SEXUAL DYSFUNCTION IN WOMEN

WITH PSYCHOSIS

Dissertation submitted to

The Tamil Nadu Dr. M.G.R. Medical University

In part fulfilment of the requirement for

M.D. branch XVIII - Psychiatry final examination

March 2014

CERTIFICATE

This is to certify that the dissertation titled "**Sexual dysfunction in women with psychosis**" is the bonafide work of **Dr.Suvarna Jyothi K** towards MD Psychiatry Degree Examination of Tamilnadu Dr M.G.R Medical University to be conducted in April 2014. This work has not been submitted to any university in part or full.

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Vellore 632002

CERTIFICATE

This is to certify that the dissertation titled "**Sexual dysfunction in women with psychosis**" is the bonafide work of **Dr.Suvarna Jyothi K**" towards the MD Psychiatry Degree Examination of Tamil Nadu Dr M.G.R Medical University to be conducted in April 2014 and that this study has been done under my guidance. This work has not been submitted to any university in part or full.

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Professor of Psychiatry
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DECLARATION

I hereby declare that this dissertation titled “Sexual dysfunction in women with psychosis” is a bonafide work done by me under the guidance of Dr. Anju Kuruvilla, Professor of Psychiatry, Christian Medical College, Vellore. This work has not been submitted to any university in part or full.

Dr.Suvarna Jyothi K
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I thank the research committee of Christian Medical College, Vellore for approval of funding of this project.

I am obliged to my parents, husband, brother and friends for their constant encouragement and support.

Suvarna Jyothi K

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October 8, 2012

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Sub: **FLUID Research grant project NEW PROPOSAL:**
Sexual dysfunction in women with psychosis.
Dr. Suvarna Jyothi. K., PG Registrar, Psychiatry, Dr. Anju Kuruvilla, Dr. Rajesh Gopalakrishnan, Psychiatry

Ref: IRB Min. No. 7942 dated 02.08.2012

Dear Dr. Suvarna Jyothi,

The Institutional Review Board (Blue, Research and Ethics Committee) of the Christian Medical College, Vellore, reviewed and discussed your project entitled "Sexual dysfunction in women with psychosis" on August 2, 2012.

The Committees reviewed the following documents:

1. Format for application to IRB submission
2. Consent Form (English and Tamil)
3. FSFI questionnaire (English and Tamil)
4. Cv of Dr. Suvarna Jyothi.
5. A CD containing documents 1 - 4

The following Institutional Review Board (Research & Ethics Committee) members were present at the meeting held on July 4, 2012 in the CREST/SACN Conference Room, Christian Medical College, Bagayam, Vellore 632002.

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We approve the project to be conducted as presented.

The Institutional Ethics Committee expects to be informed about the progress of the project, any serious adverse events occurring in the course of the project, any changes in the protocol and the patient information/informed consent. And on completion of the study you are expected to submit a copy of the final report.

A sum of ₹ 40,000/- (Rupees Forty thousand only) can be sanctioned for 12 months. A subsequent installment of 40,000/- will be released at the end of the first year following the receipt of the progress report (Total amount 80,000/-).

Yours sincerely

Dr. Nihal Thomas
Secretary (Ethics Committee)
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CC: Dr. Anju Kuruvilla, Professor, Department of Psychiatry -Unit 1, CMC

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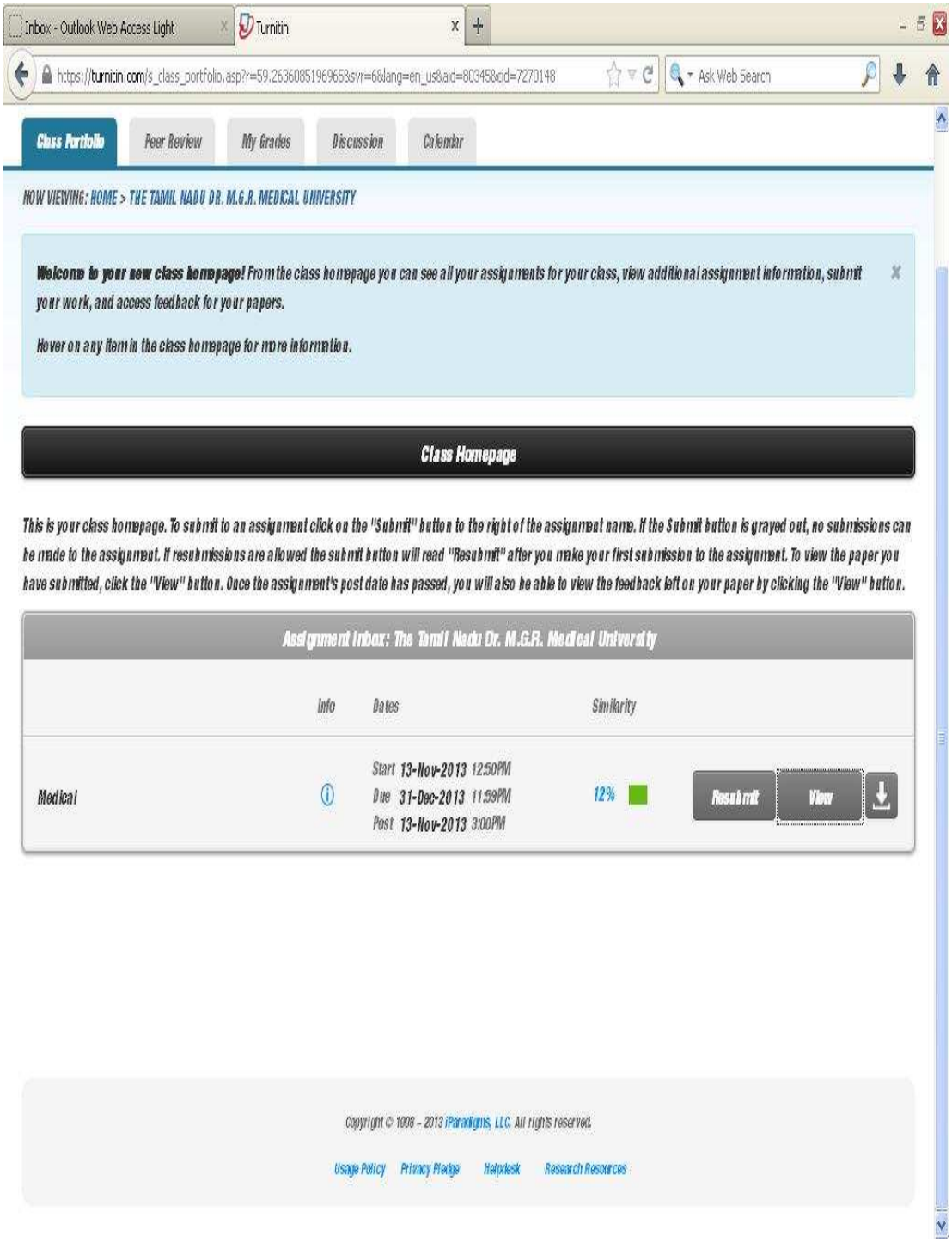
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INTRODUCTION

Human sexual function is complex and affected by many different factors. In patients with mental and emotional disorders such as schizophrenia, biological and psychosocial factors associated with sexual functioning are further complicated by illness and medication effects. Antipsychotic medication, the main modality of treatment in schizophrenia, is known to produce sexual side effects in addition to others such as weight gain and the metabolic syndrome. Because of the sensitive nature of the problem, many patients may not report this side effect to the therapist, though distressing to them, unless specifically asked for it. These sexual side-effects may subsequently lead to nonadherence, distress in patient and /or partner and marital dysharmony. Therefore effective management of this problem is essential. While prevention is most desirable, early identification and effective management of these sexual side effects could improve compliance and quality of life.

1. REVIEW OF LITERATURE:

1.1 NORMAL HUMAN SEXUALITY

1.1.1 DEFINITION

Sexuality refers to 'who we are' i.e. awareness of being a male or female, 'how we behave' i.e. expression of private thoughts and fantasies, and 'how we think 'as sexual beings.(1) It refers to the interaction of emotional (desire, feelings), cognitive (thoughts, expectations, judgements, plans),behavioural (overt actions) and physical experiences (sensations, increased blood flow, warmth).(2) Normal sexual behaviour involves stimulation of the primary sex organs followed by coitus, brings pleasure to both the partners, is not compulsive and is devoid of guilt and anxiety.(1)

1.1.2 HISTORY

Interest in sexual behaviour of humans began in 18th century but more focused studies were done in 1900s. (3)In world literature,"Psychopathia Sexualis", by Richard Freiherr von Krafft-Ebing in 1886, is one of the earliest books to describe case histories of human sexual behaviour and sexual disorders (4). Havelock Ellis published his work on a variety of sexual practices and inclinations ;his works included "The Evolution of Modesty" – "The Phenomena of Sexual Periodicity" and "Auto-Erotism" which helped in quantifying normal and abnormal sexual acts (5).More recently, research in sexuality was pioneered by Alfred Kinsey who performed large scale surveys in the late 1930s and published the Kinsey Reports on Sexual Behavior in the Human Male (1948) and Sexual Behavior in the Human Female (1953). In the 1960s William Masters and Virginia Johnson published their work on the sexual response cycle – considered a major landmark contribution in the history of sexuality research(6).

Research on aspects of female sexuality began in the late 1920s with surveys on the sex life of women in New York (.(7).Kinsey's work on sexual behaviour in the female in the United States was followed by a similar publication from the United Kingdom by Chesser.(8)The concept of female sexual dysfunction arose from the works of Masters and Johnson and Helen Singer Kaplan (7)(9). Later Laumann and colleagues published in 1999 their study in the United States using a national probability sample that reported a greater prevalence of sexual dysfunction among women as compared to men.(10). More recently, the topic of female sexual dysfunction has received more critical attention and attempts are being made to revise and redefine the concept.

From the cultural perspective, attitudes to sexuality have oscillated between the liberal and the puritanical, and between acceptance versus the repression of human sexuality. By the 1960s prevalent attitudes towards sex in the United States had become markedly liberal. However conservative views re emerged and this shift was attributed largely to the fear of getting infected with the Human Immunodeficiency Virus. (11)

Approaches to the management of sexual dysfunction have shifted over time, based on the prevailing ideology. Before the 1950s the psychoanalytic approach was widely accepted, wherein sexual problems were linked to unconscious unresolved conflicts during specific developmental periods. Psychoanalytic notions were predominantly male centered and were criticized for the controversial concept of penis envy and for labeling females as neurotic when they have clitoral orgasm. From the 1950s to the 70s, the behavioral perspective gained popularity and sexual dysfunction was reframed as a learned anxiety response. Behavioural interventions such as systematic desensitization and pairing of relaxation and exposure methods emerged and are practiced till today. In 1966 Masters and

Johnson published their laboratory observations of six hundred males and females during sexual intercourse(7).Helen Singer Kaplan in her book, The New Sex Therapy, suggested a new approach to understanding sexual dysfunction by integrating psychoanalytical and cognitive behavioural perspectives.(7) Following this ,the new era of the biopsychosocial model emerged ,which involves the management of dysfunction that incorporates detailed physical examination, education, behavioral and cognitive tasks, understanding the interpersonal context and issues and intervening with brief, problem focused solutions.(13)

1.1.3 ANATOMY AND PHYSIOLOGY

An adequate understanding of female sexual anatomy and physiology is necessary for the evaluation and management of sexual dysfunction.

Female external genitalia include vulva, mons pubis, labia majora and minora, clitoris, glans, vestibule and vaginal orifice. The ovary, fallopian tubes, uterus and vagina form the internal system of female genitalia.(14)

The female sexual response is highly influenced by hormones which are under the regulatory control of the hypothalamic-pituitary-gonadal (HPG) axis: hypothalamus, anterior part of pituitary gland, and ovary. The hypothalamus secretes gonadotropin releasing hormone (GnRH), which in turn stimulates the anterior pituitary to release follicle stimulating hormone (FSH) and luteinizing hormone (LH).LH stimulates thecal cells of the ovary to secrete testosterone, part of which gets converted by ovarian granulosa cells into estrogen before entering the circulation.FSH stimulates ovarian granulose cells to release oestrogen and the negative feedback regulation occurs when

inhibin reducing FSH secretion and oestrogen decreasing LH secretion from the anterior pituitary.(15)

Genitalia are predominantly innervated by the autonomic nervous system (ANS). The parasympathetic system plays a facilitatory role by increasing the blood flow and causing enlargement of the clitoris and lubrication of the vagina.The sympathetic system plays an inhibitory role by contracting uterine smooth muscles, clitoris and vagina which result in orgasm. As the ANS is under the involuntary control of the spinal cord, it is influenced by external events (e.g., drugs, stress) and internal organs (eg. Hypothalamus, cortical stimuli, limbic system), which makes the system easily vulnerable to dysfunction.(16)

1.1.4 NEUROBIOLOGY OF SEXUAL BEHAVIOUR

The neurobiology of female sexual behaviour includes neurochemistry, neuroendocrinolgy, neuroanatomy and neurogenetics.

Neurochemistry: Several neurotransmitters influence sexual functioning in a complex manner.

Dopamine

The overall effects of dopamine on sexual activity is facilitatory, increasing desire,increasing the subjective sense of arousal and helping to continue sexual activity once it begins.Evidence in favour of this includes reports of increase in sexual desire in patients taking antiparkinsonian medications which act by increasing dopamine,as well as reports of low sexual desire in patients taking antipsychotic medication which decrease central dopaminergic transmission.

Norepinephrine

Norepinephrine is said to regulate desire and sexual arousal by its action on the ventromedial hypothalamus.

Serotonin

Serotonin has variable effects on sexual functioning depending on its site of action and the receptor subtype involved.Increased serotonin in the brain dimnishes the excitatory effects of both dopamine and nor epinephrine.Peripherally, serotonin interferes with arousal by negative effects on sensations and decreasing synthesis of nitric oxide(NO).Serotonin also interferes with orgasm by decreasing the contractions of the uterus by it's effects on vascular tone and bloodflow.

Stimulation of $5HT_2$ subtype results in impaired sexual functioning while activation of $5HT_{1A}$ subtype results in facilitation of sexual activity. The evidence for the role of serotonin in sexual activity comes from the fact that SSRIs which increase serotonergic transmission can cause varied sexual side effects such as decreased libido and orgasmic difficulties.

Neuroendocrinolgy: The endocrine factors that are implicated in sexual functioning include androgens, estrogens, progesterone, prolactin, oxytocin, cortisol and pheromones.(17)

Testosterone

Testosterone is an androgen group of steroid hormone secreted predominantly by the testis in males. It is also secreted by ovaries and by the adrenal glands in female. Its secretion is controlled by the hypothalamic-pituitary-adrenal axis (HPA or HTPA axis) .In response to sexual arousal, the cerebral cortex sends a signal to the hypothalamus and GnRH is released, this stimulates the anterior pituitary to release LH, which in turn stimulates the testes and ovaries to produce testosterone .Production levels are controlled by negative feedback.

Oestrogen

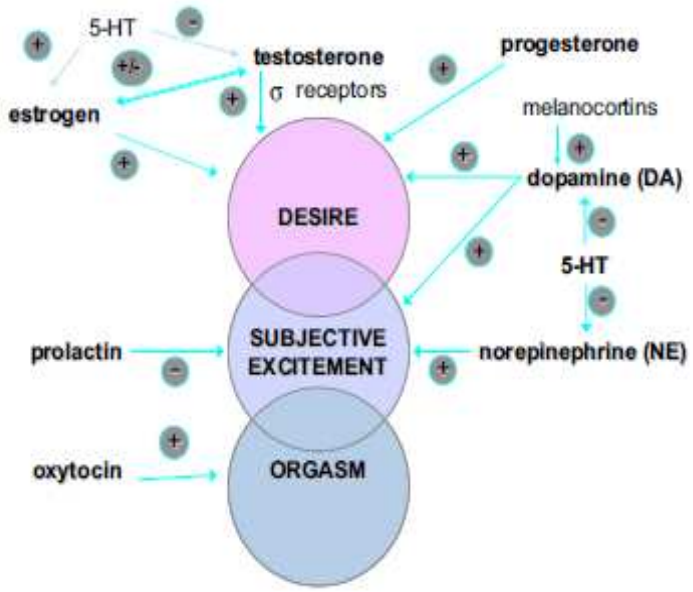
Oestrogen also belongs to the steroid family and is secreted predominantly by the ovaries following stimulation by LH, and also in small amounts by the liver and adrenal glands. Oestrogen synthesis begins in the ovarian cells by the synthesis of androstenedione which gets converted to oestradiol.

