“A COMPARATIVE STUDY OF VARIOUS TESTING METHODOLOGIES FOR THE SCREENING OF SYPHILIS IN HIGH RISK AND LOW RISK GROUP”

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CERTIFICATE

This is certified that this dissertation entitled **"A COMPARATIVE STUDY OF VARIOUS TESTING METHODOLOGIES FOR THE SCREENING OF SYPHILIS IN HIGH RISK AND LOW RISK GROUP"** is a bonafide work done by **Dr. THANGAM. V,** post graduate student of the Department of Dermatology, Venereology and Leprosy, Madras Medical College & RGGGH, Chennai during the academic year 2014 to 2017. This work has not previously formed the basis for the award of any degree.

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INTRODUCTION

INTRODUCTION

Syphilis is a chronic infectious disease caused by Treponema pallidum. It is one of the commonest STI which commonly causes adverse events during pregnancy.

As the asymptomatic latent period is long, the patients with syphilis tend to be unaware of the infection and can transmit the infection to the sexual partners. If the disease is left untreated in pregnancy, it can cause serious consequences such as stillbirth, prematurity and neonatal deaths. Adverse outcomes of pregnancy are preventable if the infection is detected and treated before mid-second trimester.

Since Treponema pallidum is a non cultivable bacteria, serology plays a vital role in the diagnosis. As it increases the transmission of other STI, screening of syphilis in high risk population is very important.

Early detection and treatment is also critical in preventing severe long term complications in the patient and onward transmission to sexual partners.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Definition

Syphilis as defined by Stokes is an infectious disease, due to Treponema Pallidum of great chronicity, systemic from the outset, capable of involving particularly every structure of the body in its course, distinguished by florid manifestations on the one hand and years of completely asymptomatic latency on the other, able to simulate many disease in the field of medicine and surgery, transmissible to off spring in man, transmissible to certain laboratory animals and treatable to the point of presumptive cure[1].

Historical Background

There are two theories concerned with the origin of syphilis.

First one is the Precolumbian theory, which says the disease was originated in the tropics as a primitive treponemal disease commonly transmitted by chance contact between the individuals like yaws and then it spread to temperate regions and affected the more advanced communities where the most common transmission mode being sexual contact.

Second one is the Columbian theory, according to which the disease was brought to Europe with the return of Columbus in 15th

century after his discovery of America. From Europe the disease spread to India and Far East through Portuguese sailors[1].

The disease acquired its name from the poem "Syphilis Sive Morbus Gallicus" written in 1530 by an Italian pathologist Girolamo Fracastoro which says the mythical shepherd Syphilis refused to make sacrifices to God Apollo and was cursed as a result. The disease had also been known as Morbus gallicus and Lues venereum in the past[2].

History of diagnosis of syphilis

The use of diagnostic tests for syphilis began in 1903 with the first trial to link the infection with a microorganism through animal inoculation. In 1905 Fritz Schaudinn and Erich Hoffmann were the first to associate Spirochaeta pallida, as Treponema pallidum was then known with the syphilis disease. A modified Giemsa stain was used by them to examine lesion material from people with chancres.

In 1909, the use of darkfield illumination was described by Coles, basing diagnosis on the motility of the organism. The direct microscopic examination of treponemes in stained tissue sections was described in 1910, and the darkfield microscopy became a routine diagnostic procedure in 1923. The fluorescent antibody technique was used to test lesion material was described in 1964. Subsequently the DFA-TP

technique was expanded for used with monoclonal antibodies and tissue sections. The newest of the antigen detection methods is Polymerase chain reaction, described by Grimprel and Noordhoek in 1991. The PCR technique can only be applied to specimens from lesions, CSF and tissue sections. PCR utility with samples from blood are under investigation.

Wassermann, Neisser, and Bruck developed complement-fixation test. In 1941, Pangborn identified the extracts as a serologically active phospholipid called cardiolipin. Michaelis and Meinicke developed the precipitation tests for syphilis. In 1922, Kahn found a macroscopic flocculation test without complement.

With Pangborn's successful attempt for precipitation of the phospholipid – cardiolipin in 1941 from beef heart, the active antigenic component of the nontreponemal tests, standardization was possible.

Harris, Rosenberg and Riedel in 1946 introduced VDRL. The unheated serum reagin (USR) test was then introduced by Portnoy, Carson and Smith in the year 1957.

Portnoy in 1961 successfully performed the RPR test with the incorporation of charcoal particles.

In 1987, an enzyme-linked immunosorbent assay (ELISA) was developed by Pedersen, Orum and Mouritsen.

A serological test using Treponema pallidum as the antigen,the Treponema pallidum immobilization (TPI) test developed by Nelson and Mayer in the year 1949.

In 1964, Deacon and Hunter's work led to the development of the more specific and sensitive fluorescent treponemal antibody absorption (FTA-ABS) test.

In 1965, TPHA test was described by Ratlev. The enzyme linked immunosorbent assay (ELISA) was first applied to syphilis serology in 1975 by Veldekamp and Visser[3].

Epidemiology

Syphilis remains a common infection worldwide[4]. Every case of infectious syphilis should be considered as a potential source of infection. Prostitutes and promiscuous persons constitute a reservoir for syphilis. Lack of treatment facilities and ignorance allows many cases to run the natural course of the disease and thus constitute a reservoir. Syphilis occurs all over the world without any restriction to any social class. However, persons in certain occupations such as taxi and truck drivers[5], soldiers, sailors, salesmen, hotel and restaurant staffs, night club musicians, students and tourists are at high risk of acquiring infection[6].

