJAN	###	1	CHEYYAR	B.A	BACHELOR DEGREE	YES	MARRIED	RURAL		NIL		6000.0	NIL	NIL	JOINT	CATATONIC SCHIZOPHRENIA	75.0	2 YEARS	QUETIAPIN
57	VISWANATHAN	###	1	SALEM	12	HIGHER SECONDER	NIL	MARRIED	URBAN		NIL		5000.0	YES	NIL	JOINT	UNSPECIFIED	100.0	1 YEAR	QUETIAPIN
58	MANICKAM	###	1	PERAMBALUR	8	HIGH SCHOOL	NIL	MARRIED	RURAL		NIL		3000.0	NIL	NIL	NUCLEAR	SIMPLE-SCHIZOPHRENIA	125.0	10 MONTH	QUETIAPIN
59	PRATHAP	###	1	VELLORE	12	HIGHER SECONDER	NIL	MARRIED	RURAL		NIL		6000.0	NIL	YES	NUCLEAR	HEBEPHRENIC SCHIZOPHRENIA	100.0	2 YEARS	QUETIAPIN
60	MOHAMMED	###	1	ARAKKONAM	10	HIGH SCHOOL	YES	MARRIED	RURAL		YES		5000.0	NIL	NIL	JOINT	PARANOID SCHIZOPHRENIA	75.0	11 MONTH	QUETIAPIN
61	KARTHIKEYAN	###	1	THIRUVALLUR	10	HIGH SCHOOL	YES	MARRIED	RURAL		NIL		9000.0	NIL	NIL	NUCLEAR	UNDIFFERENTIATED SCHIZOPHR	150.0	6 MONT	QUETIAPIN
62	MURALI	###	1	CHENNAI	12	HIGHER SECONDER	YES	MARRIED	URBAN		NIL		######	NIL	YES	NUCLEAR	UNSPECIFIED	75.0	5 MONT	QUETIAPIN
63	PAULSAMY	###	1	CHENNAI	12	HIGHER SECONDER	YES	MARRIED	URBAN		NIL		3500.0	NIL	NIL	JOINT	PARANOID SCHIZOPHRENIA	150.0	9 MONT	QUETIAPIN
64	PARTHASARATHY	###	1	AATHUR	B.COM	BACHELOR DEGREE	YES	MARRIED	RURAL		YES		######	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	200.0	6 MONT	QUETIAPIN
65	AMIR	###	1	TINDIVANAM	B.B.A	BACHELOR DEGREE	YES	MARRIED	RURAL		YES		5000.0	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	200.0	14 MONTH	QUETIAPIN
66	MANOHAR	###	1	VELLORE	10	HIGH SCHOOL	YES	MARRIED	RURAL		NIL		3000.0	NIL	NIL	NUCLEAR	UNDIFFERENTIATED SCHIZOPHR	150.0	11 MONTH	QUETIAPIN
67	KALEESWARI	###	2	CHENNAI	8	HIGH SCHOOL	NIL	MARRIED	URBAN		NIL		3000.0	NIL	NIL	NUCLEAR	PARANOID SCHIZOPHRENIA	100.0	1 YEAR	QUETIAPIN
68	ROSEMARY	###	2	TINDIVANAM	12	HIGHER SECONDER	NIL	MARRIED	RURAL		NIL		2000.0	NIL	NIL	JOINT	UNSPECIFIED	75.0	5 MONT	QUETIAPIN
69	KAVITHA	###	2	THIRUVALLUR	M.A	MASTER DEGREE	YES	MARRIED	RURAL		YES		8500.0	NIL	YES	NUCLEAR	PARANOID SCHIZOPHRENIA	125.0	1 YEAR	QUETIAPIN
70	PAAVITHRA	###	2	VELLORE	B.A	BACHELOR DEGREE	YES	MARRIED	RURAL		YES		######	NIL	NIL	NUCLEAR	CATATONIC SCHIZOPHRENIA	75.0	3 MONT	QUETIAPIN
71	ANJUGAM	###	2	NEYVELI	10	HIGH SCHOOL	NIL	MARRIED	RURAL		NIL		4000.0	NIL	YES	JOINT	PARANOID SCHIZOPHRENIA	100.0	5 MONT	QUETIAPIN
72	RAJESHWARI	###	2	CHIDAMBARAM	8	HIGH SCHOOL	NIL	MARRIED	RURAL		NIL		3000.0	NIL	YES	NUCLEAR	UNSPECIFIED	75.0	8 MONT	QUETIAPIN