Prolactin

Prolactin is a peptide homone secreted from the anterior pituitary. Dopamine acts on the tuberoinfundibular pathway and inhibits prolactin secretion. Serotonin increases the release of prolactin. The reproductive effects of chronic elevation of prolactin levels include reduced sexual drive.The exact mechanism by which hyperprolactinemia causes sexual dysfunction is not clearly understood.

Others

The effects of oxytocin and endorphins in human sexual activity is not clearly defined , however they may possibly have an inhibitory effect.



(Psychiatric clinics of North America 2010,Mental Health Today 2000)(15)

1.1.5 HUMAN SEXUAL RESPONSE CYCLE

There are 3 types of sexual response cycles described in literature.

They include:

1. EPOR model (1966)

Masters and Johnson were the first to describe the female sexual response in humans. They described it in four linear successive phases: excitement, plateau, orgasmic and resolution .(18)

Later they described the Biphasic model where excitement and orgasm are viewed separately and plateau as a state where both excitement and orgasm are absent.(19)This

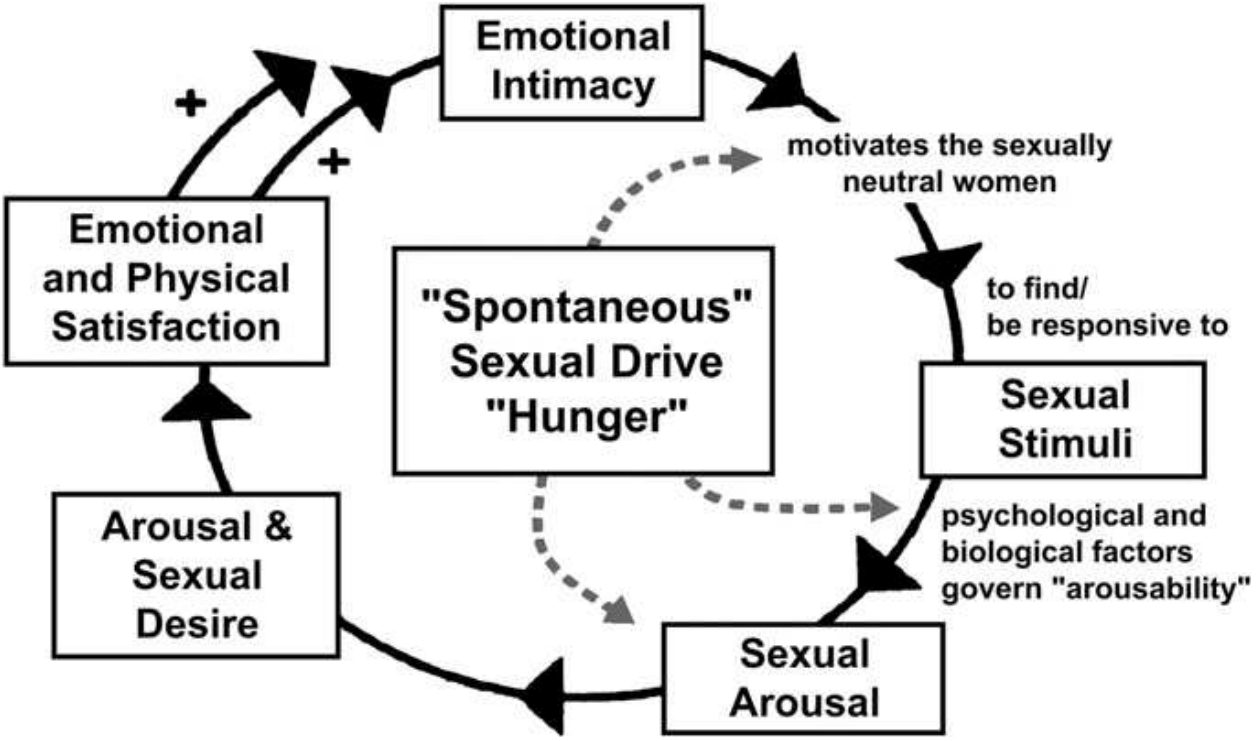
model fails to explain variable responses in different women and even variability from one episode to another in the same woman.(20)

2. DEO model (1979)

Kaplan proposed this three-phase model, which included a desire phase along with arousal and orgasm and excluded the resolution phase. She proposed that before the E (excitement) phase there should be a D (desire) phase .(21) This formed the basis for the current DSM-IV definition of the sexual response cycle.

3. Basson's model (2001)

Basson was dissatisfied with the linear model of sexual response and proposed that though the model was adequate for describing the male sexual response, it did not fully describe the female sexual response. She postulated a circular model, which states that closeness between partners increase the effectiveness of sexual arousal and that enhanced sexual arousal results in orgasm. She propounded that women engage in sexual activity not for orgasm but due to multiple other psychological and social advantages.(22)



(From Basson R. Female sexual response: the role of drugs in the management of sexual dysfunction. Obstet Gynecol2001;98:3503; with permission).

DSM-IV-TR (American Psychiatric Association. (2000)) defines the sexual response cycle in 4 phases:

Phase I- desire phase

Phase II- excitement phase

Phase III-orgasm phase

Phase IV- resolution phase.

The sequence of responses overlaps and fluctuates rather than progressing in a linear manner. It is also recognized that an individual's subjective experiences are equally important to objective physiologic response in terms of sexual satisfaction.(23)

1. Desire phase

The desire phase is a distinct psychological phase which reflects motivations, drives and personality. The conscious desire to have sex and sexual fantasies happen during this phase. Though considered a psychological phase, it may be biologically driven as well.(23)

2. Excitement phaseExcitement happens following psychological or physiological stimulation. It includes both subjective and objective signs of sexual excitement. It is characterized by physiological changes like increased respiratory rate, heart rate and blood pressure, increased blood flow to genitals with swelling of clitoris, lubrication of vagina, breast engorgement, and hardening of nipples and psychological changes like heightened sensitivity to stimuli and sense of pleasure.(24)(23)

3. Orgasm phase

This is characterized by a sense of heightened sexual pleasure with the release of sexual tension, and pelvic muscle contraction. It is also associated with 3 to 15 involuntary sustained rhythmic contractions of the lower third of the vagina and uterus. These contractions progress from the fundus to the cervix, along with involuntary contractions of the anal sphincter. Blood pressure, heart rate, respiratory rate and muscle tension reaches its peak. Orgasm lasts from 3 to 25 seconds and is associated with a slight clouding of consciousness.(23)

4. Resolution phase

Resolution brings the body back to its resting state .It is characterized by disgorgement of blood from the genitalia (detumescence).Resolution is rapid and associated with a subjective sense of well-being and relaxation if orgasm occurs .Resolution may take 2 to 6

hours if orgasm does not occur, and can be associated with irritability and discomfort. Women are capable of multiple and successive orgasms as they don't have a refractory period.

Summarizing, the sexual response is a true psycho-physiological experience. Desire is predominantly psychological, arousal is triggered by both psychological and physical stimuli and orgasm is normally a peak subjective perception of release .Psychosexual development , attitude towards sexuality and one's sexual partner influence sexual response.(2)

1.2 DESCRIPTION OF FEMALE SEXUAL DYSFUNCTION

1.2.1 DEFINITION

In the Text Revision of Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV-TR), sexual dysfunctions are categorized as Axis I disorders.

The syndromes listed are correlated with the sexual physiological response, which is divided into the four phases discussed above. The essential feature of the sexual dysfunctions is inhibition in one or more of the phases, including problems in the subjective sense of pleasure or desire or disturbance in objective performance or experience. Either type of disturbance can occur alone or in combination. Sexual dysfunctions are diagnosed only when they are a major part of the clinical picture. They can be lifelong or acquired; situational or generalized; due to psychological factors, physiological factors or due to combined etiology. If sexual dysfunction is attributable to a general medical condition or substance use, adverse effects of medication, then sexual

dysfunction due to a general medical condition or substance-induced sexual dysfunction is to be diagnosed accordingly.

1.2.2 DIAGNOSTIC CRITERIA OF SEXUAL DYSFUNCTION IN FEMALE

Seven major categories of sexual dysfunction are listed in DSM-IV-TR: They include(25)

(1) Sexual desire disorders

(2) Sexual arousal disorders

(3) Orgasm disorders

(4) Sexual pain disorders

(5) Sexual dysfunction due to a general medical condition,

(6) Substance-induced sexual dysfunction

(7) Sexual dysfunction not otherwise specified.

According to the tenth revision of International Statistical Classification of Diseases and Related Health Problems (ICD-10), sexual dysfunction refers to a person's inability to "participate in a sexual relationship as he or she would wish." The dysfunction is manifested as a lack of desire or of pleasure or as a physiological inability to initiate, maintains, or complete sexual interaction. Because sexual response is psychosomatic, it may be difficult to determine "the relative importance of psychological and/or organic factors."

Sexual dysfunction such as lack of desire can occur in both genders, but women more often complain of the "subjective quality" of the experience than of the "failure of a specific response." ICD-10 advises looking "beyond the presenting complaint to find the most appropriate diagnostic category".ICD 10 criteria for sexual dysfunction include:

- G1. The subject is unable to participate in a sexual relationship as he or she would wish.
- G2. The dysfunction occurs frequently, but may be absent on some occasions.
- G3. The dysfunction has been present for at least 6 months.
- G4. The dysfunction is not entirely attributable to any of the other mental and behavioural disorders in ICD-10, physical disorders (eg:, endocrine disorder), or drug treatment

<u>Lack or loss of sexual desire</u>

A. The general criteria for sexual dysfunction must be met.

B. There is a lack or loss of sexual desire, manifested by decrease in seeking out sexual cues, of thinking about sex with associated feelings of desire or appetite, or of sexual fantasies.

C. There is a lack of interest in initiating sexual activity either with a partner or as solitary masturbation, resulting in a frequency of activity clearly lower than expected, taking into account age and context, or in a frequency very clearly reduced from previous much higher levels.

<u>Sexual aversion</u>

A. The general criteria for sexual dysfunction must be met.

B. The prospect of sexual interaction with a partner produces sufficient aversion, fear, or anxiety that sexual activity is avoided, or, if it occurs, is associated with strong negative feelings and an inability to experience any pleasure.

C. The aversion is not the result of performance anxiety (reaction to previous failure of sexual response).

Lack of sexual enjoyment

A. The general criteria for sexual dysfunction must be met.

B. Genital response (orgasm) occurs during sexual stimulation but is not accompanied by pleasurable sensations or feelings of pleasant excitement.

C. There is no manifest and persistent fear or anxiety during sexual activity.

Failure of genital response

A. The general criteria for sexual dysfunction must be met.

B. There is failure of genital response, experienced as failure of vaginal lubrication, together with inadequate tumescence of the labia. The dysfunction takes one of the following forms:

1. general: Lubrication fails in all relevant circumstances, lubrication may occur initially but fails to persist for long enough to allow comfortable penile entry;
2. Situational: Lubrication occurs only in some situations (e.g., with one partner but not another, or during masturbation, or when vaginal intercourse is not being contemplated).

Orgasmic dysfunction

A. The general criteria for sexual dysfunction must be met.

B. There is orgasmic dysfunction (either absence or marked delay of orgasm), which takes one of the following forms:

1. orgasm has never been experienced in any situation;
2. orgasmic dysfunction has developed after a period of relatively normal response:

a. general: Orgasmic dysfunction occurs in all situations and with any partner;

b. situational: Orgasm does occur in certain situations (e.g., when masturbating or with certain partners

c. The problem is not the result of prolonged abstinence from sexual activity.

Nonorganic vaginismus

A. The general criteria for sexual dysfunction must be met.

B. There is spasm of the perivaginal muscles, sufficient to prevent penile entry or make it uncomfortable. The dysfunction takes one of the following forms:

1. normal response has never been experienced;

2. Vaginismus has developed after a period of relatively normal response:

a. when vaginal entry is not attempted, a normal sexual response may occur;

b. any attempt at sexual contact leads to generalized fear and efforts to avoid vaginal entry (e.g., spasm of the adductor muscles of the thighs).

Nonorganic Dyspareunia

A. The general criteria for sexual dysfunction must be met.

B. Pain is experienced at the entry of the vagina, either throughout sexual intercourse or only when deep thrusting of the penis occurs.

C. The disorder is not attributable to Vaginismus or failure of lubrication; Dyspareunia of organic origin should be classified according to the underlying disorder.

Excessive sexual drive: No research criteria are attempted for this category. Other sexual dysfunction, not caused by organic disorder or disease Unspecified sexual dysfunction, not caused by organic disorder or disease(23)

DSM-V: (25)

The following categories were present under sexual dysfunction

Specify if: lifelong/acquired

Specify if: generalized/ situational

Specify current severity: Mild/moderate /severe distress over the symptoms

302.73 Female orgasmic disorder

A. Presence of either of the two symptoms and experienced on almost all (75-100%) occasions of sexual activity

1. Marked delay /infrequency/absence of orgasm

2. Markedly reduced intensity of sensations of orgasm

B. The symptoms would have persisted for a minimum duration of 6 months

C.The above mentioned symptoms cause significant distress in the individual

D.The sexual dysfunction is not better explained by a non sexual mental disorder or as a consequence of severe relationship distress (e.g., partner violence) or other significant

stressors and is not attributable to effects of a substance /medication or another medical condition.

Specify if: they never experienced orgasm under any situation

302.72 Female sexual interest/Arousal disorder

A. Lack of, or significantly reduced, sexual interest/arousal, as manifested by at least three of the following:

1. Absent/reduced sexual activity

2. Absent/reduced sexual /erotic thoughts/fantasies

3. No/reduced initiation of sexual activity, and typically unreceptive to partners attempts to initiate

4. Absent /reduced sexual excitement/pleasure during sexual activity in almost all or all (75-100%) sexual encounters

5. Absent /reduced sexual interest/arousal in response to any internal or external sexual /erotic cues (eg:, written,visual,verbal)

6. Absent /reduced genital or non genital sensations during sexual activity in all or all (75-100%) sexual encounters

B. The symptoms would have persisted for a minimum duration of 6 months

C.The above mentioned symptoms cause clinically significant distress in the individual

D.The sexual dysfunction is not better explained by a non sexual mental disorder or as a consequence of severe relationship distress (e.g., partner violence) or other significant stressors and is not attributable to effects of a substance /medication or another medical condition.

302.76 Genito-pelvic pain/penetration disorder

A. Persistent or recurrent difficulties in at least one of the following

1. Vaginal penetration during intercourse
2. Marked vulvovaginal or pelvic pain during vaginal intercourse or penetration attempts.
3. Marked fear /anxiety about vulvovaginal or pelvic pain in anticipation of, during or as a result of penetration.
4. Marked tensing or tightening of the pelvic floor muscles during attempted vaginal penetration.

B. The symptoms would have persisted for a minimum duration of 6 months

C. The above mentioned symptoms cause significant distress in the individual

D. The sexual dysfunction is not better explained by a non sexual mental disorder or as a consequence of severe relationship distress (e.g., partner violence) or other significant stressors and is not attributable to effects of a substance /medication or another medical condition.

302.79 Other specified sexual dysfunction

302.70 Unspecified sexual dysfunction

1.2.3 THEORIES AND RISK FACTORS

Different etiological models are proposed for dysfunction in each phase of sexual response cycle. They include psychological, behavioural, biological and social models.

- Biological model- affects through physiological mechanisms that prepare and enables genital response
- Psychological model -affects through affective and cognitive predispositions and interpretations that sustain genital response
- Social model affects through dyadic interactions promoting intimacy, satisfaction.

Problems in all the above factors contribute to sexual dysfunction and it is often difficult to distinguish which model contributes to what in different phases of sexual responsive cycle.