The factors that operate and interact in acquisition and spread of the disease are complex in nature. The essential risk factor for acquiring infection is sexual exposure to it. The population explosion, migration of people from rural to urban areas, especially young men seeking work, disproportionate male to female ratio in the floating population in urban and pilgrim centres account for the spread of the disease[8].

In many developing countries there appear to be changes occurring in the direction of increased freedom, decreasing age limits for sexual activities, wider spectrum of activity and frequent extramarital and premarital intercourse with more partners. The social stigma attached to a sexually transmitted disease leads to its concealment and aids its spread. Movies, magazines, wall-posters, exhibits, advertisements, etc., also encourage promiscuity. The association between high-risk behaviour patterns and various STDs has been reported in many studies. Extramarital sexual activity, disharmony with spouse, premarital sex, multiple sex partners, non-usage of condoms, visiting commercial sex workers and unawareness about symptoms of STDs are important risk factors[6]. Men having unprotected sex with female sex workers have the greatest risk of acquiring infections and of transmitting them to women[6].

In India, prostitution is still an important cause for the spread of STDs. In commercial sex workers a significant association with syphilis has been observed for periods of exposure. Economic factors play a considerable role in prostitution particularly among the underprivileged. Syphilis was found to be the commonest sexually transmitted disease, affecting 30% of 200 commercial sex workers attending STD clinic for various ailments[9].

A country's socioeconomic structure and its functioning determine the prevalence of syphilis in a community. Sexually transmitted diseases, including syphilis, are more prevalent in large cities than in small towns and rural areas, showing clustering of cases within the towns probably due to enhanced opportunity for spread. In India, as well as in other developing countries, poor reporting systems make it difficult to obtain the exact incidence or prevalence of syphilis. However, early syphilis appears to have a proportionally higher incidence in developing countries, both in rural and urban areas, than in industrialized ones[8]. The reported incidence of early syphilis among STD patients in India in the past varies from 7.1% to 55.6%[9]. Syphilis was reported to be the commonest STD in India, accounting for 10.4% to 36.1%. Its prevalence ranges from 2.7% to 26.6% in serological surveys[12]. The increased incidence of acquired syphilis amongst teenagers in some developing countries has been

attributed to lack of sex education, homosexuality, group sex, early age of sex, urbanization, industrialization, increase in tourist traffic, affluence, and economic and social independence in many young people.

According to WHO estimates in 1999, the annual global incidence of syphilis is approximately 12.2 million cases, most of which occur in developing countries[4]. The prevalence of seropositivity in pregnant women may exceed 10% in many developing countries compared to 0.1% to 0.6% in developed countries[13].

Syphilis usually affects men and women in the sexually active age group (i.e. 20–40 years). It is more common in males than in females. The majority of males continue to be sexually active even after acquiring the infection[14]. Alcohol and drug abuse are additional risk factors.

Microbiology

Treponema pallidum is a thin delicate spirochete with tapering ends about 8 – 16 µm long and 0.1 – 0.2 µm wide. It has about 6 – 20 regular spirals, sharp and angular at regular interval of about 1 µm. It is actively motile exhibiting rotation around long axis, backward and forward movement, the whole body is flexible. Other movements are buckling, undulating, coil compression and expansion, angulation and looping. The organism divides by binary fission[13].

Figure-1: Dark ground microscopic appearance of treponema pallidum

Electron Microscope

The cytoplasm surrounded by trilaminar cytoplasmic membrane, enclosed by a cell wall containing peptidoglycan which gives cell rigidity and shape. External to this is lipid rich outer membrane layer through which only a few antigenic proteins protrude (TROMP) from each end of cell. There is 3 to 4 endoflagella wind around axis of cell but do not protrude outside, remain within outer membrane layer. The highly immunogenic portions of organism are lipoprotein anchored predominantly to periplasmic leaflet of cytoplasmic membrane[4].

Cultivation

Pathogenic T. pallidum do not grow in artificial media. Virulent T. pallidum strains (Nichol strain) are maintained for decade by serial testicular passage in rabbits. This is used for diagnostic and research purpose. The isolate of non pathogenic T. pallidum (Reiter strain) is used as antigen in group specific treponemal test for diagnosis of syphilis. The reiter strain grows well on thioglycolate medium containing serum[1].

Resistance

T. pallidum is very delicate, inactivated by drying or at the temperature of 41- 42°C in one hour which is the basis for fever therapy. It is killed in 1 -3 days at < 4°C. Inactivated by contact with distilled water, soap, arsenical, mercurial, bismuth and common antiseptical agents[15].

Transmission

T. pallidum has a one third chance of transmission during contact between susceptible and infectious sexual partners. Overall, a patient with syphilis is most infectious during the first one to two years of infection and infectivity gradually decreases after that time.

The important factors that lead to transmission of infection include the number of exposures, type of sexual activity and morphology and

distribution of the lesions in the affected partner. Moist kisses are another mode of transmission in a patient with syphilitic lesions of lips or oral cavity. Because of the greater amount and variety of lesions present, the secondary stage of syphilis is most contagious[16].