73	LALITHA	###	2	PERAMBALUR	12	HIGHER SECONDER	NIL	MARRIED	RUAL		NIL		5000.0	YES	NIL	JOINT	SIMPLE-SCHIZOPHRENIA	100.0	1 YEAR	QUETIAPIN
74	SAVITHRI	###	2	CHENNAI	D,PHARM	OTHERS	NIL	MARRIED	URBAN		NIL		2000.0	NIL	N IL	NUCLEAR	PARANOID SCHIZOPHRENIA	125.0	3 MONT	QUETIAPIN

75	LOHESWARI	###	2	COIMBATORE	B,SC	BACHELOR DEGREE	NIL	MARRIED	URBAN		NIL		6000.0	NIL	NIL	JOINT	UNSPECIFIED	200.0	1 YEAR	QUETIAPIN
76	SOMU	###	1	CHENNAI	12	HIGHER SECONDER	YES	MARRIED	URBAN		YES		5000.0	NIL	NIL	NUCLEAR				CONTROL
77	PRABUSANKAR	###	1	CHENNAI	B.A	BACHELOR DEGREE	YES	MARRIED	URBAN		YES		9000.0	NIL	NIL	NUCLEAR				CONTROL
78	RATHORE	###	1	DELHI	B.B.A	BACHELOR DEGREE	YES	MARRIED	URBAN		YES		######	NIL	YES	NUCLEAR				CONTROL
79	MUNIAN	###	1	VILLUPURAM	8	HIGH SCHOOL	NIL	MARRIED	RURAL		NIL		1000.0	NIL	NIL	JOINT				CONTROL
80	PANEERSELVAM	###	1	SALEM	8	HIGH SCHOOL	YES	MARRIED	RURAL		YES		4000.0	NIL	NIL	JOINT				CONTROL
81	SENTHIL	###	1	CHENNAI	D.NURSIN(	OTHERS	YES	MARRIED	URBAN		YES		######	NIL	NIL	NUCLEAR				CONTROL
82	PRAKASH	###	1	ERODE	D.PHARM	OTHERS	YES	MARRIED	RURAL		YES		8500.0	NIL	NIL	NUCLEAR				CONTROL
83	ASHOK KUMAR	###	1	CHENNAI	B.SC	BACHELOR DEGREE	YES	MARRIED	URBAN		YES		8000.0	NIL	NIL	NUCLEAR				CONTROL
84	SUNIL	###	1	CHENNAI	12	HIGHER SECONDER	YES	MARRIED	URBAN		YES		7000.0	NIL	YES	JOINT				CONTROL
85	ADHIMOOLAM	###	1	VELLORE	10	HIGH SCHOOL	YES	MARRIED	RURAL		YES		######	NIL	YES	NUCLEAR				CONTROL
86	BABU	###	1	chidambaram	d,ted	OTHERS	yes	MARRIED	RURAL		NO		7000.0	NIL	NIL	JOINT				CONTROL
87	PREMKUMAR	###	1	VELLORE	D.TED	OTHERS	NIL	MARRIED	RURAL		NO		3000.0	NIL	NIL	JOINT				CONTROL
88	ANAND KUMAR	###	1	CHENNAI	D.NURSIN(	OTHERS	YES	MARRIED	URBAN		YES		7500.0	NIL	YES	NUCLEAR				CONTROL
89	SASIKALA	###	2	CHENNAI	12	HIGHER SECONDER	YES	MARRIED	URBAN		YES		5000.0	NIL	NIL	NUCLEAR				CONTROL
90	MOHANA	###	2	ARIYALUR	10	HIGH SCHOOL	NIL	MARRIED	RURAL		NO		4000.0	NIL	NIL	NUCLEAR				CONTROL
91	PRIYA	###	2	SALEM	12	HIGHER SECONDER	NIL	MARRIED	RURAL		NO		######	NIL	NIL	NUCLEAR				CONTROL
92	RAJI	###	2	CHENNAI	10	HIGH SCHOOL	NIL	MARRIED	URBAN		NIL		6000.0	NIL	NIL	NUCLEAR				CONTROL
93	LALITHA	###	2	THIRUVALLUR	B.A	BACHELOR DEGREE	YES	MARRIED	RURAL		NIL		8000.0	NIL	NIL	NUCLEAR				CONTROL
94	ARRUNA	###	2	CHENNAI	8	HIGH SCHOOL	NIL	MARRIED	URBAN		NIL		7000.0	NIL	NIL	NUCLEAR				CONTROL