Theories for hypoactive sexual desire include:

- Low dopamine
- Low testosterone
- Negative emotions (anger, shame, guilt etc.)
- Marital dissatisfaction
- Childhood sexual abuse
- Physical abuse by partner

- Gender identity conflict
- Painful experiences with coitus in past

Theories for sexual aversion disorders include:

- Early sexual abuse
- Perception of physical abuse by partner
- Painful experiences with coitus

Theories for Sexual arousal disorders include:

- Low dopamine
- Low nor epinephrine
- High serotonin
- Physiological problems(decreased lubrication)
- Inadequate foreplay
- Hurried attempts at intercourse
- Conflicting religious/cultural ideas
- Relationship dissatisfaction
- Preoccupation with life tasks
- Sexual orientation incongruity

Theories for Orgasmic Disorder include:

- High serotonin
- In ability to give up clitoral sensitivity for vaginal responsiveness (Freud's notion)
- Fear of losing control
- Disappointments with father
- Guilt regarding sexual impulses
- Fear of rejection/damage

Theories for Vaginismus include:

- Psychosomatic illness
- Phobia to sex
- Rejection of female role
- Conditioned fears
- Strict religious adherence
- Irrational beliefs about anatomy of female genitalia

Theories for Dyspareunia include:

- Rigid hymen
- Vaginal atrophy
- Infections of female external or internal genitalia

- Post gynaecological and obstetric surgeries

Along with the above mentioned factors, medical conditions affecting neurotransmitters and hormones involved in sexual functioning like neurological, endocrine, cardiovascular and pelvic conditions do influence difference phases of the sexual response cycle. Drugs affecting sexual functioning include sex steroids, psychotropic's, histamine receptor blockers, narcotics, NSAIDs, thiazide diuretics and non selective beta antagonists.(15)

1.3 PREVALENCE OF FEMALE SEXUAL DYSFUNCTION

There is a paucity of literature on female sexual dysfunction as compared to that available on male sexual dysfunction. A majority of these are cross sectional studies; longitudinal studies are scarce. Studies on female sexual dysfunction have mostly been conducted in the community; there are few on patients with co morbid medical and psychiatric disorders. There is some literature available on relative comparison of sexual dysfunction with different antipsychotic medications especially second generation antipsychotics.

1.3.1 INTERNATIONAL DATA

National Health and Social Life Survey (NHSLS) evaluated the sexual behaviour of a 1992 strong cohort of adults in the United States and concluded that sexual dysfunction is more common in women (43%) than in men (31%) and is associated with negative experiences in sexual relationships as well as poor physical and emotional health.(26)A large cross sectional study from Iran evaluated prevalence and risk factors associated with sexual dysfunction in women between the ages of 20 and 60 in the community using a self reported questionnaire (Female Sexual Function Index-FSFI) and DSM-IV criteria for a

diagnosis of sexual dysfunction. The study concluded that the prevalence of sexual dysfunction was 31.5% ; it increased with age (26% in 20–39 years to 39% in those above 45 years). The prevalence of orgasmic disorders (OD) was 37 %, desire disorders (DD) was 35% , arousal disorders (AD) was 30% and pain disorders was 26.7% All these, except pain disorders, increased significantly with age ; pain disorders were most frequently reported in women aged 20–29 years . The factors associated with sexual dysfunction included psychological problems, low physical activity, chronic disease, multiparity, menopause status and spousal sexual dysfunction.(27) Similar results of prevalence of female sexual dysfunction increasing with age was found in a cross sectional survey of Turkish women of 18-65 years evaluated using the Female Sexual Function Index(FSFI) ;it was found that low education, lack of employment, chronic diseases, multiparity and menopausal status were important risk factors.(28) A study of women in an outpatient clinic in Nigeria reported that 63% out of 384 interviewed were sexually dysfunctional ; disorder of desire was reported in 8.3%, disorder of arousal in 5.4%, disorder of orgasm in 63.6% and dyspareunia in 22.7% .The peak age of sexual dysfunction was observed among the 26-30 year-olds, as opposed to previous studies which reported increased prevalence with increasing age. Another difference in this study was the report of women from higher educational status being more affected in contrast to results from the community sample where lower education was reported to be a risk factor. Reasons for an unsatisfactory sexual life were similar in most studies and mainly included psychosexual factors such as an uncaring partner, excessive domestic duties, lack of adequate foreplay, competition among wives in a polygamous family setting, previous sexual abuse, guilt-feeling of previous pregnancy termination among infertile women as

well as medical illness and medication intake.(29).A critical review of published studies on changes in sexual function with age among women commented that there were significant inconsistencies in the measurement of sexual function which may have resulted in erroneous results. They concluded that sexual function declines with age and that prevalence of most sexual dysfunctions remains constant with age except for dyspareunia which may decrease with age. The possible explanation for constancy of dysfunction inspite of decline in functioning could be a change in perceived personal distress associated with sexual dysfunction.(30)

Another study with a small sample of 50 patients evaluated prevalence and comorbid symptoms on partners of men presenting with sexual dysfunction using a standardized tool – the Brief Index of Sexual Function for Women - revealed the presence of hypoactive desire in 20%, arousal/lubrication difficulty in 30%, orgasmic difficulty in 24%, dyspareunia in 18% and sexual dissatisfaction in 34%.They also reported co morbid symptoms of incontinence during intercourse in 8% and depressive symptoms in 44%.(31).

Several possible limitations for generalizability of most of studies on female sexual dysfunction have been identified including variable measurement criteria, low response rates, limited age ranges, restrictive inclusion criteria and unmeasured or unanalyzed confounders.(30)

A significant issue is the difference between prevalence rates of female sexual problems and the prevalence of associated sexual distress. A large epidemiological study in the United States of America revealed that age adjusted prevalence of sexual problems was 43.1% (as rated by -the Changes in Sexual Functioning Questionnaire- CSFQ) but

prevalence of sexually related personal distress was 22.2% (as defined by a score of more than 15 score on the Female Sexual Distress Scale)(32)

Studies on prevalence of female sexual dysfunction in common medical conditions like diabetes report increased prevalence in diabetic women probably due to neuroendocrine changes resulting in decreased vaginal lubrication(33). The impact of diabetes on women's sexual function is complex and the most consistent finding is a correlation between sexual dysfunction and depression.(34) A study in obese and overweight women as evaluated by FSFI showed a very high prevalence of sexual dysfunction(78.3%) and high co morbid hypertension, diabetes and dyslipidemia.(35).A study on heterosexual couples with sexual dysfunction revealed high co morbid lifetime affective disorders (38.3%)and lifetime anxiety disorders (37.3%) in women with sexual dysfunction.(36)

1.3.2 INDIAN DATA

There is a paucity of epidemiologic data in India regarding female sexual dysfunction. A cross sectional study revealed a prevalence of 73.2% using the FSFI. They also identified older age (above 40 years) and lower level of education as unmodifiable risk factors. Most of the women attributed sexual dysfunction to physical illness in self or partner, problems in relationship, and cultural taboos but none had sought professional help. (37)A large cross sectional study in the community revealed prevalence of sexual dysfunction (64.3%), desire disorder (55.2%), arousal disorder (52.0%), lubrication disorder (52.0%), orgasm disorder (52.0%), satisfaction disorder (50.9%), and pain disorder (51.6%). It also reported increasing age, illiteracy, menopausal status, financial debt, marital discord,

husband's fidelity, lack of privacy at home, lack of definitive contraception and the presence of medical illness to be associated with low scores on FSFI.(38)

A hospital based sample from an obstetrics and gynecology clinic revealed that there was a discrepancy in the prevalence of female sexual dysfunction as assessed by DSM-IV criteria and FSFI(Female Sexual Functioning Index) and found that there was no sexual dysfunction in two thirds of women as assessed by DSM-IV(39)

1.3.3 ASSESSMENT OF FEMALE SEXUAL DYSFUNCTION:

Suggested steps in the assessment of sexual problems in the female patient:

1. Ensure a conducive environment:

Establishing a rapport puts the patient at ease and makes the environment suitable for discussing sexual problems. Use of appropriate terminology avoids discomfort and embarrassment for the patient and therapist.

2. Detailed history and assessment:

History should include past medical history, current health status and reproductive history. Evaluation needs to be done to rule out endocrinological, thyroid and psychiatric illness. A complete sexual history should include medical, surgical, psychiatric, social and sexual information in great detail.

3. Laboratory evaluation and physical examination:

Laboratory evaluation helps in determining physiological factors involved in sexual complaints. This needs to be done along with evaluation of blood pressure, pulse rate, peripheral pulses, edema, and neurological screen to assess sensation.

4, Scales, questionnaires, and checklists:

Validated instruments include

BISF-W-Brief Index of Sexual Functioning (Taylor et al1994)

CSFQ-Changes in Sexual Functioning Questionnaire (Clayton et al 1997)

DISF-Derogatis Interview for Sexual Functioning (Derogatis et al, 1997)

GRISS-Golombok Rust Inventory on Sexual Satisfaction (Rust et al, 1986)

FSFI-Female Sexual Function Index (Rosen et al, 2000)

Though FSFI is validated for western populations there are huge discrepancies in prevalence reported by FSFI in Indian subcontinent. A cross sectional hospital based study attempted to validate FSFI in southern India against the gold standard of DSM-IV criteria.(39)

1.4 SEXUAL DYSFUNCTION IN PSYCHOSIS AND SCHIZOPHRENIA

1.4.1PREVALENCE

Sexual dysfunction is common in people with schizophrenia and other psychotic disorders The prevalence rates have been reported to be 30–80% in women and 45–80% in men.(40)(41)(42)(43)(44)(45)(46)(47) All domains of sexual function(43)(48), including desire, arousal, erection, ejaculation and orgasm have been reported to be affected.

1.4.2 ETIOLOGICAL FACTORS: Sexual dysfunction among this population has been attributed to several factors: the disease process itself (positive, negative, cognitive symptoms), severity of symptoms ,as well as secondary to medication used in the management of the illness.

1.4.2.1*Illness related factors*: Several studies have shown that sexual dysfunction is present at the onset of illness,(49)(50) even prior to the commencement of

antipsychotic medication(51) .The severity of dysfunction has been reported to be positively correlated to the severity of the illness.(52)(53)(54)Some studies have reported that depressive symptoms in people with psychosis may contribute to the presence of sexual dysfunction, however findings have not been consistent,(54)(55)(46)The presence of sexual dysfunction in individuals with a prodrome or at the onset of illness has raised the possibility that the psychotic illness and the sexual dysfunction have a shared etiology, such as dopaminergic dysfunction(56).

1.4.2.2 *Antipsychotic induced sexual dysfunction*: Sexual dysfunction is a common but significantly underestimated side effect of antipsychotic medication. Though common, women are less likely than men to report it. The most common sexual dysfunction among women reported in literature was a decrease in libido, inability to achieve orgasm and menstrual irregularities(57)

The mechanisms by which antipsychotic drugs may cause sexual dysfunction are as follows:

Dopamine receptor antagonism-The four well defined pathways of dopamine in the brain include the mesolombic ,mesocortical , nigrostraital and the tuberinfundibular pathway.(58) The hyperactivity of the mesolombic pathway accounts for positive psychotic symptoms as well as aggressive/hostile symptoms through serotonergic control of dopamine. The mesocortical pathway mediates negative/cognitive symptoms along with excitotoxic glutamate overactivity from degenerative processes. The hyperactivity of nigrostraital pathways accounts for

various movement disorders and rigidity. The dopamine neurons of the tuberinfundibular pathway project from the hypothalamus to the anterior part of pituatory gland. The dopamine neurons when active inhibit prolactin release. Drugs which decrease dopamine (including antipsychotic drugs) can cause a rise in prolactin by preventing feedback inhibition.(58) Antipsychotic induced sexual dysfunction is thought to be related to the hyperprolactinaemia that can be induced by dopamine-blocking properties of these agents. Prolactin elevation secondary to treatment with antipsychotic medications are often much higher in women than in men. Hyperprolactinaemia can manifest as gynaecomastia, galactorrhoea, sexual dysfunction, infertility, oligomenorrhoea, amenorrhea and bone loss. As hyperprolactinaemia can also be due to tumors in the hypothalamic-pituitary area, these should always be ruled out before assuming it to be antipsychotic induced hyperprolactinaemia.

Dopaminergic receptor antagonism may also decrease the libido by inhibiting motivation and reward.

Histamine receptor antagonism- Antipsychotic medication, being bound to histaminergic receptors may impair arousal by directly increasing sedation.

Cholinergic receptor antagonism- Cholinergic receptor antagonism may induce erectile dysfunction by reducing peripheral vasodilation.

Alpha-adrenergic alpha receptor antagonism- Alpha-adrenergic alpha receptor antagonism can reduce peripheral vasodilation, resulting in erectile dysfunction in men and decreased lubrication in women. Additionally, abnormal ejaculation in men is correlated with the anti-adrenergic effects of treatment.

Serotonergic blockade-This is also considered a potential cause of antipsychotic induced sexual dysfunction.

Prevalence-A self reported assessment in severely mentally ill outpatients found that 38.5% of females and 62.5% of males felt that their psychiatric medications were causing sexual side effects .However, there was a significant gender difference in reporting ,with 80% of the women failing to discuss this perceived sexual dysfunction with their mental health care providers . 15.4% of them had stopped their medications at some point during their treatment based on a belief that they were experiencing sexual side effects.(57) The prevalence rates for related side-effects range from 45% for oligomenorrhoea/amenorrhea and 19% for galactorrhoea.(59)

Nature of drug Among the different antipsychotic agents, risperidone and the typical antipsychotics are associated with a high rate of sexual dysfunction as compared to olanzapine, clozapine, quetiapine and aripiprazole.(60)The Intercontinental Schizophrenia Outpatient-Health Outcomes observational study (IC-SOHO) found that olanzapine had the lowest prevalence of neuroleptic-induced sexual difficulties; no significant difference between males and females was observed.(61) . Risperidone has also been reported to be associated with an increase in serum prolactin level due to a drug-induced benign pituitary tumor (prolactinoma);a few case reports have noted a resolution of hyperprolactinaemia and prolactinoma after cessation of risperidone treatment.(62)

1.4.3 CONSEQUENCES: Sexual dysfunction in psychotic disorders causes distress to the individual, partner dissatisfaction, marital disharmony, increase risk of antipsychotic nonadherence ,suicide, a poorer quality of life and significant problems in the long term management of women with schizophrenia.(33, 36)

1.4.4 MANAGEMENT OF SEXUAL DYSFUNCTION

Given the consequences of sexual dysfunction in people with schizophrenia, preventing the onset of such problems would be ideal, though often not practically possible. There is little evidence based research available on the management strategies and no agents had been proven to have consistent efficacy in treating antipsychotic-induced sexual dysfunction in women.(64)(65)(57)A systematic review of 15 RCTs revealed that psychological interventions like Masters and Johnson techniques or a cognitive-behavioral treatment program have produced improvements in sexual functioning in general ,however benefits were not always maintained in the follow-up period.(66)

Possible management strategies that have been suggested include:

-Reduction of antipsychotic dose. However it must be kept in mind that maintenance treatments with a lower and potentially inadequate dose have a higher relapse rate than the no-dose-reduction treatment.

-Switching to a different antipsychotic agent. A change from an antipsychotic agent that has a greater tendency to elevate prolactin -such as haloperidol, risperidone, and amisulpride- to a prolactin-sparing drug -such as olanzapine, clozapine, quetiapine, ziprasidone, and aripiprazole-(67)(68)(69) may reduce sexual dysfunction. However this is

not always possible if the patient has responded well to the current antipsychotic. Furthermore, the alternative antipsychotic may be associated with other adverse effects, such as sedation, weight gain, and diabetes.

-Adjunctive dopamine agonists, such as bromocriptine. However, evidence suggests the addition of dopamine agonists often aggravates psychosis and abnormal involuntary movements.

-Alternative therapies. Adjunctive herbal medicines are used commonly in China and Japan to manage antipsychotic-induced hyperprolactinemia in clinical practice.

-Treatments individualized towards the specific complaints of the particular woman is necessary as hormones and agents like Tibolone are relevant treatment options for women with menopausal symptoms.(70).The British Society for Sexual Medicine (BSSM) recommends sufficient enquiry about the sex life and assessment and correction of testosterone deficiency ,as testosterone is thought to be contribute to a healthy sex life for both women and men.(61)

-Apart from the above mentioned strategies, the following techniques can be used for all women who have sexual dysfunction:

-For lack of sexual desire, psychotherapeutic interventions like psychodynamic, cognitive, behavioural and marital techniques can be used either alone or in combination. However the outcome studies of combination treatments demonstrate that 50-70% of women with disorders of sexual desire achieve modest gains following therapy, but these gains were not maintained in longer follow ups.(72)(73)(74)Testosterone has been shown to increase

sexual desire but its effect may be limited to those who have low levels of bioavailable testosterone.(75)

-For sexual arousal disorders techniques that increase sexual arousal (fantasy training, erotic stimuli, attention focusing measures, Kegels exercises) and techniques that reduce factors inhibiting sexual arousal (cognitive restructuring, relaxation training, systematic desensitization of anxiety provoking stimuli)can be employed along with enhancing partner skills and addressing relationship issues.(72)

-For orgasmic disorders, a combination of sex education, sexual skills training, sensate focus techniques, directed masturbation can be employed.(75)

-For pain disorders like dyspareunia targeting treatment on the etiological entity is useful. However some studies reported that dyspareunia did not improve until completing a course of sex therapy in women who underwent medical /surgical procedures for dyspareunia. Vaginismus is treated with a combination of banning sexual intercourse, graduated insertion of increasing sized dilators, systematic desensitization, kegels exercise and resolving unconscious conflicts.