Other modes of transmission include transfusion of infected blood, and infection through the transplacental route from an infected mother to the fetus in prenatal syphilis (Syphilitic D'emblee). Accidental inoculation of infected material can sometimes occur in medical personnel (syphilis insontium)[4].

Immunity

It is generally accepted that some degree of immunity to exogenous reinfection (chancre immunity) eventually develops in humans who are infected with syphilis. This immunity is not a complete one, since it is incapable of eradicating ongoing infection. Certain studies indicate that long-term syphilis infection is required to produce this immunity, which sometimes wanes following antimicrobial therapy.

Both humoral and cell-mediated responses are active in syphilitic infection. The cell-mediated immune response is important in protecting against T. pallidum infection and this is distinctly suppressed in some stages of the disease. During the early stage of infection this may be due

to binding of SIL-2R (soluble IL-2 receptors) to IL-2, leading to weakening of T-cell function and of resistance against T. pallidum infection, thereby permitting the multiplication and widespread dissemination of T. pallidum in virtually all tissues of the body. Initially, humoral and later localized cellular immunity appear. Immune complexes may be present. Immobilizing antibodies appear irregularly in the early stage but are found regularly in latency. Delayed hypersensitivity occurs only in latent syphilis. A remarkable reduction in the number of treponemes ensues either with or without therapy.

The late appearance of cell-mediated immunity may account for the failure to eradicate live organisms from infectious lesions in the early stage of the disease. The persistence of T. pallidum, which has been reported at certain sites such as the aorta, brain, eye, lymph nodes, and perilymph even after adequate therapy, may be related to site specific poor access to immune products[4].

Pathogenesis

T. pallidum penetrate through small breaks in skin or mucosa. The generation time of T. pallidum during early active stage is 30 – 33 hours. The concentration of treponemes generally reaches atleast 10^7/g of tissue before the appearance of clinical lesion. The median incubation period in human (21 days) suggests an average inoculum of 500 – 1000 infectious

organisms. The infectious dose for fifty percent of individuals to develop the disease is 57 organisms.

After penetration the organism slowly multiplies at the site of inoculation and forms the primary chancre. Both cell mediated immunity and humoral antibody response occurs against T. pallidum. The CMI causes tissue damage mainly by recruitment of lymphocytes, plasma cells and macrophages resulting in capillary endothelial proliferation and subsequently endarteritis obliterans resulting in primary chancre. Due to Th1- type cytokine profile, macrophages are activated leading to phagocytosis and ultimately destruction of treponemes, resulting in spontaneous resolution of chancre. But due to partially exposed immunogenic surface proteins(TROMP) treponemes persists resulting in partial immunity and dissemination of infection, through blood and lymphatics long before the appearance of primary lesions. Humoral responses lead to development of cross reacting non specific (non- treponemal) antibodies[4].

Classification of Syphilis

Congenital syphilis

1. Early
2. Late
3. Stigmata

Acquired Syphilis

1. **Early infectious phase (< 2 years)**
    - Primary stage
    - Secondary stage
    - Early latent stage
2. **Late non infectious phase (> 2 years)**
    - Late latent stage
    - Late benign stage

3. Cardiovascular syphilis and Neurosyphilis[16]

Primary Syphilis

After an incubation period of 9 – 90 days (mean – 21 days) infection starts as a macule, becoming papule which subsequently ulcerates to form chancre. In males, common site include coronal sulcus, glans, shaft of penis, prepuce, frenulum and urinary meatus. In females it commonly occurs in vulva, vagina and cervix.

The characteristics of primary chancre are single (sometimes multiple) dull red indurated painless ulcer with well defined border and clean looking floor which heals spontaneously over a period of 3 – 10 weeks. Exudate is serous in nature. A painless, firm, rubbery, non – inflammatory and discrete enlargement of bilateral adjacent lymph nodes

often occurs. Extra genital chancre occurs on anorectal, oral cavity, breasts, hands, fingers, nails etc[17].

Condom chancre – chancre occurring at the hilt of shaft of penis

Chancre redux – recurrence of primary sore at site of original lesion

Pseudo chancre redux – gumma occurring at the site of primary sore[4, 18]

The primary lesion is indolent, taking a slow course and heal spontaneously, within three to ten weeks with or without treatment[17].

Secondary Syphilis

The lesions of secondary syphilis usually occurs 4 -8 weeks after the appearance of primary chancre. In about one third of cases, primary lesion is still present. The lesions are generalized and can involve any organ. Although skin rash and lymphadenopathy are the most common manifestation more than 60% does not recall any type of lesions.

The rashes may be macular, papular, maculopapular, papulosquamous, psoriasiform, annular, pustular, nodular, lichenoid or follicular. Vesiculobullous lesions do not occur.

Rashes are bilaterally symmetrical, polymorphic, non itchy, non vesicular and ham coloured involving trunk, extremities, palms and soles.

Papules along the hairline on forehead arranged in a crown like pattern called corona veneris. The annular syphilid occurs over the face, dry papules may appear in rings; central regression of a large papule may also give a ring formation. Follicular syphilid, papular lesions related to the hair follicles, commonly occurs over the scalp, associated with itching may lead to syphilitic alopecia. Corymbose syphilid is characterized by central plaque surrounded by smaller satellite papules.

As the papules resolve they leave faintly pigmented area which fade gradually, resulting in residual depigmentation of the skin of the neck, known as Leucoderma colli or Collar of Venus[17].