95	VIJIALAKSMI	###	2	BOMBAY	10	HIGH SCHOOL	NIL	MARRIED	URBAN		NIL		######	NIL	NIL	NUCLEAR				CONTROL
96	PRASANTHINI	###	2	CHENNAI	B.B.A	BACHELOR DEGREE	YES	MARRIED	URBAN		NIL		######	NIL	NIL	JOINT				CONTROL
97	JALIMA BEGAUM	###	2	ERODE	12	HIGHER SECONDER	NIL	MARRIED	RURAL		NIL		######	NIL	NIL	JOINT				CONTROL
98	SHENBAGAM	###	2	SENGENI	10	HIGH SCHOOL	NIL	MARRIED	URBAN		NIL		8000.0	NIL	NIL	JOINT				CONTROL
99	VIJAYA	###	2	VELLORE	12	HIGHER SECONDER	NIL	MARRIED	URBAN		NIL		6000.0	NIL	NIL	NUCLEAR				CONTROL
100	KAMALI	###	2	GUDIYATHAM	10	HIGH SCHOOL	NIL	MARRIED	RURAL		NIL		7500.0	NIL	NIL	NUCLEAR				CONTROL

NEWG	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	TOTAL	PLEASURE	DESIRE	ERECTION	EJACULATIO N	TSG	PG	DG	EG	EJG	PGN
4.00	4.00	2.00	3.00	3.00	3.00	3.00	4.00	4.00	3.00	5.00	4.00	4.00	3.00	5.00	51.00	4.00	15.00	11.00	11.00	.00	.00	.00	1.00	1.00	1.00
4.00	2.00	3.00	4.00	2.00	1.00	3.00	2.00	2.00	3.00	5.00	3.00	4.00	3.00	5.00	42.00	2.00	13.00	7.00	10.00	1.00	.00	.00	1.00	1.00	.00
4.00	4.00	5.00	5.00	4.00	3.00	4.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	63.00	4.00	21.00	14.00	14.00	.00	.00	1.00	.00	.00	1.00
4.00	5.00	4.00	5.00	5.00	3.00	4.00	5.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	64.00	5.00	21.00	14.00	14.00	.00	1.00	1.00	.00	.00	1.00
4.00	2.00	3.00	3.00	3.00	2.00	2.00	4.00	3.00	2.00	5.00	4.00	5.00	2.00	4.00	44.00	2.00	13.00	9.00	11.00	1.00	.00	.00	1.00	1.00	.00
4.00	2.00	3.00	4.00	2.00	4.00	4.00	3.00	2.00	3.00	5.00	4.00	3.00	2.00	5.00	46.00	2.00	17.00	8.00	9.00	1.00	.00	.00	1.00	1.00	.00
4.00	3.00	2.00	3.00	3.00	3.00	2.00	2.00	2.00	3.00	5.00	4.00	5.00	5.00	5.00	47.00	3.00	13.00	7.00	14.00	1.00	.00	.00	1.00	.00	.00
4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.00	2.00	5.00	5.00	5.00	4.00	5.00	5.00	58.00	4.00	20.00	10.00	14.00	.00	.00	1.00	1.00	.00	1.00
4.00	2.00	3.00	3.00	3.00	2.00	3.00	4.00	2.00	3.00	4.00	5.00	4.00	4.00	5.00	47.00	2.00	14.00	9.00	14.00	1.00	.00	.00	1.00	.00	.00
4.00	3.00	2.00	3.00	2.00	2.00	2.00	2.00	3.00	2.00	4.00	3.00	5.00	3.00	5.00	41.00	3.00	11.00	7.00	11.00	1.00	.00	.00	1.00	1.00	.00
4.00	4.00	3.00	2.00	3.00	4.00	4.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	58.00	4.00	16.00	14.00	14.00	.00	.00	.00	.00	.00	1.00
4.00	3.00	3.00	2.00	3.00	4.00	3.00	2.00	3.00	2.00	4.00	4.00	5.00	5.00	4.00	47.00	3.00	15.00	7.00	14.00	1.00	.00	.00	1.00	.00	.00