1.4.5 SUMMARY:

Sexual dysfunction is a common and distressing problem among women with psychosis. Prevalence rates vary from 30 to 80% .(76)Risk factors include the disease itself ,as well as antipsychotic medication used in the treatment. As women may have problems discussing these difficulties openly, the clinician will be required to sensitively handle these concerns. If inadequately managed, female sexual dysfunction could lead to significant distress and a

poorer quality of life. While prevention of onset is ideal, management strategies include the use of prolactin sparing antipsychotic agents.

1.5 RATIONALE FOR THE STUDY

There is currently little information regarding the longitudinal course of sexual function among women with schizophrenia. This study was performed to assess the extent of the problem prior to initiation of treatment and the course after commencing on antipsychotic medication.

AIMS AND OBJECTIVES

AIM

This study was conducted to investigate sexual dysfunction in women with psychosis.

SPECIFIC OBJECTIVES

1. To describe the nature, prevalence and risk factors for sexual dysfunction in neuroleptic-naïve women with psychosis.
2. To evaluate the incidence of antipsychotic medication induced sexual dysfunction in women while on treatment for psychosis.

METHODOLOGY

3.1 STUDY DESIGN

The study was an observational one that studied a cohort of women with a diagnosis of psychosis, who were assessed prior to onset of treatment and again during the course of treatment.

3.2 STUDY SETTING AND SITE

This study was carried out in patients attending the outpatient clinics and admitted into the ward at the Department of Psychiatry, Christian Medical College, and Vellore. This 122-bed hospital provides short-term care for patients with a variety of psychiatric diagnoses from the town of Vellore and a wider rural area beyond. It also functions as a tertiary referral centre for management of patients with mental and behavioral disorders from different parts of India. The emphasis is on a multidisciplinary approach and eclectic care using a wide variety of pharmacological and psychological treatments. The hospital has a daily outpatient clinic in which 400-450 patients are seen per day.

Patients were recruited over a period of 12 months. Following recruitment participants were interviewed at three points in time. The first was at initial presentation to the hospital when in a drug-naïve state, or when off antipsychotic medication for at least six months; the second and third were at 6 weeks and 6 months after initiating antipsychotic medication. All patients received treatment as usual.

3.3 SUBJECTS

Subjects were chosen from those attending the outpatient clinic at the Department of Psychiatry based on the following criteria:

Inclusion criteria

Married women aged between 18 and 45 years, who were conversant in Tamil and were diagnosed to have acute psychosis or schizophrenia based on International Classification of Diseases - 10 (ICD-10) research diagnostic criteria (WHO, 1992).

Exclusion criteria

Subjects with a history of antipsychotic exposure within the past 6 months, those with severe language, hearing or cognitive impairment, primary mood disorder, substance use disorder, those with organic disorders including gynecological and endocrine disease that affect sexuality, those who were pregnant or breast-feeding within the past 6 months, post menopausal women and those who were unable to participate due to severity of psychosis.

3.4 PROCEDURE

3.4.1 Sampling

Consecutive patients who attended the outpatient clinic, who fulfilled criteria for inclusion into the study, were contacted. Informed consent was obtained.

3.4.2 Variables assessed

All subjects who consented to take part in the study were assessed for female sexual dysfunction using the Tamil version of the Female Sexual Function Index (FSFI) as well as DSM IV criteria for female sexual dysfunction. Sociodemographic data was recorded in a specially designed proforma. Clinical variables such as duration and severity of illness, comorbid medical conditions, weight, blood sugar levels and serum prolactin level were

recorded .Clinical and sexual function parameters were reassessed after 6 weeks and 6 months of treatment with antipsychotic medication.

3.4.3 Data measurement

The tools administered in this study include:

-Positive and Negative Syndrome Scale (PANSS) for assessing severity of psychopathology (Appendix:1)

-Female Sexual Function Index (FSFI) for screening for sexual dysfunction (Appendix:2)

-A structured interview to assess for a diagnosis of female sexual dysfunction based on DSM IV (Appendix:3)

-Proforma for recording socio-demographic and clinical variables (Appendix:4)

3.4.3.1 Positive and Negative Syndrome Scale (PANSS)

The PANSS (Kay et al, 1986) is designed to assess symptom profile. It is an operationalized, standardized, drug-sensitive instrument that provides a balanced representation of positive and negative symptoms and gauges their relationship to one another and to global psychopathology. It is used to evaluate persons with schizophrenia and other psychotic disorders in clinical and research settings.

3.4.3.2 Female Sexual Function Index (FSFI)

The FSFI (Rosen et al, 2000) is used to screen for sexual dysfunction in women. It is a 19-item questionnaire, a brief, multidimensional self-report instrument for assessing the key dimensions of sexual functioning in women. It is psychometrically sound, easily administrable, and has well demonstrated ability to discriminate between clinical and nonclinical populations. The questionnaire was designed and validated for assessment of

female sexual function and quality of life in clinical trials or epidemiological studies. The Tamil version of the FSFI was used in this study.

3.5 STATISTICAL METHODS

3.5.1 DETERMINATION OF SAMPLE SIZE

The sample size for the study was determined using the computer package Epi Info (Version 6.0) (1993). The calculations were based on the following assumptions : Estimated prevalence of sexual dysfunction in women on antipsychotic medication 30% (based on earlier studies); confidence interval 95%; power 80%.The sample size thus obtained was 90.

3.5.2. DATA ANALYSIS

Mean, standard deviation and range were employed to describe continuous variables. Frequency distributions were obtained for di/polychotomous variables. The chi-squared test was used to assess the significance of associations for categorical data; student's t test was used to test associations for continuous variables. Pearson's correlation coefficient was employed to study the correlation between continuous variables.

The statistical software package - SPSS for Windows (version 16.0.1) was employed for the analysis of data.

RESULTS

4.1 SUBJECTS

4.1.1. The Study Sample

111 subjects were contacted, of whom 104 (93.69 %) consented to participate in the study.

Refusers versus consenters

The age and literacy of those who consented (henceforth known as the sample) and those who refused to participate in the study were compared. Both were not significantly different between the 2 groups.

4.2 SOCIO-DEMOGRAPHIC PROFILE OF SAMPLE

Table 4.1 documents the sociodemographic profile of the sample. The mean age of the patients was 33.38 years. 85.6% of patients resided in rural areas. Many patients were from a low socio-economic background. 24% of patients had been unable to buy food in the past month due to financial problems and 43.3% reported having debts. Only 26% lived in concrete houses with more than two rooms.26.9% of the sample were illiterate and another 14.4% were only able to read. 13.5 % had no formal education; 26 % had had only primary school education, 38.4% secondary education and 22.2% were educated above high school. The majority of the sample were housewives (58.7%). 62.5% of the spouses were un or semiskilled workers.

Table 4.1 Sociodemographic profile of sample

Sociodemographic characteristic	Score	Range
Age(yrs): mean (sd)	33.38 (6.31)	19-45
Literacy, *n* (%) Illiterate Read only Read and write	 28(26.9) 15(14.4) 61 (58.7)	
Schooling, years: mean (s.d)	7.73(4.33)	0-18
Housing, *n* (%) Own Rented Squatting	 34(32.7) 69(66.3) 1 (1.0)	
Residence :n (%) Rural Urban	 89 (85.6) 15 (14.4)	
Number of children: mean (sd)	1.9 (0.99)	0-5
Unable to buy food in the past one month, *n* (%) Yes No	 25 (24) 79 (76)	
Monthly family income, rupees: mean (s.d.)	8,187.72 (16,642.48)	1,000-1,50,023
Debt, *n* (%) Yes No	 45 (43.3) 59 (56.7)	
Amount of debt, rupees: mean (s.d)	1,17,000 (506,900)	0-5000000
Number of people living in the house: mean (s.d)	4.42 (1.59)	2-9
Occupation, *n* (%) Housewife Unskilled labour Other	61 (58.7) 28 (26.9) 15 (14.4)	
Occupation of spouse, *n* (%) Unskilled labour Semiskilled labour Skilled labour Other	 38 (36.5) 27 (26.0) 24 (23.1) 15 (14.4)	
Education Nil formal 1-5 6-10 +2 Graduation and above	 14 (13.5) 27 (26) 40 (38.4) 14 (13.5) 9 (8.7)	

4.3 CLINICAL PROFILE OF SAMPLE

Table 4.2 documents the clinical profile of the sample. The mean age of onset of illness was 31.57 years while the duration of illness varied from 1 day to 12 years. A majority (69.2%) of the patients had a diagnosis of schizophrenia while the rest had a diagnosis of acute psychosis. 43.3% had a continuous course of illness. 65.4% did not have a family history of psychiatric illness while 22.1% had a family history of psychosis.

The average number of living children was 1.92. 64.4% of the subjects had undergone tubectomy. The mean serum prolactin level was 17.61ng/ml with a range between 2.17 to 229 ng/ml. 5.8% had a co-morbid medical illness at initial evaluation such as anemia, hypothyroidism, and hypertension.

Table 4.2 Clinical profile of sample

Clinical characteristic	Score	Range
Age of onset of illness (yrs): mean (sd)	31.57 (6.63)	17-44
Duration of illness (days): mean (sd)	596.31 (836.56)	1-4380
Course of illness: *n* (%) Continuous Episodic First episode	 45(43.3) 13(12.5) 46(44.2)	
Diagnosis: *n* (%) Schizophrenia Acute psychosis	 72(69.2) 32(30.8)	
PANSS score : mean (sd) Positive Negative General psychopathology Total	 22.98 (5.73) 21.70 (8.57) 46.45 (12.96) 91.13 (22.61)	 7-42 7-49 20-92 46-175
Family history of psychiatric illness: *n* (%) Present Absent	36(34.7) 68(65.4)	
Contraceptive use: *n* (%) Nil Temporary Permananent	 35(33.7) 2(1.9) 67(64.4)	
Days since last menstrual period: mean (sd)	19.23 (23.72)	0-187
Galactorrhoea: *n* (%) Present Absent	 4(3.8) 100(96.2)	
Menstrual irregularities, : *n* (%) Present Absent	15(14.4) 89(85.6)	
Medical co morbidity: *n* (%) Present Absent	4(3.8) 100(96.2)	
Serum prolactin level (ng/ml) : mean (sd)	17.61 (28.25)	2.17-229
Fasting blood sugar (mg%): mean (sd)	49.98 (47.47)	71-152
Height (cms) : mean (sd)	151.15 (6.95)	130-170
Weight: mean (kgs) : mean (sd)	50.88 (11.17)	30-90

4.4 SEXUAL DYSFUNCTION-PREVALENCE, NATURE and RISK FACTORS-AT INITIAL ASSESSMENT

4.4.1 PREVALENCE

Table 4.3.1 documents the scores on the Female Sexual Function Index for each domain including desire, arousal, lubrication, orgasm, satisfaction, pain as well as a total score. Based on the cutoff score of 26 for the total FSFI score, 67.3% (70) of the participants have sexual dysfunction. Using the median of the total FSFI score of this population as cut-off, 51% (53) of the sample have a sexual dysfunction (Table 4.4).

Analyses was repeated after excluding 54 women from among the sample who indicated `no sexual activity/intercourse' in the past one month because some research suggests that the FSFI may not be a valid assessment in such cases. The prevalence of sexual dysfunction among this sample, using the FSFI cut-off of 26, was found to be 16% (32 of *n*=50) (Table4.3.2).

Table 4.3.1 FSFI scores

Domain	Score Mean	SD	Median	Range
Desire	2.56	1.53	1.2	1.2-6.0
Arousal	2.07	2.29	0	0-6.0
Lubrication	2.34	2.56	0	0-6.0
Orgasm	2.03	2.31	0	0-6.0
Satisfaction	2.63	2.08	0.8	0.8-6.0
Pain	2.56	2.79	0	0-6.0
Total	14.19	13.21	**4.4**	2-36

Table 4.3.2 FSFI scores excluding those who had not had sexual activity in the past month

Domain	Score Mean	SD	Median	Range
Desire	3.84	1.04	3.6	1.2-6.0
Arousal	4.30	1.09	4.5	1.2-6.0
Lubrication	4.86	1.11	5.1	1.2-6.0
Orgasm	4.22	1.32	4.4	1.2-6.0
Satisfaction	4.61	1.17	4.8	1.20-6.0
Pain	5.32	1.14	6.0	2.4-6.0
Total	27.17	5.89	28.45	12-36

4.4.2 NATURE

Thresholds recommended by previous studies from the West were used to estimate prevalence rates of hypoactive sexual desire (threshold < 4.28), arousal (threshold <5.08), lubrication (threshold < 5.45), orgasm (threshold <5.05), satisfaction (threshold < 5.04) and pain disorders (<5.51) (77)(78)(Table 4.4.1 and 4.4.2).Median scores from this population were also used to estimated prevalence of the different disorders.

Table 4.4.1 Number of women with sexual dysfunction (by FSFI)[n=104]

Domain	Number	%
Sexual dysfunction, FSFI score less than or equal to 3.6 (median score)	53	51.0
Sexual dysfunction, FSFI score less than or equal to 26 (cut-off score)	70	67.3
Desire disorder(<threshold 4.28/ <median 1.2)	90/54	86.5/51.9
Arousal disorder(<threshold 5.08/ <median 0)	90/54	86.5/51.9
Lubrication disorder(threshold 5.45/ < median 0)	89/54	85.6/51.9
Orgasm disorder(<threshold 5.05/ < median 0)	91/54	87.5/51.9
Satisfaction disorder(<threshold 5.04/ < median 0.8)	85/54	81.7/51.9
Pain disorder(<threshold 5.51 / <median 0)	70/54	67.3/51.9

Table 4.4.2 Number of women with sexual dysfunction (by FSFI)excluding those who reported no sexual activity over the past one month [n=50]

Domain	Number	%
Sexual dysfunction,FSFI score less than or equal to 26	16	32
Sexual dysfunction,FSFI score less than or equal to 28.45	25	50
Desire disorder(threshold < 4.28; <median 3.6)	37/32	74/64
Arousal disorder(threshold <5.08; <median 4.5)	36/26	72/52
Lubrication disorder(threshold < 5.45; <median 5.1)	35/27	70/54
Orgasm disorder(threshold <5.05; <median 4.4)	37/29	74/58
Satisfaction disorder(threshold < 5.04; <median 4.8)	31/18	62/36
Pain disorder(threshold <5.51; <median 6.0)	16/50	32/100

Using DSM IV criteria 59.7% had hypoactive sexual desire. Of those who had been sexually active, 13.72% had sexual arousal disorder, 19.6% had orgasmic dysfunction,5.88% had vaginismus and dyspareunia and 1.96 had sexual aversion disorder.

Table 4.5 Number of women with sexual dysfunction (by DSM-IV)

DISORDER	Dysfunction absent n (%)	Dysfunction present		No sexual activity over past one month n (%)
		with distress n (%)	without distress n (%)	
Hypoactive sexual desire	**45 (43.3)**	**13 (12.5)**	**46 (44.2)**	**-**
Sexual arousal	**44 (42.3)**	**1 (1)**	**6 (5.8)**	**53 (51)**
Orgasmic dysfunction	**41 (39.4)**	**1 (1)**	**9 (8.7)**	**53 (51)**
Vaginismus	**48 (46.2)**	**1 (1)**	**2 (1.9)**	**53 (51)**
Dyspareunia	**48 (46.2)**	**1 (1)**	**2 (1.9)**	**53 (51)**
Sexual aversion	**50 (48.1)**	**1 (1)**	**-**	**53 (51)**

4.4.3 FACTORS ASSOCIATED WITH SEXUAL DYSFUNCTION

1.***Based on FSFI cut off score*** (Tables 4.6 and 4.7):

Using the chi squared test for categorical variables and t-test for continuous variables the following factors were studied for association with female sexual dysfunction:

Demographic factors (Table 4.6): No demographic factors were found to be significantly associated with sexual dysfunction. Analysis excluding those with no sexual activity also did not reveal any demographic factors to be signicantly associated with sexual dysfunction.