Buschke Ollendorf sign – deep dermal tenderness elicited by applying pressure with blunt side of pin on an early papule over a bony prominence due to cutaneous vaculitis[19].

In warm and moist areas of body like perineum, perianal, under breast, axilla and groin, the lesions may proliferate to form a broad based flat topped papules (condyloma lata).

In papulosquamous syphilid, the papules or plaques covered with waxy scaling on the surface, may appear like the crusted lesions of psoriasis termed as Psoriasiform secondary syphilid.

The Pustular syphilid occurs as a result of endarteritis obliterans and diminution of blood supply, presents with a central core of necrotic tissue which may resemble a pustule. Pustular lesions may be associated with extensive indolent necrosis of tissue, giving rise limpet – like crusts which may be discoloured with altered blood are termed as Rupia, often seen on the face. A rare form of destructive syphilid with deeply ulcerating lesions and severe toxaemia which may end in death, is described as Malignant pustule.

Mucous lesions in the form of serpingenous ulcers called as snail track ulcers, erosions, split papules affecting oral and genital mucosa. Moth eaten alopecia beginning in the occipital hair is characteristic. Lymphadenopathy involving two or more groups are discrete, rubbery, painless and non tender. The occipital, axillary, inguinal and epitrochlear group of lymph nodes are most commonly involved.

Systemic manifestations include fever, malaise, mild hepatitis with elevated liver enzymes, icterus, uveitis, arthritis, periosteitis, parotiditis, glomerular nephritis, myocarditis, pulmonary changes and neurological

involvement like acute meningitis, raised intracranial pressure and cranial nerve palsies can occur[17].

Untreated secondary syphilitic rash can last for several weeks. Relapse can occur in 25% cases. Relapse is mostly less severe than the initial episode[4].

Latent syphilis

Latent syphilis means a reactive serology along with positive specific treponemal antigen tests in the absence of clinical evidence. According to WHO two years period is considered as a demarcation between early and late latent syphilis. This is important, as patients in early latent stage may have relapse of secondary syphilis and is considered infectious. After the second year of the disease, syphilis enters the late phase and is usually non contagious[16].

Benign tertiary syphilis

The first lesion of tertiary stage of syphilis are usually seen from three to ten years after the primary stage. It commonly manifests as gumma. It can be localized or diffuse. The diffuse gummatous reaction is commonly seen in tongue and testis. The lesions are due to cellular hypersensitivity to treponemal antigens. Histologically show a granulomatous inflammation with central area of necrosis. Most

commonly involved sites include skin and skeletal system, mouth, upper respiratory tract, larynx, liver and stomach. However it can affect any organ in the body.

Skin lesions may be solitary or multiple, painless and indurated, nodular, papulosquamous and ulcerative lesions which are destructive, chronic, tends to heal centrally and extend peripherally. Skeletal gumma most frequently involves long bones of legs, but any bone can be affected. The most common symptom is boring pain which is worse at night. In late benign syphilis, serological tests are almost reactive and can be confirmed by specific tests.

Gumma of the liver present as hepar lobatum, diffuse interstitial fibrosis and amyloid disease of the liver.

Billiard ball testis is diffuse gummatous infiltration of the testis. Testicular swelling is smooth with a regular surface and feels heavy. Testicular sensation is lost but the patient is aware of dragging sensation and altered consistency of the organ[17].

Neurosyphilis

T. pallidum invades the central nervous system during the early stages of syphilitic infection[20]. There may be spontaneous resolution, some may develop acute symptomatic meningitis, while a few others

remain asymptomatic to manifest 5 – 35 years later with meningovascular parenchymatous and gummatous disease in brain and spinal cord. It is more common in men[21].

The penicillin therapy brought down the incidence of neurosyphilis considerably. However, with the upsurge of HIV infection, the incidence of an early form of neurosyphilis, 'acute syphilitic meninigitis' has increased and also the presence of later forms of the disease like paresis, gumma, ophthalmic disease and otologic complications has become more familiar[16].

Development of meningovascular syphilis even after therapy for primary syphilis necessitates the need for appropriate serological follow up[21].

Merritt classification of neurosyphilis

- Asymptomatic neurosyphilis
    a. Early
    b. Late
- Meningeal syphilis
    a. Acute syphilitic meningitis
    b. Meningovascular
    c. Cerebral
    d. Spinal form

- Parenchymatous syphilis
    a. General paresis of insane
    b. Tabes dorsalis
    c. Taboparesis
    d. Optic atrophy
- Gummatous
    a. Cerebral form
    b. Spinal form[16]

Cardiovascular syphilis

The indolent chronic inflammatory process of syphilis takes longest to manifest itself in the cardiovascular system. It may take 10 – 40 years to manifest its first sign.

Syphilis of the heart – this is set to take the form of diffuse myocarditis or gumma of the heart. Narrowing of the coronal ostia with decreased coronary circulation reslts in angina and myocardial infarction.

Syphilis of the great vessels – it may occur in aorta, pulmonary artery or in the great vessels arising from the aorta. As the result of endarteritis obliterans some areas of media undergo necrosis with fragmentation and destruction of the elastic tissue and replaced by white fibrous tissue. Intimal thickening occurs due to hyalinisation which is

irregular. It can present as uncomplicated aortitis, coronary ostial stenosis, aortic regurgitation and aortic aneurysm[22].