4.00	2.00	2.00	3.00	2.00	2.00	3.00	3.00	2.00	3.00	4.00	3.00	2.00	2.00	5.00	37.00	2.00	12.00	8.00	7.00	1.00	.00	.00	1.00	1.00	.00
4.00	1.00	3.00	2.00	2.00	2.00	2.00	5.00	5.00	4.00	5.00	4.00	3.00	2.00	4.00	44.00	1.00	11.00	14.00	9.00	1.00	.00	.00	.00	1.00	.00
4.00	2.00	1.00	2.00	3.00	3.00	2.00	2.00	1.00	3.00	5.00	5.00	4.00	5.00	5.00	43.00	2.00	11.00	6.00	14.00	1.00	.00	.00	1.00	.00	.00
4.00	3.00	2.00	3.00	2.00	1.00	4.00	3.00	4.00	3.00	4.00	3.00	3.00	2.00	3.00	40.00	3.00	12.00	10.00	8.00	1.00	.00	.00	1.00	1.00	.00
4.00	3.00	3.00	3.00	4.00	4.00	3.00	2.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	51.00	3.00	17.00	10.00	12.00	.00	.00	1.00	1.00	.00	.00
4.00	4.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	5.00	4.00	4.00	4.00	5.00	48.00	4.00	13.00	9.00	12.00	.00	.00	.00	1.00	.00	1.00
4.00	2.00	1.00	2.00	2.00	3.00	2.00	3.00	4.00	1.00	5.00	4.00	4.00	4.00	4.00	41.00	2.00	10.00	8.00	12.00	1.00	.00	.00	1.00	.00	.00
4.00	2.00	2.00	1.00	2.00	3.00	3.00	4.00	3.00	3.00	4.00	3.00	3.00	2.00	4.00	39.00	2.00	11.00	10.00	8.00	1.00	.00	.00	1.00	1.00	.00
4.00	4.00	3.00	4.00	4.00	4.00	2.00	4.00	4.00	5.00	5.00	4.00	4.00	4.00	5.00	56.00	4.00	17.00	13.00	12.00	.00	.00	1.00	.00	.00	1.00
4.00	4.00	5.00	4.00	4.00	4.00	3.00	3.00	5.00	5.00	5.00	3.00	4.00	5.00	5.00	59.00	4.00	20.00	13.00	12.00	.00	.00	1.00	.00	.00	1.00
4.00	3.00	4.00	2.00	1.00	1.00	1.00	3.00	2.00	2.00	5.00	3.00	2.00	3.00	4.00	36.00	3.00	9.00	7.00	8.00	1.00	.00	.00	1.00	1.00	.00
4.00	2.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	5.00	3.00	4.00	2.00	4.00	35.00	2.00	9.00	6.00	9.00	1.00	.00	.00	1.00	1.00	.00
4.00	3.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00	4.00	4.00	3.00	4.00	5.00	5.00	53.00	3.00	16.00	13.00	12.00	.00	.00	1.00	.00	.00	.00
2.00	4.00	3.00	3.00	3.00	3.00	4.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	58.00	4.00	16.00	14.00	14.00	.00	.00	.00	.00	.00	1.00
2.00	1.00	2.00	2.00	1.00	2.00	3.00	3.00	4.00	3.00	5.00	4.00	5.00	5.00	5.00	45.00	1.00	10.00	10.00	14.00	1.00	.00	.00	1.00	.00	.00
2.00	4.00	4.00	3.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	61.00	4.00	19.00	14.00	14.00	.00	.00	.00	.00	.00	1.00
2.00	2.00	3.00	1.00	1.00	2.00	2.00	2.00	2.00	3.00	4.00	4.00	3.00	3.00	5.00	37.00	2.00	9.00	7.00	10.00	1.00	.00	.00	1.00	1.00	.00