Table 4.6 Socio demographic factors associated with sexual dysfunction (FSFI cut off score)

Variable	Case	Control	t/chi square	Degrees of freedom	*p* value
Age, years: mean (s.d.)	33.09 (6.89)	33.51 (6.07)	-.322	102	.748
Number of children: mean (s.d)	1.82 (0.90)	1.97 (1.04)	-.711	102	.478
Monthly income in rupees: mean (s.d)	11868.32 (26600.59)	6400 (8069.71)	1.173	35.982	.249
Debt in rupees: mean (s.d)	63735.29 (116600)	142000 (612000)	-.739	102	.462
Years of schooling: mean (s.d)	8.35 (4.39)	7.43 (4.29)	1.023	102	.309
Literacy, *n* (%): illiterate	8 (23.5)	20 (28.6)	.296	1	.587
Level of education , *n* (%):nil formal	4 (11.8)	10 (14.3)	.125	1	1.000
Number of people in house:mean (s.d)	4.50 (1.42)	4.39 (1.67)	.343	102	.732
Housing, *n* (%);less than two rooms	25 (73.5)	52 (74.3)	.007	1	.934
Residence,n(%):rural	28 (82.4)	61 (87.1)	.425	1	.558
Inability to buy food, *n* (%); yes	8 (23.5)	17 (24.3)	.007	1	.933
Debt, *n* (%); yes	14 (41.2)	31 (44.3)	.090	1	.764
Occupation,*n* %;present	34 (100)	64 (91.4)	3.093	1	.174

Clinical and Sexual factors (Table 4.7.1 and 4.7.2): As compared to those without, persons with sexual dysfunction had significantly longer duration of illness, a longer period of untreated psychosis , a continuous course of illness ,more number of episodes, a diagnosis of schizophrenia rather than acute psychosis .The total negative, general psychopathology and overall total scores on the PANSS were also associated with sexual

dysfunction. (Table 4.7a) .As shown in Table 4.7b, analysis excluding subjects who did not have any sexual activity in the past one month,revealed the following significant associations: greater duration of illness, higher negative score and total PANSS score were associated with sexual dysfunction .

Table 4.7.1 Clinical and sexual factors associated with sexual dysfunction (FSFI cut off score)

Variable	**Control**	**Case**	**t /chi square**	**Degrees of freedom**	***p* value**
Age of onset of illness (yrs): mean (sd)	32.47 (7.15)	31.13 (6.37)	.968	102	.335
Duration of illness (days): mean (sd)	297.44 (667.62)	741.47 (875.27)	-2.863	83.325	.005
Duration of untreated psychosis: mean (sd)	259.79 (651.50)	582.44 (825.89)	-2.164	81.015	.033
Course of illness: *n* (%), Continuous	8 (23.5)	37 (52.9)	8.019	1	.005
If episodic, number of episodes: mean (sd)	1.75 (0.5)	3.64 (3.25)	-2.611	12.156	.023
Diagnosis: *n* (%). schizophrenia	17 (50)	55 (78.6)	8.770	1	.003
PANSS score : mean (sd) Positive	22.18 (6.52)	23.37 (5.31)	-.998	102	.320
PANSS score : mean (sd) Negative	17 (6.95)	23.99 (8.39)	-4.203	102	.000
PANSS score : mean (sd) General psychopathology	39.88 (10.26)	49.64 (12.99)	-3.835	102	.000
PANSS score : mean (sd) Total score	79.06 (16.88)	97 (22.81)	-4.072	102	.000

Family history of psychiatric illness: *n* (%) Present	14 (41.2)	22 (31.4)	.961	1	.327
Contraceptive use: *n* (%) Nil	12 (35.3)	23 (32.9)	.061	1	.805
Days since last menstrual period: mean (sd)	25.56 (36.76)	16.19 (12.84)	1.449	36.966	.156
Galactorrhoea: *n* (%) Present	2 (5.9)	2 (2.9)	.566	1	.595
Menstrual irregularities, : *n* (%) Present	7 (20.6)	8 (11.4)	1.556	1	.242
Medical comorbidity: *n* (%) Present	1 (2.9)	5 (7.1)	.743	1	.661
Serum prolactin level (ng/ml) : mean (sd)	18.28 (24.41)	17.29 (30.09)	.167	102	.868
Fasting blood sugar (mg%): mean (sd)	52.29 (48.53)	48.71 (47.39)	.359	102	.721
Height (cms) : mean (sd)	150.74 (6.45)	151.36 (7.22)	-.426	102	.671
Weight: mean (kgs) : mean (sd)	51 (10.1)	50.83 (11.72)	.073	102	.942

Table 4.7.2 Clinical and sexual factors associated with sexual dysfunction (FSFI cut off score) excluding those with `no sexual activity in the past one month')

Variable	Control	Case	t /chi square	Degrees of freedom	*p* value
Duration of illness (days): mean (sd)	297.44 (667.62)	854.75 (893.91)	-2.219	23.182	.037
PANSS score : mean (sd) Negative	17 (6.95)	21.87 (6.59)	-2.351	48	.023
PANSS score : mean (sd) Total score	79.06 (16.88)	91.37 (21.01)	-2.223	48	.031

2.***Based on FSFI total score*** (Tables 4.8 and 4.9):

Using t-test for categorical variables and Pearson's correlation coefficient for continuous variables the following factors were found to be associated with female sexual dysfunction:

Demographic factors (Table 4.8.1 and 4.8.2): No demographic factors were found to be significantly associated with sexual dysfunction when entire sample of those below the FSFI cut-off of 26 was taken, as well as when those without sexual activity in the past month were excluded.

Table 4.8.1 Demographic Factors associated with sexual dysfunction (FSFI total score)

Variable	Mean n (%) (SD)	r /t	Degrees of freedom	*P* value
Age	33.38 (6.31)	-0.072		0.468
Literacy, Illiterate	12.52(12.48)	-0.777	102	0.439
Schooling, years	7.73 (4.33)	0.168		0.089
Residence, Rural	13.79(13.10)	-0.742	102	0.460
Rooms in house,less than two	13.33 (13.23)	-1.120	102	0.265
Number of children	1.92 (0.99)	-0.079		0.425
Unable to buy food in the past one month, yes	13.64(13.30)	-0.235	102	0.815
Monthly family income, rupees	8187.72 (16642.48)	0.120		0.223
Debt, yes	15.53(13.52)	0.908	102	0.366
Amount of debt, rupees	117000 (506868.61)	-0.050		0.614
Number of people living in the house	4.42 (1.59)	0.000		0.988

Table 4.8.2Demographic Factors associated with sexual dysfunction (FSFI total score) excluding those who did not have sexual activity in the past month

Variable	Mean (SD)	r /t	Degrees of freedom	*P* value
Age	33.20 (6.66)	-.196		.174
Literacy, Illiterate	24.6692(7.26055)	-1.816	48	.076
Schooling, years	8.38 (4.38)	.124		.391
Residence, Rural	26.8286 (6.18879)	-.931	48	.357
Rooms in house, less than two	27.5853(5.65375)			
Number of children	1.88 (0.87)	-.201		.161
Unable to buy food in the past one month, yes	26.2583(7.25202)	-.609	48	.546
Monthly family income, rupees	10190.46 (22272.61)	.039		.789
Debt, yes	27.2750 (6.43430)	.122	48	.903
Amount of debt, rupees	94900 (176800)	-.123		.394
Number of people living in the house	4.38 (1.38)	.129		.372

Clinical and sexual factors (Tables 4.9.1 and 4.9.2): Subjects with a continuous rather than episodic course ,and patients with a diagnosis of schizophrenia rather than acute psychosis had significantly lower FSFI total scores signifying sexual dysfunction; those with higher scores on the negative,general psychopathology and total PANSS scores had more severe dysfunction(Table 4.9)

When those without sexual activity were excluded the factors that remained correlated significantly with sexual dysfunction was the negative score on PANSS (r=-.346;p=.014) and total PANSS score (r=-.320;p=.023).

Table 4.9.1: Clinical and sexual factors associated with sexual dysfunction (FSFI total score)

Variable	Mean n (%)(SD)	r /t	Degrees of freedom	*P* value
Family history of illness,present	16.53(13.20)	-1.327	102	0.188
Age of onset of illness	31.57(6.63)	0.053		0.594
Duration of illness	596.31(836.56)	-0.181		0.066
Duration of untreated psychosis in days	476.96(784.89)	-0.136		0.168
Course of illness,continuous	9.18(11.36)	-3.637	100.68	0.000
Number of episodes of illness	3.13(2.1)	-0.019		0.946
Height	151.15(6.95)	-0.048		0.626
Weight	50.88(11.17)	0.069		0.484
AC blood sugar	49.88(47.56)	0.078		0.430
Prolactin	17.61(28.25)	0.092		0.351
Days since last LMP	19.23(23.73)	0.182		0.065
Periods,irregular	17.55(14.25)	1.068	102	0.288
Galactorrhoea,yes	15.45(15.60)	0.194	102	0.846
Medical illness,yes	11.48(11.53)	-0.586	5.85	0.580
Contraception,nil	14.30 (13.44)	0.064	102	0.949
Diagnosis,schizophrenia	11.57 (12.63)	-3.156	102	0.002
PANSS positive score	22.98(5.73)	-0.086		0.385
PANSS negative score	21.70(8.57)	-0.404		0.000
PANSS general psychopathology score	46.45(12.96)	-0.382		0.000
PANSS total score	91.13(22.61)	-0.394		0.000

Table 4.9.2Clinical Factors associated with sexual dysfunction (FSFI total score) excluding those who did not have sexual activity in the past month

Variable	Mean n (%)(SD)	r /t	Degrees of freedom	*P* value
Family history of illness,present	26.81(6.26)	0.362	48	0.719
Age of onset of illness	32.14(6.83)	-0.115		0.428
Duration of illness	475.78(783.43)	-0.237		0.097
Duration of untreated psychosis in days	411.58(813.67)	-0.265		0.063
Course of illness,continuous	24.45(8.39)	-1.603	15.727	0.129
Number of episodes of illness	3.38(2.615)	-0.535		0.172
Height	150.76(6.83)	0.011		0.938
Weight	51.94(10.22)	-0.098		0.500
AC blood sugar	53.18(49.46)	0.080		0.582
Prolactin	22.98(39.35)	-0.277		0.052
Days since last LMP	22.54(31.04)	0.197		0.169
Periods,irregular	27.92(7.29)	0.420	48	0.676
Galactorrhoea,yes	28.9(2.68)	0.420	48	0.676
Medical illness,yes	20.96(7.91)	-1.929	48	0.060
Contraception,nil	28.3500(4.49222)	0.971	48	0.336
Diagnosis,schizophrenia	26.29(7.14)	1.271	41.95	0.211
PANSS positive score	22.64(5.84)	-0.142		0.325
PANSS negative score	18.86(7.15)	-0.346		0.014
PANSS general psychopathology score	41.80(10.98)	-0.252		0.077
PANSS total score	83.00(18.99)	-0.320		0.023

4.5 SEXUAL DYSFUNCTION-PREVALENCE, NATURE and RISK FACTORS-AT FIRST FOLLOW UP AT SIX WEEKS

4.5.1 SAMPLE:A total of 58 (55.77%) subjects of the original sample were available for follow-up at 6 weeks .

4.5.2 CLINICAL PROFILE

Table 4.10 documents the clinical profile of the subjects who returned for the follow-up after 6 weeks of initiation of therapy. The mean total PANSS score had reduced from 91.13 (sd=22.61) at baseline to 65.76(sd=27.84).Galactorrhoea and menstrual irregularities were present in 17.2% and 44.8% of the population compared to 3.8% and 14.4% at baseline. Mean serum prolactin level was 77.07ng/ml (sd=94.03), compared to 17.61ng/ml at initial intake. The most common antipsychotic medication that had been prescribed was risperidone (81.03%) , followed by olanzapine (12.07%) . 10 women had a co-morbid medical illness – 7 had anemia, while 1 each had hypothyroidism, respiratory illness and hypertension. The mean daily antipsychotic dose in chlorpromazine equivalents was 261.67mg (sd=81.71).The cumulative antipsychotic dose was also estimated, incorporating details such as medication noncompliance, and was found to be 8773.79 mg (sd=4416).Compliance was 11-100%

Table 4.10: Clinical profile at six week follow-up

Clinical characteristic AT 6 WEEKS ; *n*=58	**Score**	**Range**
PANSS score : mean (sd) Positive Negative General psychopathology Total	 11.77(7.00) 16.98(7.93) 37.00(15.53) 65.76(27.84)	 7-31 7-42 16-74 30-138
Galactorrhoea: *n* (%) Present Absent	 10(17.2) 48 (82.8)	
Menstrual irregularities, : *n* (%) Present Absent	 26(44.8) 32(55.2)	
Medical comorbidity: *n* (%) Present Absent	 14(24.1) 44(75.9)	
Serum prolactin level (ng/ml) : mean (sd) [n=41]	77.07 (94.03)	5.93-401.8
Fasting blood sugar (mg%): mean (sd) [n=45]	70.31 (38.897)	69-104
Weight: mean (kgs) : mean (sd)	54.36 (11.039)	34-79
Antipsychotic: *n* (%) Risperidone Olanzapine Quetiapine Aripiprazole Olanzapine and risperidone Aripiprazole and risperidone	47(81.03) 7(12.07) 1(1.72) 1(1.72) 1(1.72) 1(1.72)	
Maximum antipsychotic dose per day (Chlorpromazine equivalents): mean (sd)	261.67(81.71)	150-667
Duration of antipsychotic medication in days: mean (sd)		
Cumulative antipsychotic dose over 6 weeks (Chlorpromazine equivalents) : mean (sd)	8773.79(4416)	650-28333
Sexual dysfunction at baseline: *n* (%) present absent	38(65.5) 20(34.5)	

4.5.3 **PREVALENCE** AT SIX WEEKS

Table 4.11 documents the scores on the Female Sexual Function Index for each domain including desire, arousal, lubrication, orgasm, satisfaction, pain as well as a total score. Based on the cutoff score of 26 for the total FSFI score 82.8% (48) of the participants had sexual dysfunction.

Table 4.11 FSFI scores

Domain	Score Mean	SD	Median	Range
Desire	1.99	1.37	1.2	1.2-6.0
Arousal	1.29	1.99	0	0-6.0
Lubrication	1.47	2.26	0	0-6.0
Orgasm	1.19	2.01	0	0-6.0
Satisfaction	1.91	1.81	0.8	0.8-6.0
Pain	1.66	2.57	0	0-6.0
Total	9.53	11.77	2.0	2-36

Of the sample of 58,39 reported no sexual activity in the past month; of the remaining 19,9 (47.4%) had a sexual dysfunction using the FSFI cut off of 26.

4.5.4 INCIDENCE

Among the 58 patients who returned for 6 week follow up,20 did not have sexual dysfunction at the baseline assessment. Of these 12 had developed sexual dysfunction by the 6 week assessment, suggesting an incidence rate of 60% female sexual dysfunction following the initiation of antipsychotic medication.

Table 4.12 Sexual dysfunction by FSFI scores at six weeks

Sexual dysfunction	Frequency	Percentage
Absent	8	40.0
Present	12	60.0
Total	20	100

4.6 SEXUAL DYSFUNCTION-PREVALENCE, NATURE and RISK FACTORS- AT FIRST FOLLOW UP AT SIX MONTHS

4.6.1 SAMPLE: A total of 18 (17.30%) subjects of the original sample were available for follow-up at 6 months.

4.6.2 CLINICAL PROFILE

Table 4.13 documents the clinical profile of the subjects who returned for the follow-up after 6 months of initiation of therapy. The mean total PANSS score had reduced from 65.76(sd=27.84)at 6 weeks to 62.3333(sd=28.17174)).Galactorrhoea and menstrual irregularities were present in 22% and 55% of the population compared to 17.2% and 44.8% at 6 weeks.Mean serum prolactin level was 58.4539ng/ml (sd=75.06871),compared to 77.07ng/ml (sd=94.03)at 6 week follow up.The most common antipsychotic medication that had been prescribed was risperidone (66.67%) , followed by olanzapine (27.78%) .The mean daily antipsychotic dose in chlorpromazine equivalents was 287.06 mg(sd=121.673).The cumulative antipsychotic dose was also estimated,incorporating details such as medication noncompliance ,and was found to be 31533.33 mg(sd=19942.417).Compliance was reported to be 5.6-100%.