Syphilis and pregnancy

Syphilis in pregnancy remains a problem despite the availability of adequate diagnostic tests and penicillin therapy. Usually the end of secondary syphilis is the end of the infectious phase, except in pregnant women where the infectiousness to the unborn child may last for five to six years. There is considerable evidence that pregnancy has a benign effect on syphilis in the mother, although its effect on the fetus may be disastrous[22].

Effect of Pregnancy on Syphilis

It appears that generally the course of syphilis is mild during pregnancy. It is believed that chancres are seen less frequently and manifestations of secondary syphilis may be much milder than in non-pregnant females. Cardiovascular syphilis and neurosyphilis are more common in men than in women and there is evidence that women who become pregnant in the early stage of the disease are less likely to suffer from neurosyphilis[5].

Effect of Syphilis on Pregnancy

Syphilis is highly deleterious to the offspring, causing abortion, stillbirth, or the birth of a syphilitic child. If the mother is suffering from primary or secondary syphilis during her pregnancy, there is a high chance of abortion and still birth. Longer the duration of untreated syphilis in mother, the less likely it is that the fetus will die in utero, and the more likely that a live congenital syphilitic infant will be born or that the fetus will escape entirely[22].

Mode of Infection

The mode of infection is transplacental. The placenta is infected first and the organisms present in the maternal circulation reach the fetal circulation via the placental capillaries. The most frequent pathologic lesion is necrotizing funisitis. The demonstration of IgM, C3, and rheumatoid factor reactivity in the syphilitic placenta suggests their significant role in the evolution of the pathological changes. The long held belief that syphilis does not infect the fetus before 18 weeks of gestation is incorrect.

Demonstration of T. pallidum in amniotic fluid at a mean gestational age of 17 weeks in continuing early pregnancy and report of a first trimester abortion due to syphilitic endometritis suggest that

treponemal infection can cause fetal morbidity during early gestation. However, because of the inability of the fetus to mount an immune response before the fourth month and a deficiency of some biochemical treponemal requirements in the young fetus, little inflammation is produced in the first trimester. The pathogenic changes occur only after the fetus becomes immunocompetent, i.e. after 18–20 weeks of gestation, due to the presence of T. pallidum which have crossed the placenta in the first trimester.

The outcome of pregnancy in untreated syphilis depends upon the time of infection. A woman in the early contagious stage will almost certainly infect her unborn child by hematogenous spread of organisms through the placenta, producing a severe effect on the fetus because a large number of treponemes cross the placenta. The chance of a fetus being infected in the latent or late stages depends largely on the duration of infection in the pregnant mother. Usually the effect on the fetus is less severe because of the diminished number of circulating treponemes[4].

Colle's law – a new born child affected with congenital syphilis, eventhough it may have symptoms in the mouth, never causes ulceration of the breast which it sucks, if it be the mother who suckles it, though continuing capable of infecting a strange nurse.

Kassowitz's law (Diday's law) – it states that a woman with untreated syphilis has a series of pregnancies; the likelihood of infection of the fetus in later pregnancies becomes less. Thus, in successive pregnancies she may have a miscarriage at the fifth month, on the next occasion a still birth at the eighth month, next the birth of an infant with congenital syphilis who dies within a few weeks, followed by the birth of 2 or 3 infants with congenital syphilis who survive. Finally one or more healthy children may be born.

Profeta's law – at birth an infected infant may appear healthy and may not develop signs till it is some weeks old[22].

The infant may contract infection and develop a primary chancre via contact with infectious lesions in the birth canal of the mother who has contracted the disease late in pregnancy. Infection of an infant born to a mother with late prenatal syphilis may be due to newly acquired infection.

Technological advances have led to improved serodiagnostic tools for syphilis. On-site confirmation by decentralized antenatal screening is now possible since the new RPR reagents and modified treponemal test that are stable at room temperatures have become commercially available, so also solar powered rotators and simple, rapid point-of-care treponemal tests that use whole blood and do not require electricity or equipment.

SYPHILIS AND HIV

HIV seropositive patients are at higher risk of having serological evidence of active syphilis[4,24]. Syphilis incidence was almost 10 times higher in HIV- seropositive Men having sex with men than in HIV-negative Men having sex with men[25]. This difference is largely attributable to behavioural factors and was strongly associated with unprotected anal intercourse[26,27].

Primary chancre are more likely to be larger, multiple and painful in HIV positive patients. Occurrence of malignant syphilis in association with HIV had been published[27]. More rapid progression to neurosyphilis may occur and asymptomatic meningitis is commoner amongst those with HIV[4].

Laboratory Diagnosis

As T. pallidum is not an easily cultivable or stainable bacterium, other laboratory methods to identify the infection in various clinical stages of syphilis have been developed. Apart from venereal route, the disease can also be transmitted congenitally thereby attaining its importance in antenatal screening[16].

Routine testing for syphilis is done in pregnant women, HIV clinic attendees, screening before surgery and blood & tissue donation. In many

countries six-monthly syphilis serology is included in the monitoring of HIV seropositive patients[29].

WHO recommend serological screening test for syphilis in all antenatal women during their first antenatal care visit and this should be repeated early in third trimester[30].