2.00	2.00	2.00	1.00	2.00	2.00	2.00	3.00	3.00	3.00	5.00	5.00	4.00	5.00	5.00	44.00	2.00	9.00	9.00	14.00	1.00	.00	.00	1.00	.00	.00
2.00	4.00	3.00	4.00	5.00	4.00	4.00	4.00	3.00	4.00	5.00	4.00	5.00	5.00	5.00	59.00	4.00	20.00	11.00	14.00	.00	.00	1.00	1.00	.00	1.00
2.00	4.00	4.00	3.00	4.00	3.00	3.00	5.00	5.00	4.00	5.00	3.00	3.00	4.00	5.00	55.00	4.00	17.00	14.00	10.00	.00	.00	.00	.00	1.00	1.00
2.00	2.00	2.00	2.00	2.00	2.00	3.00	4.00	4.00	4.00	5.00	4.00	2.00	2.00	4.00	42.00	2.00	11.00	12.00	8.00	1.00	.00	.00	1.00	1.00	.00
2.00	3.00	3.00	2.00	3.00	1.00	3.00	3.00	4.00	3.00	5.00	4.00	4.00	4.00	4.00	46.00	3.00	12.00	10.00	12.00	1.00	.00	.00	1.00	1.00	.00
2.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	62.00	4.00	20.00	14.00	14.00	.00	.00	1.00	.00	.00	1.00

2.00	1.00	2.00	2.00	1.00	2.00	2.00	2.00	2.00	2.00	5.00	3.00	3.00	4.00	5.00	36.00	1.00	9.00	6.00	10.00	1.00	.00	.00	1.00	1.00	.00
2.00	2.00	3.00	2.00	3.00	1.00	2.00	3.00	4.00	3.00	4.00	4.00	5.00	5.00	5.00	46.00	2.00	11.00	10.00	14.00	1.00	.00	.00	1.00	.00	.00
2.00	3.00	3.00	3.00	2.00	2.00	2.00	5.00	5.00	4.00	5.00	2.00	3.00	3.00	5.00	47.00	3.00	12.00	14.00	8.00	1.00	.00	.00	.00	1.00	.00
2.00	4.00	5.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	64.00	4.00	21.00	15.00	14.00	.00	.00	1.00	.00	.00	1.00
2.00	4.00	3.00	3.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	4.00	5.00	4.00	5.00	59.00	4.00	18.00	14.00	13.00	.00	.00	1.00	.00	.00	1.00
2.00	3.00	4.00	2.00	2.00	2.00	3.00	3.00	2.00	3.00	4.00	3.00	2.00	3.00	4.00	40.00	3.00	13.00	8.00	8.00	1.00	.00	.00	1.00	1.00	.00
2.00	4.00	3.00	4.00	4.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	5.00	5.00	60.00	4.00	19.00	13.00	14.00	.00	.00	1.00	.00	.00	1.00
2.00	2.00	1.00	2.00	1.00	2.00	1.00	2.00	1.00	2.00	3.00	2.00	3.00	2.00	4.00	28.00	2.00	7.00	5.00	7.00	1.00	.00	.00	1.00	1.00	.00
2.00	3.00	3.00	2.00	2.00	1.00	1.00	2.00	2.00	2.00	5.00	3.00	3.00	3.00	5.00	37.00	3.00	9.00	6.00	9.00	1.00	.00	.00	1.00	1.00	.00
2.00	3.00	4.00	4.00	3.00	4.00	4.00	4.00	5.00	4.00	5.00	5.00	5.00	4.00	5.00	60.00	3.00	19.00	13.00	14.00	.00	.00	1.00	.00	.00	.00
2.00	4.00	4.00	5.00	4.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	61.00	4.00	21.00	13.00	13.00	.00	.00	1.00	.00	.00	1.00
2.00	2.00	3.00	2.00	3.00	2.00	2.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	4.00	40.00	2.00	12.00	9.00	9.00	1.00	.00	.00	1.00	1.00	.00