Table 4.13: Clinical profile at six month follow-up

Clinical characteristic at sixmonths ; *n*=18	Score	Range
PANSS score : mean (sd) Positive Negative General psychopathology Total	12.0000(7.66965) 15.0000(6.72134) 35.3333(16.67) 62.3333(28.17174)	7-30 7-28 16-62 30-114
Galactorrhoea: *n* (%) Present Absent	4(22.22) 14 (77.78)	
Menstrual irregularities, : *n* (%) Present Absent	10(55.55) 8(44.45)	
Medical comorbidity: *n* (%) Present Absent	3(16.67) 15(83.33)	
Serum prolactin level (ng/ml) : mean (sd) [n=15]	58.4539(75.06871)	9.13-197.67
Fasting blood sugar (mg%): mean (sd) [n=11]	56.67(46.927)	79-110
Weight: mean (kgs) : mean (sd)	62.28(11.706)	42-84
Antipsychotic: *n* (%) Risperidone Olanzapine Quetiapine	12(66.67) 5(27.78) 1(5.56)	
Maximum antipsychotic dose per day (Chlorpromazine equivalents): mean (sd)	287.06(121.673)	100-667
Duration of antipsychotic medication in days: mean (sd)	109.83(33.340)	48-138
Cumulative antipsychotic dose over 6 weeks (Chlorpromazine equivalents) : mean (sd)	31533.33(19942.417)	8200-92000
Sexual dysfunction at baseline: *n* (%) present absent	38(65.5) 20(34.5)	

Table 4.14 Sexual dysfunction by FSFI scores at six months

Domain	Score Mean	SD	Median	Range
Desire	2.4000	1.58077	1.2	1.2-6.0
Arousal	1.8500	2.33118	0	0-6.0
Lubrication	2.1667	2.66259	0	0-6.0
Orgasm	1.7556	2.27989	0	0-6.0
Satisfaction	2.4222	2.06926	0.8	0.8-6.0
Pain	2.4889	2.95394	0	0-6.0
Total	13.0833	13.55	2.0	2-36

4.6.4 INCIDENCE

Among the 18 patients who returned for 6 month follow up,5 did not have sexual dysfunction at the six week assessment. None of these reported sexual dysfunction even at 6 month follow-up. The 13 who did have dysfunction already had developed dysfunction by the six week assessment.

SUMMARY

111 subjects were contacted for recruitment to the study and 104 (93.69%) consented to the interview. Subjects who consented and those who refused did not differ with respect to age and literacy.58 and 18 subjects returned for follow up assessments at six weeks and six months respectively.

The majority of the participants were literate (58.7%) and from a rural background (85.6%).The mean age was 33.38 years (s.d 6.31).The mean age of onset of illness was 31.57 years (s.d 6.63) and duration of illness was 596.31years (s.d 836.56).The most common clinical diagnosis was schizophrenia (69%).

The prevalence rate of sexual dysfunction was 67.3%, 82.8% and 72.22% at baseline, six weeks and six months respectively. The incidence of sexual dysfunction at six weeks was 60%.

The most common type of dysfunction was hypoactive sexual desire and orgasmic disorder, while pain disorder was the least common.

Factors associated with sexual dysfunction at different points of time included age,education,age of onset and duration of illness, negative and general psychopathology scores and type of antipsychotic used.Weight,prolactin level and dose of antipsychotic medication were not found to be significantly associated with sexual dysfunction.

DISCUSSION

5.1 INTRODUCTION

Female sexual dysfunction is a common and distressing problem in women with psychosis. It is a complex group of conditions influenced by the medical, biological and psychological factors associated with the illness as well as the medication used in its management. Women in Indian culture do not often report such problems spontaneously. However, if ignored, it could have an impact on compliance with treatment and quality of life. This study attempted to study the prevalence, nature and risk factors for sexual dysfunction in women with a psychotic illness in tertiary care hospital setting in Tamilnadu. This section discusses the methodological issues and results.

5.2 METHODOLOGICAL CONSIDERATIONS

1. Translation

The translated and validated version of the FSFI was used in this study .The consent form that was given to the subjects was in the local language Tamil.

2. The sample size

The sample size at intake was sufficiently large to draw conclusions from the baseline data. However, drop- out rates were high at the 6 weeks (n=46,44%) and 6 months follow up (n=86,82.6%) .Valid conclusions regarding the longitudinal course of sexual dysfunction require further study with adequate sample sizes.

3. Subjects

6.3% of the subjects contacted did not participate in the study, resulting in a 93.7% response rate. However analysis showed that refusers did not differ significantly in age and

literacy from the consenters, thereby allowing generalization of results to the entire study sample.

4. Setting

The interview procedures were carried out in the investigator's consultation room in the hospital. All patients were interviewed in privacy. Despite the attempt to ensure privacy, in some cases the lack of it and the sensitive nature of the issues discussed could have influenced the results of the administered instruments.

5. Procedure

Though only 28% of the participants were illiterate, to ensure uniformity, the instruments were not self-administered but were instead read out to them using the recommended procedure.

6. Instruments

Subjects were interviewed regarding socio demographic details; psychosis was rated on the PANSS.The FSFI and DSM –IV criteria were used to assess female sexual dysfunction.

5.3 PREVALENCE OF FEMALE SEXUAL DYSFUNCTION IN WOMEN WITH PSYCHOSIS

The community prevalence of female sexual dysfunction is reported to be between 20 - 65%(79)(38)(80)(81).Prevalence in clinic populations have been reported as 63%.(29)Rates among women with psychosis have been reported to lie between 30 and 80%(76)(82).

5.3.1 PREVALENCE OF FEMALE SEXUAL DYSFUNCTION IN WOMEN WITH PSYCHOSIS IN A DRUG NAÏVE STATE :

This study found a prevalence rate of 67.3% using the recommended cutoff of 26 on the total FSFI score .Using the median value of the total FSFI score of this population as cut-off, the prevalence rate was 51%. These prevalence rates are similar to those (61)(83)(84)(47)(85) reported in literature. However many of these included subjects who were on treatment with antipsychotic medication , as compared to our study where we included antipsychotic drug naïve individuals or subjects who had not taken antipsychotics for at least 6 months.

The relatively high prevalence rates in these drug naïve individuals can be explained by the illness itself .It is well known that people with psychotic illness have lower libido, reduced marital rates and may also be unable to describe details of dysfunction because of the illness. This study additionally found that the prevalence was higher among subjects with a continuous illness as compared to those with a single or multiple episodes, suggesting that longer the illness, the greater the likelihood of sexual dysfunction .

The high rate also suggests that the problem of female sexual dysfunction in women with psychosis is more common than assumed. As these disorders can result in distress, dissatisfaction and poorer quality of life in the individual and her family, it is important that clinicians are aware of the extent of this problem, identify such individuals early and provide appropriate management.

The FSFI includes a question regarding the presence or absence of sexual activity in the month prior to assessment. A significant number of our study subjects reported not having

had any sexual activity in the past 1 month .This again may be a reflection of the positive, negative and cognitive symptoms of the psychotic illness.

Some researchers have suggested that the 15 items on the FSFI which include a score of zero for `no sexual activity' may not be psychometrically sound when administered to women with no sexual activity, thus making the questionnaire invalid.(13) Therefore such subjects were excluded and a reanalysis of only those subjects who had been sexually active in the previous month was calculated. The prevalence rate of sexual dysfunction among this group was found to be much lower at 16%, also lower than other studies. (12)Using DSM IV criteria, the prevalence rates of the different disorders was again found to be lower. This highlights the problem of difference in prevalence rates based on the assessment tool used. It has been reported that the use of screening instruments ,such as the FSFI ,to diagnose sexual dysfunction in women is inappropriate and results in very high prevalence rates.(79) The huge difference in prevalence rates by different criteria suggests the need for validation of assessment instruments for specific populations across world.(79)

The DSM incorporates the criteria of distress related to a disorder. In this study, it was found that the prevalence rates of disorders dropped significantly when this criteria was added. This suggests that sexual dysfunction cannot be considered a single problem nor equated with disease. Many women may not regard lack of sexual desire or other sexual problems as a serious difficulty. These findings also suggest that cultural and contextual aspects need to be kept in mind while assessing for sexual dysfunction. Studies from India which have employed instruments standardized in the west have reported very high rates

(37)(87)(16) as compared to those which have taken into account the woman's context , culture and also examined individual and partner distress .(88).

5.3.2 PREVALENCE AND INCIDENCE OF FEMALE SEXUAL DYSFUNCTION IN WOMEN WITH PSYCHOSIS AT SIX WEEKS FOLLOW UP:

The prevalence rates of sexual dysfunction at six weeks after initiation of treatment was higher than at the initial intake point. Using the cutoff of 26 for the total FSFI score, the prevalence rate was 82.8%, as compared to 67.3% at baseline. Excluding those who reported no sexual activity in the past month, the prevalence rate was 47.4% as compared to 16% at baseline. The increase in prevalence can be explained by the onset of medication effects that further complicate preexisting illness related factors.

There is no previous longitudinal data available on incidence rates of female sexual dysfunction among women with psychosis before and after the initiation of antipsychotic medication. In the present study, incidence of dysfunction was estimated by assessing the sexual functioning in subjects who did not have sexual dysfunction at intake into the study. Out of the group of 58 who were available at the second assessment, 20 did not have sexual dysfunction at baseline assessment. These subjects were included in the analysis and it was found that 12 had developed dysfunction at six weeks follow-up, suggesting an incidence rate of 60% female sexual dysfunction following the initiation of antipsychotic medication.

This high incidence highlights the need to consider preventive strategies as well as regularly screen patients for sexual problems on an ongoing basis during the course of treatment.

5.3.3 PREVALENCE AND INCIDENCE OF FEMALE SEXUAL DYSFUNCTION IN WOMEN WITH PSYCHOSIS AT SIX MONTHS FOLLOW UP:

At 6 months follow up only 18 subjects were present. Of the 18, 13 had sexual dysfunction at six months using the cutoff of 26 for the total FSFI score; thus the prevalence rate of female sexual dysfunction at six months was 72%.

It was found that all thirteen individuals who had dysfunction at six months were among those who had had dysfunction at the earlier assessment at six weeks. Thus no new cases of sexual dysfunction were found at the last assessment. The five remaining women did not have sexual dysfunction at 6 weeks or 6 months. This suggests that sexual dysfunction may develop early on after starting antipsychotic, however given the small sample; no firm conclusions can be drawn.

5.4 NATURE OF SEXUAL DYSFUNCTION IN PSYCHOTIC WOMEN

The most common disorders that were reported were hypoactive desire and orgasmic disorders, while pain disorders were the least common. This finding remained consistent at all three points of assessment. This is similar to earlier published studies from the West.(28)(89)

5.5 RISK FACTORS FOR SEXUAL DYSFUNCTION IN PSYCHOTIC WOMEN

At the initial assessment when patients were drug naïve, many clinical factors such as duration of illness, duration of untreated psychosis, continuous nature of illness and a diagnosis of schizophrenia rather than acute psychosis were associated with sexual

dysfunction. This suggests that illness factors significantly affect sexual functioning .While there is much literature implicating antipsychotic medication in the causation of sexual dysfunction in psychosis, this finding suggests that they are not the sole cause of the problem.

The study also found that it was the high negative symptom score and general psychopathology score that correlated with sexual dysfunction rather than the positive score, suggesting that motivation, interest, initiative and mood states influence sexual functioning more than delusions or hallucinations. Negative symptoms may cause decreased interest in sexual activity, may impair excitement and result in poor lubrication thereby causing pain, impaired orgasm and inadequate sexual satisfaction.

A longer duration of illness and duration of untreated psychosis imply a more chronic illness which is known to result in a poorer quality of life including in the sexual area.

At six weeks follow up older age was found to be significantly associated with sexual dysfunction. It has been shown in previous studies (89) that sexual dysfunction in women increases with age. It may be postulated that older women are more vulnerable to antipsychotic induced sexual dysfunction also.

The mean age of onset of psychosis of the women with sexual dysfunction at 6 weeks was significantly higher than those without. This could suggest that those who develop illness at a younger age may be less aware of normal sexual functioning and therefore report less dysfunction; on the other hand women who develop psychosis at a later age have experienced a period of normal sexual functioning and are able to recognize a change in the quality of sexual functioning.

At six weeks follow-up schooling and education was found to be significantly correlated with sexual dysfunction; those with no formal education and fewer number of years of education had a greater degree of sexual dysfunction. This is similar to several previously published studies in west.(28)

At six months followup, women being treated with the antipsychotic risperidone had significantly higher rates of sexual dysfunction .This is well documented in literature(90)(76),which has shown risperidone to be the antipsychotic which causes the greatest degree of sexual side effects , along with the typical antipsychotic agents.However,it is interesting to note that prolactin level, frequently mentioned as etiologically related to antipsychotic induced sexual dysfunction, was not found to be significantly associated in the present study.

5.6 DISEASE VERSUS DYSFUNCTION

Though the prevalence of sexual dysfunction was high, many women did not regard it as a serious problem and had no associated distress. While this has been shown to be the case in previous studies on female sexual dysfunction, it may be especially pertinent in women who are actively psychotic. On enquiry, many attributed it to their ill health and lack of privacy. It was also observed that women were more distressed by the other common side effects of antipsychotic medication such as like menstrual irregularities, galactorrhoea and weight gain, rather than the sexual dysfunction itself. Though dysfunction is common, it would be inappropriate to label such patients as diseased, thus compounding the already existing stigma and distress.

5.7 IMPORTANCE OF SEXUAL HISTORY IN WOMEN WITH PSYCHOSIS

There are several factors which may have an impact on women with psychosis reporting sexual problems. Most often clinicians as well as family members focus on the obvious symptoms of the psychotic illness. Rarely is sexual functioning raised as a concern. Secondly, sexual issues are considered a taboo and a sensitive issue in our culture, especially among women. Therefore many may be hesitant to discuss such issues with the doctor, fearing criticism or dismissal of the problem.

Physicians can overcome these problems by providing a conducive and non threatening atmosphere for patients and by discussing sexual issues in a direct, matter-of-fact and non judgmental manner using appropriate and culturally accepted terminology. This will encourage women to express their sexual concerns and treatment related worries.

5.8 STENGTHS AND LIMITATIONS

Limitations of the study

1. Assessing sexual functioning during a psychotic period may be considered inappropriate as the patient is assumed to be `not in contact with reality'.However, this is an inherent problem with any study that asks questions and opinions of patients with psychosis.
2. The topic of the study is sensitive and some respondents may have been reluctant to discuss their true concerns.
3. There are no well defined criteria or norms on what is normal or adequate sexual functioning, since it is a complex interplay of one's experiences, expectations and culture and what an individual considers adequate for her at that phase of life.

Therefore it is difficult to label one as having dysfunction unless her own personal, family, cultural and illness factors are taken in to consideration and evaluated.

4. The drop-out rates at six weeks and six months were high, thus limiting the generalizability of our findings.

Strengths of the study:

1. There is currently no longitudinal study that has assessed sexual dysfunction in women with psychosis before and after the initiation of antipsychotic medication. To the best of our knowledge this is the first such study from India.
2. The sample size at initial assessment was adequate to draw reasonable conclusions.
3. All interviews were performed by a single investigator, who was aware of the social and cultural backgrounds of the participants and was well versed in the local language. This helped to minimize bias.
4. Standardized assessment tools were used in the study.

5.9 RECOMMENDATIONS AND FUTURE DIRECTIONS FOR RESEARCH

1. Well-defined and broadly accepted diagnostic framework and classification must be developed for female sexual disorders.

2. Further qualitative research is required to understand the cultural aspects, beliefs and explanatory models of illness in female sexual dysfunction in women with and without psychosis.

3. The FSFI cut off score for this population needs to be established as Western standards cannot be assumed to be appropriate.

4. Culturally sensitive and easy to administer tools need to be developed.

5. Longitudinal studies with large sample size need to be conducted to draw valid conclusions on the incidence of sexual dysfunction secondary to antipsychotic use.

6. Randomized control trials will improve the understanding of the variations in incidence of antipsychotic induced sexual dysfunction with the different antipsychotic medication.