Test for syphilis divided into two categories:

Direct identification of T. pallidum

1. Dark field microscopy
2. Direct fluorescent antibody (DFA) test for T. pallidum
3. Animal inoculation
4. PCR

Serological test to detect antibodies

1. Non treponemal test – to determine the disease activity (VDRL, RPR, USR,TRUST, EIA)
2. Treponemal test – for screening and confirmation (FTA-ABS, TPHA, TPPA, EIA, TPI, Immunoblots)[4]

The serology plays a vital role in the latent stage of the infection, as the pathogen cannot be detected directly. In T.pallidum infection, the host produces antibodies to twenty different polypeptide antigens. The

specific anti T.pallidum IgM antibodies develop during the 2nd week of infection. IgG antibody response begins around the 4th week and usually persists. Treatment causes decrease in the amount of antibodies; however the IgG antibodies may remain at a low level at a low level even after treatment[29] . An ideal serological test should have high sensitivity and specificity. In addition it should be suitable for treatment monitoring and should give a negative result on successful therapy to allow a clearcut diagnosis of reinfection[31]. Such an ideal test is not yet available, however by using the different but complimentary characteristics of specific and non - specific treponemal tests, a diagnosis of syphilis and a serological assessment of disease activity, treatment response and reinfection can be made[32].

Sensitive test should be used for screening and a positive screening test should always be confirmed by further testing. A nontreponemal serological test is used to assess disease activity and treatment response. Treponemal tests are usually used for screening and confirmation of the diagnosis[4].

FTA-Abs will be the first to become positive in around four weeks followed by VDRL and TPHA at six and eight weeks respectively. As EIA is a relatively new test becomes positive in around two weeks[28].

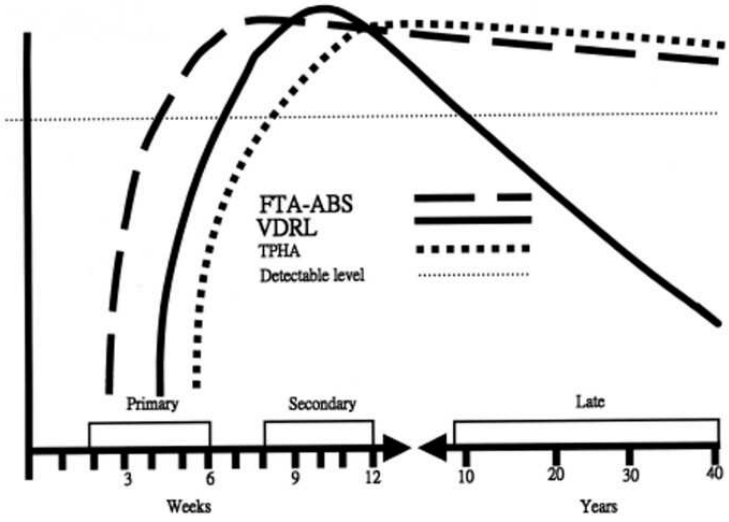


Figure-2: The relationship between levels of antibodies and time

Lab diagnosis during various stages of syphilis

Primary Syphilis

Primary Syphilis is diagnosed mainly by microscopic examination of T.pallidum through:

a) Dark Field Microscopy (DFM)

b) Direct Fluorescent Antibody-TreponemaPallidum (DFA-TP)

Serological test are not much reliable since the T. Pallidum can be detected only after a period of 1 to 4 weeks of chancre formation[33].

Secondary Syphilis

Secondary Syphilisis diagnosed by serological tests with a sensitivity of 100% and they are of two types:

- Non-Treponemal tests
- Treponemal tests

Latent Syphilis

Since the lesions are absent during this stage definite diagnosis is quiet difficult. Early latent Syphilis is usually diagnosed by Non-Treponemal tests. However in late latent Syphilis Non-Treponemal tests are negative in 30% cases and such patients results should be confirmed by Treponemal tests[34].

Tertiary Syphilis

Treponemal tests are test are used to diagnose this stage but around 2 to 4% of patients show negative reports with Treponemal tests and such patients may require other test like PCR[35].

Neurosyphilis

The VDRL-CSF test is considered to be the standard serologic test for neurosyphilis and when reactive in the absence of contamination of the CSF with blood, it is considered diagnostic of neurosyphilis[25].

Congenital Syphilis

Congenital Syphilis can be diagnosed by isolation of T. Pallidum from the nasal discharge or from the umbilical vein blood, but these are not confirmatory test since it can be due to transfer of maternal antibodies.

The diagnostic tests include:

- FTA-ABS test using fluorescent-labelled anti-human globulin.
- PCR from cerebrospinal fluid

Nontreponemal tests

The two most commonly available nontreponemal tests are VDRL test and RPR test. Both tests have the same standardized antigen comprising of lecithin, cholesterol and purified cardiolipin to detect antibody against cardiolipin. The VDRL slide test has to be read using a microscope. The test is performed on serum heated at 56°C for 30 min. Serum and antigen are mixed within a ring on a glass slide by rotating it mechanically and results are read in a microscope. When the anticardiolipin antibodies are present the antigen rods aggregate to form clumps. A quantitative test can be performed using serial dilutions of the serum[36].

RPR test can be read visually because of the presence of coloured substance in the antigen preparation. It is performed on plastic coated cards on to which circles have been imprinted. Standardized amounts of undiluted serum and stabilized antigen suspension containing charcoal particles are mixed within the circles and spread over it. To perform quantitatively serially diluted serum is mixed with the antigen. The card is rotated at 100 rpm for 8 minutes. Presence of anticardiolipin antibodies

produces flocculation of charcoal particles which is classified as a positive test[4].