2.00	2.00	3.00	3.00	3.00	1.00	2.00	2.00	2.00	2.00	4.00	2.00	3.00	4.00	4.00	37.00	2.00	12.00	6.00	9.00	1.00	.00	.00	1.00	1.00	.00
2.00	4.00	4.00	4.00	4.00	3.00	3.00	4.00	3.00	3.00	5.00	4.00	4.00	5.00	5.00	55.00	4.00	18.00	10.00	13.00	.00	.00	1.00	1.00	.00	1.00
2.00	5.00	4.00	5.00	4.00	5.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	64.00	5.00	22.00	13.00	14.00	.00	1.00	1.00	.00	.00	1.00
3.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	64.00	4.00	22.00	14.00	14.00	.00	.00	1.00	.00	.00	1.00
3.00	4.00	2.00	3.00	3.00	4.00	4.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	58.00	4.00	16.00	14.00	14.00	.00	.00	.00	.00	.00	1.00
3.00	3.00	3.00	2.00	3.00	2.00	2.00	3.00	3.00	4.00	4.00	5.00	4.00	5.00	4.00	47.00	3.00	12.00	10.00	14.00	1.00	.00	.00	1.00	.00	.00
3.00	2.00	2.00	2.00	1.00	2.00	3.00	3.00	2.00	3.00	5.00	4.00	3.00	4.00	5.00	41.00	2.00	10.00	8.00	11.00	1.00	.00	.00	1.00	1.00	.00
3.00	3.00	4.00	5.00	4.00	4.00	4.00	2.00	5.00	4.00	5.00	4.00	5.00	5.00	5.00	59.00	3.00	21.00	11.00	14.00	.00	.00	1.00	1.00	.00	.00
3.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	4.00	5.00	4.00	3.00	2.00	5.00	46.00	3.00	14.00	10.00	9.00	1.00	.00	.00	1.00	1.00	.00
3.00	2.00	1.00	1.00	1.00	1.00	2.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	46.00	2.00	6.00	14.00	14.00	1.00	.00	.00	.00	.00	.00
3.00	5.00	5.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	67.00	5.00	23.00	15.00	14.00	.00	1.00	1.00	.00	.00	1.00
3.00	4.00	4.00	3.00	2.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	59.00	4.00	17.00	14.00	14.00	.00	.00	.00	.00	.00	1.00
3.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	63.00	4.00	20.00	15.00	14.00	.00	.00	1.00	.00	.00	1.00
3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00	2.00	2.00	1.00	1.00	2.00	45.00	3.00	20.00	14.00	4.00	1.00	.00	1.00	.00	1.00	.00
3.00	4.00	5.00	5.00	3.00	4.00	5.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	64.00	4.00	22.00	14.00	15.00	.00	.00	1.00	.00	.00	1.00
3.00	3.00	3.00	5.00	4.00	4.00	4.00	2.00	2.00	1.00	5.00	3.00	2.00	1.00	5.00	44.00	3.00	20.00	5.00	6.00	1.00	.00	1.00	1.00	1.00	.00
3.00	2.00	1.00	2.00	2.00	4.00	4.00	3.00	2.00	2.00	5.00	5.00	4.00	5.00	4.00	45.00	2.00	13.00	7.00	14.00	1.00	.00	.00	1.00	.00	.00
3.00	3.00	1.00	2.00	2.00	2.00	1.00	1.00	2.00	2.00	5.00	2.00	2.00	2.00	5.00	32.00	3.00	8.00	5.00	6.00	1.00	.00	.00	1.00	1.00	.00