7. Cost-effective strategies to manage female sexual dysfunction in women with psychosis need to be developed.

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PANSS Rating Scale

Name		Base line	6 weeks	6 months
P1	Delusions			
P2	Conceptual disorganization			
P3	Hallucinatory behaviour			
P4	Excitement			
P5	Grandiosity			
P6	Suspiciousness/persecution			
P7	Hostility			
N1	Blunted affect			
N2	Emotional withdrawal			
N3	Poor rapport			
N4	Passive/apathetic social withdrawal			
N5	Difficulty in abstract thinking			
N6	Lack of spontaneity & flow of conversation			
N7	Stereotyped thinking			
G1	Somatic concern			
G2	Anxiety			
G3	Guilt feelings			
G4	Tension			
G5	Mannerisms & posturing			
G6	Depression			
G7	Motor retardation			
G8	Uncooperativeness			
G9	Unusual thought content			
G10	Disorientation			
G11	Poor attention			
G12	Lack of judgment & insight			
G13	Disturbance of volition			
G14	Poor impulse control			
G15	Preoccupation			
G16	Active social avoidance			

FSFI

Question	**Response Options**
1. Over the past 4 weeks, how **often** did you feel sexual desire or interest?	5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never
2. Over the past 4 weeks, how would you rate your **level** (degree) of sexual desire or interest?	5 = Very high 4 = High 3 = Moderate 2 = Low 1 = Very low or none at all
3. Over the past 4 weeks, how **often** did you feel sexually aroused ("turned on") during sexual activity or intercourse?	0 = No sexual activity 5 = Almost always or always 4 = Most times (more than half the time) 3 = Sometimes (about half the time) 2 = A few times (less than half the time) 1 = Almost never or never
4. Over the past 4 weeks, how would you rate your **level** of sexual arousal ("turn on") during sexual activity or intercourse?	0 = No sexual activity 5 = Very high 4 = High 3 = Moderate 2 = Low 1 = Very low or none at all
5. Over the past 4 weeks, how **confident** were you about becoming sexually aroused during sexual activity or intercourse?	0 = No sexual activity 5 = Very high confidence 4 = High confidence 3 = Moderate confidence 2 = Low confidence 1 = Very low or no confidence

6. Over the past 4 weeks, how **often** have you been satisfied with your arousal (excitement) during sexual activity or intercourse?

0 = No sexual activity
5 = Almost always or always
4 = Most times (more than half the time)
3 = Sometimes (about half the time)
2 = A few times (less than half the time)
1 = Almost never or never

7. Over the past 4 weeks, how **often** did you become lubricated ("wet") during sexual activity or intercourse?

0 = No sexual activity
5 = Almost always or always
4 = Most times (more than half the time)
3 = Sometimes (about half the time)
2 = A few times (less than half the time)
1 = Almost never or never

8. Over the past 4 weeks, how **difficult** was it to become lubricated ("wet") during sexual activity or intercourse?

0 = No sexual activity
1 = Extremely difficult or impossible
2 = Very difficult
3 = Difficult
4 = Slightly difficult
5 = Not difficult

9. Over the past 4 weeks, how often did you **maintain** your lubrication ("wetness") until completion of sexual activity or intercourse?

0 = No sexual activity
5 = Almost always or always
4 = Most times (more than half the time)
3 = Sometimes (about half the time)
2 = A few times (less than half the time)
1 = Almost never or never

10. Over the past 4 weeks, how **difficult** was it to maintain your lubrication ("wetness") until completion of sexual activity or intercourse?

0 = No sexual activity
1 = Extremely difficult or impossible
2 = Very difficult
3 = Difficult

4 = Slightly difficult
5 = Not difficult

11. Over the past 4 weeks, when you had sexual stimulation or intercourse, how **often** did you reach orgasm (climax)?

0 = No sexual activity
5 = Almost always or always
4 = Most times (more than half the time)
3 = Sometimes (about half the time)
2 = A few times (less than half the time)
1 = Almost never or never

12. Over the past 4 weeks, when you had sexual stimulation or intercourse, how **difficult** was it for you to reach orgasm (climax)?

0 = No sexual activity
1 = Extremely difficult or impossible
2 = Very difficult
3 = Difficult
4 = Slightly difficult
5 = Not difficult

13. Over the past 4 weeks, how **satisfied** were you with your ability to reach orgasm (climax) during sexual activity or intercourse?

0 = No sexual activity
5 = Very satisfied
4 = Moderately satisfied
3 = About equally satisfied and dissatisfied
2 = Moderately dissatisfied
1 = Very dissatisfied

14. Over the past 4 weeks, how **satisfied** have you been with the amount of emotional closeness during sexual activity between you and your partner?

0 = No sexual activity
5 = Very satisfied
4 = Moderately satisfied
3 = About equally satisfied and dissatisfied
2 = Moderately dissatisfied
1 = Very dissatisfied

15. Over the past 4 weeks, how **satisfied** have you been with your sexual relationship with your partner?

5 = Very satisfied
4 = Moderately satisfied
3 = About equally satisfied and dissatisfied
2 = Moderately dissatisfied
1 = Very dissatisfied

16. Over the past 4 weeks, how **satisfied** have you been with your overall sexual life?

5 = Very satisfied
4 = Moderately satisfied
3 = About equally satisfied and dissatisfied
2 = Moderately dissatisfied
1 = Very dissatisfied

17. Over the past 4 weeks, how **often** did you experience discomfort or pain during vaginal penetration?

0 = Did not attempt intercourse
1 = Almost always or always
2 = Most times (more than half the time)
3 = Sometimes (about half the time)
4 = A few times (less than half the time)
5 = Almost never or never

18. Over the past 4 weeks, how **often** did you experience discomfort or pain following vaginal penetration?

0 = Did not attempt intercourse
1 = Almost always or always
2 = Most times (more than half the time)
3 = Sometimes (about half the time)
4 = A few times (less than half the time)
5 = Almost never or never

19. Over the past 4 weeks, how would you rate your **level** (degree) of discomfort or pain during or following vaginal penetration?

0 = Did not attempt intercourse
1 = Very high
2 = High
3 = Moderate
4 = Low
5 = Very low or none at all

DSM IV TR ALGORITHMS

Diagnostic criteria for Hypoactive Sexual Desire Disorder

A. Persistently or recurrently deficient (or absent) sexual fantasies and desire for sexual activity. The judgment of deficiency or absence is made by the clinician, taking into account factors that affect sexual functioning, such as age and the context of the person's life.

FSFI 1 (score 2/1) or FSFI 2 (score 2/1)

B. The disturbance causes marked distress or interpersonal difficulty.

Has this caused you difficulties in your life (personal/marital)?No/Yes

C. The sexual dysfunction is not better accounted for by another Axis I disorder (except another Sexual Dysfunction) and is not due exclusively to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.

Specify type:

Lifelong Type/Acquired Type –How long have you had this problem?

Generalized Type /Situational Type-Does this happen all the time ? No (only some of the time) /Yes

Due to Psychological Factors /Due to Combined Factors-What do you think is the cause of this?

Diagnostic criteria for Female Sexual Arousal Disorder

A. A. Persistent or recurrent inability to attain, or to maintain until completion of the sexual activity, an adequate lubrication-swelling response of sexual excitement.

FSFI 3 (score 2/1)or FSFI 4 (score 2/1)or FSFI 6 (score 2/1)

B. The disturbance causes marked distress or interpersonal difficulty.

Has this caused you difficulties in your life (personal/marital)?No/Yes

C. The sexual dysfunction is not better accounted for by another Axis I disorder (except another Sexual Dysfunction) and is not due exclusively to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.

Specify type:

Lifelong Type/Acquired Type –How long have you had this problem?

Generalized Type /Situational Type-Does this happen all the time ? No (only some of the time) /Yes

Due to Psychological Factors /Due to Combined Factors-What do you think is the cause of this?

Diagnostic criteria for Female Orgasmic Disorder

A. Persistent or recurrent delay in, or absence of, orgasm following a normal sexual excitement phase. Women exhibit wide variability in the type or intensity of stimulation that triggers orgasm. The diagnosis of Female Orgasmic Disorder should be based on the clinician's judgment that the woman's orgasmic capacity is less than would be reasonable for her age, sexual experience, and the adequacy of sexual stimulation she receives.

FSFI 11 (score 2/1) or FSFI 12 (score 3/2/1) or FSFI 13 (score 2/1)

B. The disturbance causes marked distress or interpersonal difficulty.

Has this caused you difficulties in your life (personal/marital)?No/Yes

C. The orgasmic dysfunction is not better accounted for by another Axis Idisorder (except another Sexual Dysfunction) and is not due exclusively to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.

Specify type:

Lifelong Type/Acquired Type –How long have you had this problem?

Generalized Type /Situational Type-Does this happen all the time ? No (only some of the time) /Yes

Due to Psychological Factors /Due to Combined Factors-What do you think is the cause of this?

Diagnostic criteria for Vaginismus

A. Recurrent or persistent involuntary spasm of the musculature of the outer third of the vagina that interferes with sexual intercourse.

FSFI 17 (score 2/1) or FSFI 18 (score 2/1) Or FSFI 19 (score 2/1)

B. The disturbance causes marked distress or interpersonal difficulty.

Has this caused you difficulties in your life (personal/marital)?No/Yes

C. The disturbance is not better accounted for by another Axis I disorder (e.g., Somatization Disorder) and is not due exclusively to the direct physiological effects of a general medical condition.

Specify type:

Lifelong Type/Acquired Type –How long have you had this problem?

Generalized Type /Situational Type-Does this happen all the time ? No (only some of the time) /Yes

Due to Psychological Factors /Due to Combined Factors-What do you think is the cause of this?

Diagnostic criteria for Dyspareunia

A. Recurrent or persistent genital pain associated with sexual intercourse in either a male or a female.

FSFI 17 (score 2/1) or FSFI 18 (score 2/1) Or FSFI 19 (score 2/1)

B. The disturbance causes marked distress or interpersonal difficulty.

C. The disturbance is not caused exclusively by Vaginismus or lack of lubrication, is not better accounted for by another Axis I disorder (except another Sexual Dysfunction), and is not due exclusively to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition. Due to Combined Factors

Specify type:

Lifelong Type/Acquired Type –How long have you had this problem?

Generalized Type /Situational Type-Does this happen all the time ? No (only some of the time) /Yes

Due to Psychological Factors /Due to Combined Factors-What do you think is the cause of this?

Diagnostic criteria for Sexual Aversion Disorder

A. Persistent or recurrent extreme aversion to, and avoidance of, all (or almost all) genital sexual contact with a sexual partner. Do you feel an aversion to sexual contact or do you avoid genital sexual contact? No/Yes

B. The disturbance causes marked distress or interpersonal difficulty. Has this caused you difficulties in your life (personal/marital)?No/Yes

C. The sexual dysfunction is not better accounted for by another Axis I disorder (except another Sexual Dysfunction).

Specify type:

Lifelong Type/Acquired Type –How long have you had this problem?

Generalized Type /Situational Type-Does this happen all the time? No (only some of the time) /Yes

Due to Psychological Factors /Due to Combined Factors-What do you think is the cause of this?

SOCIODEMOGRAPHIC AND CLINICAL DATA SHEET:

Name :			
Hospital number:			
Age (in years):			
Occupation:			
Occupation of spouse:			
Number of children :			
Number of people staying in same house:			
Residence: 1)Urban 2)Rural			
Years of Schooling:			
Literacy: 1)Read and write 2)Read only 3)Illiterate			
Type of house:1)Concrete with more than 2 rooms 2)Concrete with 2 or less rooms 3) Mud thatched house 4)No house			
House ownership:1)Own 2)Rented 3)Squatting			
Unable to buy food in last month:1)No 2)Yes			
Income of Family per month:			
Patient income per month:			
Are you in debt?1)No 2)Yes			
If yes, how much?			
Substance use:1)No 2)Yes (details)			
Date of last pregnancy:			
Sterilized :1)No 2)Yes **Contraceptive use:**1)No 2)Yes (details)			
Diagnosis:			
Total duration of illness:			
Duration of drug free period before current episode:			
Age of onset of illness:			
Number of psychotic episodes:			
ECT:1)No 2)Yes (details)			
	Baseline:	**6 weeks:**	**6 months:**
PANSS score: ***Positive***			
Negative			
GeneralPsychopathology			
TOTAL			
Medical illness1)No 2)Yes (details)			

Height (m^2) :			
Date of last period:			
Regularity of periods:	Regular/Irregular	Regular/Irregular	Regular/Irregular
Galactorrhoea:	Present/Absent	Present/Absent	Present/Absent
Serum Prolactin level(ng/ml) Normal range :1.9- 25.0			
Fasting blood sugar			
Weight (kgs):			
Medication:			
Name ***Duration*** ***Max Dose*** ***Adverse reaction***			
Name ***Duration*** ***Max Dose*** ***Adverse reaction***			
Name ***Duration*** ***Max Dose*** ***Adverse reaction***			
Name ***Duration*** ***Max Dose*** ***Adverse reaction***			
Name ***Duration***			

Max Dose ***Adverse reaction***			
Compliance			
Total antipsychotic dose in Chlorpromazine equivalents			
FSFI score			

FSFI mstL

Nfstp	Njhenjlfk gjpy
1. flej 4 thuqfspy vjjid kiw ghYwtpy Mir myyJ tpUggk tejJ? Fiwthf)	5=Vwf Fiwa vgnghOJk 4=mNdfKiw (miugqF NeuqfSf F Nky) 3=ghjp (Vwf Fiwa miuklqF) 2=Vwf Fiwa vgnghOJk (miuklqFf F 1=xUnghOJk myyJ xUnghOJk ,yiy
2. flej 4 thuqfspy cqfsJ ghYwtpy Mir myyJ tpUggj ij vt thW MstpLthfs?	5=kpf mjpfk 4=mjpfk 3=kpj msT 2=Fiwej msT 1=kpff FiwT myyJ ,yyNt ,yiy
3. flej 4 thuqfspy ghYwtpd NghJ vjjid Kiw fpshrrp milejhfs?	0=ghYwNt ,yiy 5=Vwf Fiwa vgnghOJk 4=mNdfKiw (miugqF NeuqfSf F Nky) 3=ghjp rkaqfspy (Vwf Fiwa miuklqF) 2=rpy rkaqfspy (miuklqFf F Fiwthf) 1=Vwf Fiwa vgnghOJk
4. flej 4 thuqfspy ghYwtpd NghJ milej fpshrrp vt thW mstpLthfs?	0=ghYwNt ,yiy 5=kpf mjpfk 4=mjpfk 3=kpj msT 2=Fiwej msT 1=kpff FiwT myyJ ,yyNt ,yiy
5. flej 4 thuqfspy ghYwtpd NghJ fpshrrp miltJ Fwpj J vt tsT jplekgpf if nfhz bUejhfs?	0=ghYwNt ,yiy 5=kpf mjpf ekgpf if 4=mjpfk ekgpf if 3=kpj msT ekgpf if 2=Fiwej msT ekgpf if 1=kpff FiwT myyJ ,yyNt ,yiy
6. flej 4 thuqfspy ghYwtpd NghJ milej fpshrrp Kyk vjjid Kiw jpUgjp milejhfs?	0=ghYwNt ,yiy 5=kpf kpff fbdkhapUejJ KbaNt ,yiy 4=kpff fbdkhapUejJ 3=fbdkhapUeJ 2=rpwpjsT fbdkhapUejJ 1=fbdkhf ,yiy
7. flej 4 thuqfspy ghYwtpd NghJ vjjid Kiw <uggjk milejhfs?	0=ghYwNt ,yiy 5=Vwf Fiwa vgnghOJk 4=mNdfKiw (miugqF NeuqfSf F Nky) 3=ghjp rkaqfspy (Vwf Fiwa miuklqF) 2=rpy rkaqfspy (miuklqFf F Fiwthf)

1 =xUnghOJk; myyJ xUnghOJk; ,yiy

8. flej 4 thuqfspy; ghYwtpdNghJ <uggjk; miltJ vttsT fbdkhapUejJ?
0 =ghYwNt ,yiy
5 =kpf kpff; fbdkhapUejJ / KbaNt ,yiy
4 =kpff; fbdkhapUejJ
3 =fbdkhapUeJ
2 =rpwpjsT fbdkhapUejJ
1= fbdkhf ,yiy

9. flej 4 thuqfspy; ghYwtpdNghJ <uggjk; miltij ,Wjptiu vjjidKiwepiyggLjjpdhfs?
0 =ghYwNt ,yiy
5 =VwfFiwa vgnghOJk;
4 =mNdfKiw(miugqF NeuqfSfF Nky)
3 =ghjp rkaqfspy; (VwfFiwa miuklqF)
2 =rpy rkaqfspy; (miuklqFfF Fiwthf)
1 =xUnghOJk; myyJ xUnghOJk; ,yiy

10. flej 4 thuqfspy; ghYwtpdNghJ cwT KbAk;tiu<uggj;ij epiyggLjJtJ vttsT fbdkhf ,UejJ?
0 =ghYwNt ,yiy
5 =kpf kpff; fbdkhapUejJ / KbaNt ,yiy
4 =kpff; fbdkhapUejJ
3 =fbdkhapUeJ
2 =rpwpjsT fbdkhapUejJ
1= fbdkhf ,yiy