The RPR test has several advantages over VDRL. It can be read macroscopically, the antigen used is stabilized and cards are used instead of slides. As the antigen used in nontreponemal tests is a component of all mammalian cell membranes, the damage to the tissue caused by infection, immunization, pregnancy, age related changes or autoimmune diseases can result can result into false positive nontreponemal test results. The reactivity in such cases is usually only in low dilutions (<1:8); however in exceptional cases, false reactivity in very high titres (upto1:256) has been reported in IV drug abusers. The incidence of biological false positive reaction is 1-2% of the samples tested[29].

False positive results are of four types

1. Technical false positive reactions
2. Variations in the normal
3. Diseases allied to syphilis
4. Biological false positive reactions[4]

Biological false positive reactions

Acute reactions (< 6 months)

I. Physiological state[37]

- Pregnancy
- Ageing

II. Infection

- Bacterial – Pneumococcal pneumonia, scarlet fever, infective endocarditis
- Mycobacterial – Tuberculosis, leprosy
- Other spirochaetal infection – Relapsing fever, leptospirosis
- Other STI – Chancroid, lymphogranuloma venerum
- Viral infection – HIV, infectious mononucleosis, measles, mumps, chicken pox, viral hepatitis
- Protozoal infection – Malaria, filariasis

III. Others

- Immunization
- IV drug abuse

Chronic reactions (> 6 months)

- Lepromatous leprosy
- Disseminated lupus erythematosus
- Systemic lupus erythematosus
- Anti phospholipid syndrome
- Haemolytic anemia

- Rheumatoid arthritis
- Thyroiditis
- Drug addiction
- Liver failure
- Malignancy – Multiple myeloma
- Multiple blood transfusions[28,29]

Prozone phenomenon

Prozone reactions are false-negative reactions that can occur due to high concentrations of specific antibodies in a specimen. The antibody-to-antigen ratio is disproportionate and results in a “rough” nonreactive or a weakly reactive reaction. Those specimens will give a clearly positive reaction when diluted and retested, a process that brings the antibody-to-antigen ratio within the optimal range[38]. The zone of equivalence signifies this optimal ratio. In the event of antibody or antigen excess (prozone and postzone respectively) false-negative test result will arrive. Therefore, it is recommended to test antibody for prozone phenomenon by diluting patient's serum to bring antibody concentration into the “zone of equation”[4]. However, the incidence of prozone phenomenon is very low in non-HIV patients with syphilis, ranging from 0% to 0.4%[29].

When the reagin test is positive in the absence of definite history and conclusive clinical evidence of syphilis, is an indication for the performance of specific Treponemal test to confirm the diagnosis[39].

Treponemal tests

In these tests, entire T. pallidum or its fragments are used as the antigen to detect antibodies directed against Treponemal cellular components. These tests are now increasingly used as screening tests for syphilis.

The Treponemal tests become reactive before nontreponemal tests. However, unlike nontreponemal tests, these tests remain reactive for many years inspite of adequate therapy[40]. Therefore, cannot be used for monitoring purposes.

The most commonly used Treponemal tests are

1. EIA test
2. TPPA
3. TPI
4. FTA – Abs
5. TPHA

TPI uses T. pallidum (Nichols strain) grown in rabbit testes as the antigen and is based on the ability of patients'antibody and complement

to immobilize living treponemes. The results are read by darkfield microscopy. Although the TPI test was rapidly accepted as a specific test for syphilis, the TPI test was complicated, technically difficult, time consuming, and expensive to perform.

In the FTA – Abs (Fluorescent Treponemal Antibody Absorption test), Nichols strainis fixed on glass slides. The patient's serum is diluted in an extract from cultures of non pathogenic reiter treponeme to remove nonspecific treponemal antibodies. This serum is then added to the glass slide. If it contains the antibody, it coats the treponemes[41].

Then FITC - labelled antihuman immunoglobulin is added to the slide that combines with the patients antibody attached to T. pallidum. The slide is examined under a fluorescent microscope. It is relatively expensive to undertake, cannot be automated and is prone to false positives and used for screening[42].

TPHA (Treponema pallidum Hemagglutination test) is easier to perform than FTA – Abs and is suitable for testing a large number of samples. The antigen used in this procedure is ultrasonicated material from the Nichols strain of T.pallidum absorbed on to the surface of formalinized tanned sheep erythrocytes.

As in FTA – Abs test, the patient serum is first diluted in sorbent to remove non – specific treponemal antibodies. The serum is then placed in a microtitre plate and if antibodies are present in the serum they react with sheep erythrocytes to agglutinate them[43].

Reactive results are shown by smooth mat of cells covering the entire bottom of a well. Non – reactive results show a definite compact red button at the centre of the well, with or without a very small hole in the centre.

The enzyme linked immunosorbent assays(EIA) uses Nichols strain of T.pallidum as antigen. They can be automated, usually become positive within 3 weeks of acquiring syphilis. They are becoming increasingly inexpensive nowadays and are becoming established as the screening test of choice in many parts of the world[44].

Detection of IgM antibodies is used to diagnose disease early infection and assess disease activity. IgM Antibodies appear in serum toward the end of the second week of infection, decline gradually and disappear usually within 6 months. Thus IgM antibodies have been considered as indicators of active syphilis. Detection of IgM antibodies is of great significance when congenital syphilis is suspected and may be useful if reinfection is being considered[4].