3.00	4.00	4.00	3.00	5.00	4.00	5.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	63.00	4.00	21.00	14.00	14.00	.00	.00	1.00	.00	.00	1.00
3.00	3.00	3.00	2.00	2.00	2.00	3.00	4.00	3.00	3.00	2.00	4.00	4.00	4.00	2.00	41.00	3.00	12.00	10.00	12.00	1.00	.00	.00	1.00	.00	.00
3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	4.00	5.00	3.00	4.00	5.00	4.00	58.00	4.00	20.00	13.00	12.00	.00	.00	1.00	.00	.00	1.00
3.00	2.00	2.00	2.00	3.00	3.00	2.00	2.00	2.00	4.00	5.00	3.00	2.00	2.00	5.00	35.00	2.00	10.00	6.00	7.00	1.00	.00	.00	1.00	1.00	.00
3.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	67.00	4.00	24.00	15.00	14.00	.00	.00	1.00	.00	.00	1.00
3.00	3.00	2.00	3.00	4.00	5.00	3.00	4.00	5.00	4.00	5.00	4.00	5.00	4.00	5.00	55.00	3.00	17.00	13.00	13.00	.00	.00	1.00	.00	.00	.00
3.00	3.00	3.00	2.00	2.00	1.00	1.00	3.00	3.00	2.00	5.00	3.00	3.00	3.00	5.00	39.00	3.00	9.00	8.00	9.00	1.00	.00	.00	1.00	1.00	.00
3.00	5.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00	4.00	4.00	5.00	5.00	62.00	5.00	22.00	13.00	13.00	.00	1.00	1.00	.00	.00	1.00
3.00	4.00	4.00	4.00	4.00	3.00	3.00	4.00	4.00	5.00	5.00	4.00	5.00	5.00	5.00	58.00	4.00	18.00	13.00	13.00	.00	.00	1.00	.00	.00	1.00

3.00	1.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	3.00	2.00	2.00	2.00	4.00	24.00	1.00	6.00	4.00	6.00	1.00	.00	.00	1.00	1.00	.00
1.00	4.00	5.00	5.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	66.00	4.00	24.00	14.00	14.00	.00	.00	1.00	.00	.00	1.00
1.00	5.00	5.00	4.00	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	67.00	5.00	22.00	15.00	15.00	.00	1.00	1.00	.00	.00	1.00
1.00	2.00	2.00	2.00	3.00	3.00	4.00	3.00	3.00	3.00	5.00	4.00	3.00	2.00	5.00	44.00	2.00	14.00	9.00	9.00	1.00	.00	.00	1.00	1.00	.00
1.00	2.00	3.00	2.00	2.00	2.00	1.00	2.00	1.00	1.00	4.00	3.00	3.00	2.00	5.00	30.00	2.00	10.00	4.00	8.00	1.00	.00	.00	1.00	1.00	.00
1.00	4.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	4.00	5.00	5.00	5.00	62.00	4.00	22.00	12.00	14.00	.00	.00	1.00	1.00	.00	1.00
1.00	5.00	5.00	5.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	67.00	5.00	23.00	15.00	14.00	.00	1.00	1.00	.00	.00	1.00
1.00	4.00	4.00	3.00	4.00	3.00	2.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	56.00	4.00	16.00	14.00	14.00	.00	.00	.00	.00	.00	1.00