11. flej 4 thuqfspy; ghYwtpdNghJ vjjid Kiw cwtpd; crr flljij milejhfs?
0 =ghYwNt ,yiy
5 =VwfFiwa vgnghOJk;
4 =mNdfKiw(miugqF NeuqfSfF Nky)
3 =ghjp rkaqfspy; (VwfFiwa miuklqF)
2 =rpy rkaqfspy; (miuklqFfF Fiwthf)
1 =xUnghOJk; myyJ xUnghOJk; ,yiy

12. flej 4 thuqfspy; ghYwtpdNghJ crr fljij miljy; vttsT fbdkhf ,UejJ?
0 =ghYwNt ,yiy
5 =kpf kpff; fbdkhapUejJ / KbaNt ,yiy
4 =kpff; fbdkhapUejJ
3 =fbdkhapUeJ
2 =rpwpjsT fbdkhapUejJ
1= fbdkhf ,yiy

13. flej 4 thuqfspy; ghYwtpdNghJ crr fljij milAk; jpwdpy; cqfSfF vttsT jpUgjp ,UejJ?
0 =ghYwNt ,yiy
5 =kpf jpUgjpahf ,UejJ
4 =kpjkhd msT jpUgjp ,UejJ
3 =jpUgjpAk; mjpUgjpAk; rkkhf ,UejJ
2 =kpjkhd msT mjpUgjp ,UejJ
1= kpfTk; mjpUgjpaha; ,UejJ

14. flej 4 thuqfspy; ghYwtpdNghJ cqfSfFk; cqfs; Jizt UfFk; ,ilNa czhrrp Gh;tkhd neUf;fjjpy; vttsT jpUgjp ,UejJ?
0 =ghYwNt ,yiy
5 =kpf jpUgjpahf ,UejJ
4 =kpjkhd msT jpUgjp ,UejJ
3 =jpUgjpAk; mjpUgjpAk; rkkhf ,UejJ
2 =kpjkhd msT mjpUgjp ,UejJ
1= kpfTk; mjpUgjpaha; ,UejJ

15. flej 4 thuq;fsp;y cq;fs J i z tUld; ghYwtp;y vt;tsT jpUgjp milej;hfs?
5 = kpf jpUgjpahf ,UejJ
4 = kpjkhd msT jpUgjp ,UejJ
3 = jpUgjpAk; mjpUgjpAk; rkkhf ,UejJ
2 = kpjkhd msT mjpUgjp ,UejJ
1= kpfTk; mjpUgjpaha; ,UejJ

16. flej 4 thuq;fsp;y xl;L nkhjj jhk;gjj;jpa tho;tp;y vt;tsT jpUgjp milej;hfs?
5 = Vwf;Fiwa vg;nghOJk;
4 = mNdfKiw (miugq;F Neuq;fSf;F Nky)
3 = ghjp rkaq;fsp;y (Vwf;Fiwa miuklq;F)
2 = rpy rkaq;fsp;y (miuklq;Ff;F Fiwthf)
1= xUnghOJk; myyJ xUnghOJk; ,y;iy

17. flej 4 thuq;fsp;y gpwgG cWgg;gp;y Eiojypd; NghJ vjjid Kiw typ myyJ mnrsfhpak; milej;hfs?
0 = ghYwTf;F Kaw;rpf;ftp;y;iy
5 = Vwf;Fiwa vg;nghOJk;
4 = mNdfKiw (miugq;F Neuq;fSf;F Nky)
3 = ghjp rkaq;fsp;y (Vwf;Fiwa miuklq;F)
2 = rpy rkaq;fsp;y (miuklq;Ff;F Fiwthf)
1= xUnghOJk; myyJ xUnghOJk; ,y;iy

18. flej 4 thuq;fsp;y gpwgG cWgg;gp;y CLWTjiy njhlheJ vjjid Kiw Typ myyJ mnrsfhpak; milej;hfs?
0 = ghYwTf;F Kaw;rpf;ftp;y;iy
5 = Vwf;Fiwa vg;nghOJk;
4 = mNdfKiw (miugq;F Neuq;fSf;F Nky)
3 = ghjp rkaq;fsp;y (Vwf;Fiwa miuklq;F)
2 = rpy rkaq;fsp;y (miuklq;Ff;F Fiwthf)
1= xUnghOJk; myyJ xUnghOJk; ,y;iy

19. flej 4 thuq;fsp;y gpwgG cWgg;gp;y CLWTjypd; NghJ typ myyJ mnrsfhpak; Vwgl;lij mstpLthfs?
0 = ghYwNt Kaw;rpf;ftp;y;iy
5 = kpf mjpfk;
4 = mjpfk;
3 = kpf msT
2 = Fiwej msT
1= kpff;FiwT myyJ ,y;yNt ,y;iy

ஒப்புதல் படிவம்

ஆய்வின் தலைப்பு:
மனச்சிதைவு நோயுற்றோரின் உடலுறவுப் பிரச்சனைகள்.

நிலையம்:
கிருத்துவ மருத்துவக் கல்லூரி, வேலூர்.

ஆய்வின் நோக்கம்:
மனச்சிதைவு நோயுற்ற பெண்களுக்கு உடலுறவு பிரச்சனைகள் பொதுவாக காணப்படுகிறது. நாங்கள் இந்த உடலுறவு பிரச்சனைகள் எந்தவிதத்தில் இருக்கின்றன என்பதையும் மற்றும் மருந்துகளால் எந்தவித பிரச்சனைகள் ஏற்படுகின்றன என்பதையும் இந்த ஆய்வின் மூலம் தெரிந்துக்கொள்ள விரும்புகிறோம்.

பின்பற்ற இருக்கும் செயல்முறை:
மனநோய் மருத்துவப் பிரிவிலிருந்து ஒரு மருத்துவர் இந்த ஆய்வினை மேற்கொள்வார். அவர் பலவித உடலுறவு செயல்பாடுகள் பற்றிய தகவல்களை சில கேள்விச்சாதனங்கள் மூலம் சேகரிப்பார். தங்களின் தனிப்பட்ட விஷயங்கள் குறித்து சில கேள்விகள் கேட்கப்பட உள்ளது.
நீங்கள் அந்தவித கேள்விகளுக்கு பதிலளிக்கவும் அல்லது மறுப்பு தெரிவிக்கவும் தங்களுக்கு முழு சுதந்திரம் உள்ளது. ஒவ்வொரு நேர்முக கலந்துரையாடலுக்குப் பின் ஒரு இரத்தப் பரிசோதனை செய்ய வேண்டி தாழ்மையடன் கேட்டுக்கொள்ளப்படும். சுமார் ஒரு நூறு பெண்கள் இந்த ஆய்வில் கலந்துக்கொள்வார்கள்.

எதிர்பார்க்கப்படும் பங்கேற்பு காலம்:
இந்த ஆய்வின் நேர்முக கலந்துரையாடல் மூன்று முறை வெவ்வேறு காலங்களில் நடைபெறும். ஓவ்வொரு முறையும் கலந்துரையாடல் சுமார் அரைமணி நேரம் வரை ஆகலாம்.

இந்த ஆய்வின் மூலம் ஏற்படும் நன்மைகள்:
எங்களுக்கு கிடைக்கும் தகவல்கள் மூலம் தங்களின் உடலுறவு செயல்பாட்டில் உள்ள பிரச்சனைகளை நாங்கள் அறிந்துகொள்வதற்கு உதவியாக இருக்கம். மேற்கொண்டு இதற்கு சிகிச்சை தேவைப்பட்டால் அல்லது தாங்கள் உதவி வேண்டும் என்று விரும்பினால் அதன்படியே ஆலோசனை வழங்கப்படும். மேலும் இந்த ஆய்வின் முடிவில் தெரிய வரும் தகவல்களினால் மற்றவர்களும் பயன்பெற வாய்புகள் உள்ளது.

இரகசியக்காப்பு:
இந்த ஆய்வின் ஆவனங்கள் மற்றும் இந்த ஆய்வில் பெறப்படும் தகவல்கள் அனைத்தும் மிகவும் இரகசிமாக வைக்கப்படும். இந்த ஆய்வை மேற்கொள்ளும் மருத்துவரை தவிர மற்றவர்களுக்கு எப்பொழுதும் தெரியப்படமாட்டது. தங்களின் தனிப்பட்ட தகவல்கள் இந்த ஆய்விற்காக மட்டுமே பயன்படுத்தப்படும். தங்களின் பெயர் மற்றும் அடையாளம் எந்தவித வெளியீட்டிலும் தெரியபடுத்தமாட்டாது.

ஆய்விலிருந்து விலகிக்கொள்வதற்கான உரிமை:
இந்த ஆய்விலிருந்து விலகிக்கொள்வதற்கு எந்த நேரமும் தங்களுக்கு முழு சுதந்திரம் உண்டு. தாங்கள் இந்த ஆய்வில் பங்கேற்பதற்கும் அல்லது மறுப்பு தெரிவிப்பதற்கும் எடுக்கும் முடிவு இந்த மருத்துவமனையில் மேற்கொண்டு தொடர்ந்து மருத்துவ அல்லது மனநோய் சிகிச்சை பெறுவதை எந்த வகையிலும் பாதிக்காது. மேலும் சந்தேகங்களுக்கு கீழ்கண்ட முகவரியினை தொடர்புகொள்ளுங்கள்.

டாக்டர் : சுவர்னா ஜோதி க
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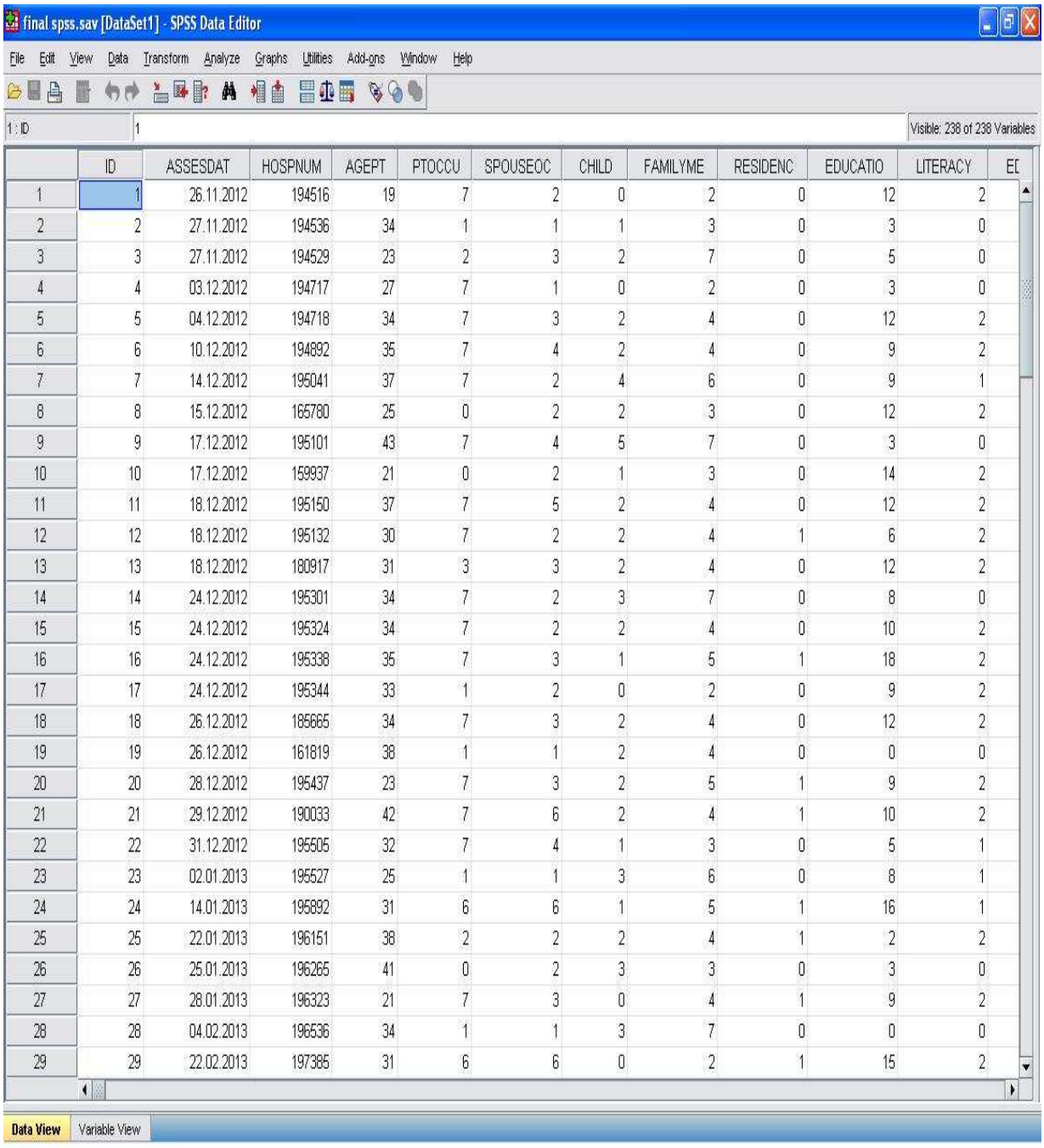
ஒப்புதல்

..... என்கின்ற எனக்கு மனச்சிதைவு நோயுற்ற பெண்களுக்கு ஏற்படும் உடலுறவு பிரச்சனைகள் குறித்த ஆய்வினை பற்றிய தகவல்கள் தெரிவிக்கப்பட்டது. இந்த ஆய்வின் விவரங்கள் பற்றி ஆய்வாளர் எனக்கு தெளிவாக எடுத்துக் கூறினார். நான் என் சொந்த விருப்பத்தில் இந்த ஆய்வில் கலந்துக்கொள்வதற்கு சம்மதம் தெரிவித்துக் கொள்கிறேன்.

கலந்துகொள்பவரின் கையொப்பம் தேதி

கலந்துகொள்பவரின் உறவினர் கையொப்பம் தேதி

ஆய்வாளரின் கையொப்பம் தேதி



	ID	ASSESDAT	HOSPNUM	AGEPT	PTOCCU	SPOUSEOC	CHILD	FAMILYME	RESIDENC	EDUCATIO	LITERACY	EC
1	1	26.11.2012	194516	19	7	2	0	2	0	12	2	
2	2	27.11.2012	194536	34	1	1	1	3	0	3	0	
3	3	27.11.2012	194529	23	2	3	2	7	0	5	0	
4	4	03.12.2012	194717	27	7	1	0	2	0	3	0	
5	5	04.12.2012	194718	34	7	3	2	4	0	12	2	
6	6	10.12.2012	194892	35	7	4	2	4	0	9	2	
7	7	14.12.2012	195041	37	7	2	4	6	0	9	1	
8	8	15.12.2012	165780	25	0	2	2	3	0	12	2	
9	9	17.12.2012	195101	43	7	4	5	7	0	3	0	
10	10	17.12.2012	159937	21	0	2	1	3	0	14	2	
11	11	18.12.2012	195150	37	7	5	2	4	0	12	2	
12	12	18.12.2012	195132	30	7	2	2	4	1	6	2	
13	13	18.12.2012	180917	31	3	3	2	4	0	12	2	
14	14	24.12.2012	195301	34	7	2	3	7	0	8	0	
15	15	24.12.2012	195324	34	7	2	2	4	0	10	2	
16	16	24.12.2012	195338	35	7	3	1	5	1	18	2	
17	17	24.12.2012	195344	33	1	2	0	2	0	9	2	
18	18	26.12.2012	185665	34	7	3	2	4	0	12	2	
19	19	26.12.2012	161819	38	1	1	2	4	0	0	0	
20	20	28.12.2012	195437	23	7	3	2	5	1	9	2	
21	21	29.12.2012	190033	42	7	6	2	4	1	10	2	
22	22	31.12.2012	195505	32	7	4	1	3	0	5	1	
23	23	02.01.2013	195527	25	1	1	3	6	0	8	1	
24	24	14.01.2013	195892	31	6	6	1	5	1	16	1	
25	25	22.01.2013	196151	38	2	2	2	4	1	2	2	
26	26	25.01.2013	196265	41	0	2	3	3	0	3	0	
27	27	28.01.2013	196323	21	7	3	0	4	1	9	2	
28	28	04.02.2013	196536	34	1	1	3	7	0	0	0	
29	29	22.02.2013	197385	31	6	6	0	2	1	15	2	