1.00	4.00	3.00	5.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	4.00	60.00	4.00	20.00	14.00	14.00	.00	.00	1.00	.00	.00	1.00
1.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00	4.00	5.00	4.00	5.00	58.00	3.00	20.00	14.00	14.00	.00	.00	1.00	.00	.00	.00
1.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	61.00	5.00	20.00	14.00	14.00	.00	1.00	1.00	.00	.00	1.00
1.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	65.00	4.00	21.00	15.00	15.00	.00	.00	1.00	.00	.00	1.00
1.00	5.00	4.00	3.00	5.00	4.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	61.00	5.00	20.00	14.00	14.00	.00	1.00	1.00	.00	.00	1.00
1.00	4.00	4.00	5.00	4.00	3.00	4.00	4.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	60.00	4.00	20.00	14.00	14.00	.00	.00	1.00	.00	.00	1.00
1.00	4.00	3.00	4.00	4.00	4.00	3.00	4.00	4.00	4.00	5.00	3.00	4.00	5.00	5.00	57.00	4.00	18.00	13.00	12.00	.00	.00	1.00	.00	.00	1.00
1.00	5.00	3.00	4.00	4.00	3.00	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	5.00	57.00	5.00	18.00	13.00	12.00	.00	1.00	1.00	.00	.00	1.00
1.00	4.00	4.00	4.00	3.00	3.00	2.00	4.00	4.00	5.00	5.00	3.00	5.00	4.00	5.00	54.00	4.00	16.00	13.00	12.00	.00	.00	1.00	.00	.00	1.00
1.00	2.00	2.00	3.00	2.00	2.00	3.00	3.00	2.00	2.00	4.00	3.00	2.00	2.00	5.00	37.00	2.00	12.00	7.00	7.00	1.00	.00	.00	1.00	1.00	.00
1.00	4.00	4.00	3.00	3.00	3.00	3.00	4.00	4.00	5.00	5.00	3.00	4.00	5.00	5.00	54.00	4.00	16.00	13.00	12.00	.00	.00	1.00	.00	.00	1.00
1.00	3.00	2.00	1.00	3.00	3.00	2.00	3.00	3.00	2.00	4.00	3.00	2.00	3.00	5.00	39.00	3.00	11.00	8.00	8.00	1.00	.00	.00	1.00	1.00	.00
1.00	4.00	4.00	3.00	3.00	3.00	4.00	4.00	4.00	5.00	5.00	4.00	5.00	5.00	5.00	58.00	4.00	17.00	13.00	14.00	.00	.00	1.00	.00	.00	1.00
1.00	4.00	3.00	3.00	3.00	3.00	2.00	4.00	4.00	5.00	5.00	4.00	3.00	5.00	5.00	53.00	4.00	14.00	13.00	12.00	.00	.00	.00	.00	.00	1.00
1.00	4.00	4.00	4.00	3.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	4.00	4.00	5.00	60.00	4.00	19.00	14.00	13.00	.00	.00	1.00	.00	.00	1.00
1.00	1.00	2.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00	2.00	3.00	3.00	3.00	30.00	1.00	9.00	6.00	8.00	1.00	.00	.00	1.00	1.00	.00
1.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	4.00	5.00	61.00	4.00	20.00	13.00	14.00	.00	.00	1.00	.00	.00	1.00
1.00	5.00	5.00	5.00	4.00	5.00	5.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	66.00	5.00	24.00	13.00	15.00	.00	1.00	1.00	.00	.00	1.00