Screening

It is defined as the search for unrecognized disease or defect by means of rapidly applied tests, examinations or other procedures in apparently healthy individuals. Screening is carried out in the hope that earlier diagnosis and subsequent treatment favourably alters the natural history of the disease in a significant proportion of those who are identified as positive.

The screening test must satisfy the criteria of acceptability, repeatability and validity, besides others such as yield, simplicity, safety, rapidity, ease of administration and cost[10].

The screening test can be evaluated by the following measures

Sensitivity

The ability of the test to identify correctly all those who have the disease that is ‘true positive’

Specificity

The ability of a test to identify correctly those who do not have the disease, that is ‘true negatives’.

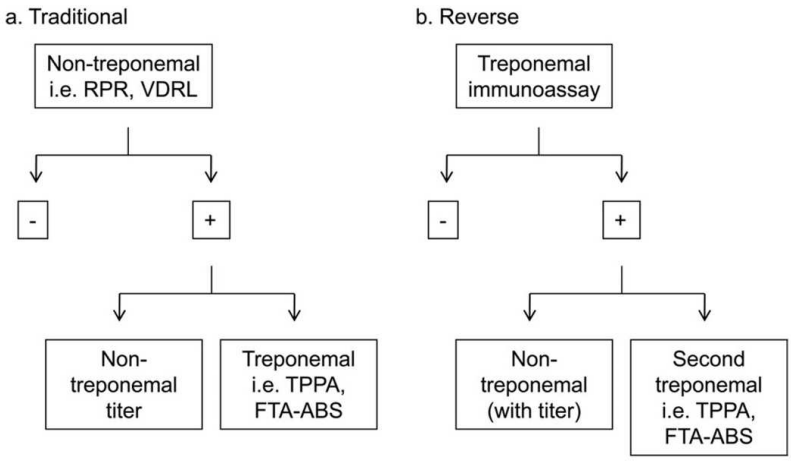
Predictive accuracy

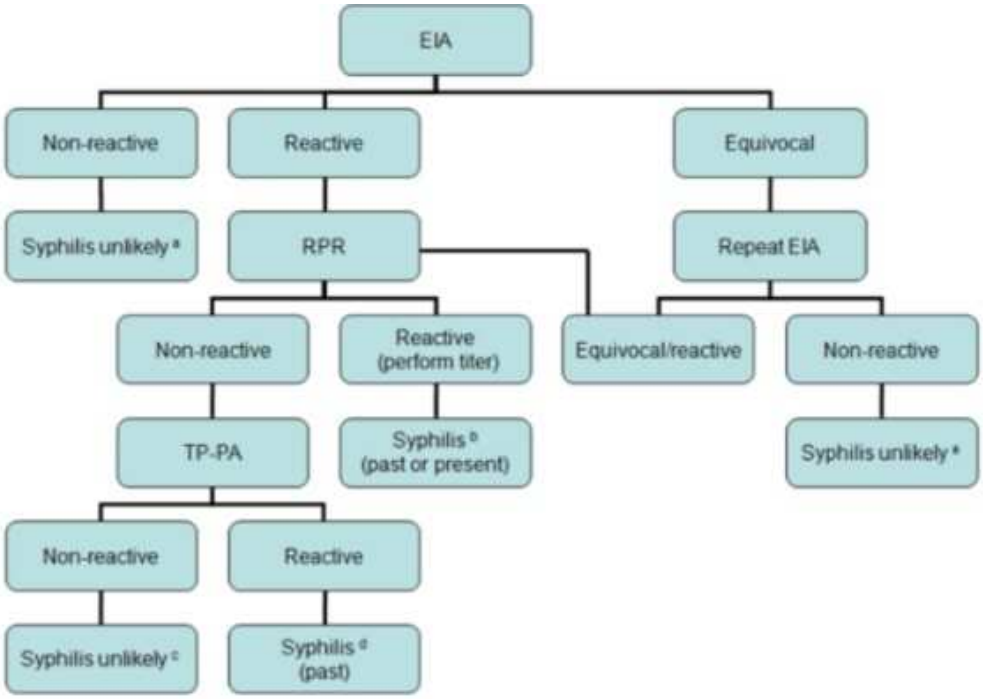
The performance of the screening test is measured by its predictive value which reflects the diagnostic power of the test.

Screening for syphilis

The clinical manifestations of syphilis vary widely and can be subtle. Syphilis is also a well known imitator of other systemic illnesses. Consequently, clinicians should have a low threshold to test for syphilis. There is no single test which can be used as a diagnostic test in syphilis In the past, when testing for clinical findings or for screening purposes, the non treponemal tests (e.g. RPR and VDRL) were used. If a non treponemal test was positive, a confirmatory treponemal test (e.g. TPHA, FTA-Abs) was performed[45,46].

The Centres for Disease Control and Prevention has proposed an algorithm for evaluating syphilis.





However, the advent of automated and rapid treponemal testing has allowed the algorithm to be reversed[26]. Thus, it is now widely accepted to order a treponemal test as a initial diagnostic tool. In high prevalence settings, this strategy seems to be cost effective, although this may not apply to public clinics handling patients with high rate of previous infections due to treated or spontaneously cured[47].

AIMS AND OBJECTIVES

AIMS AND OBJECTIVES

1. To evaluate the validation (sensitivity and specificity) of rapid tests for syphilis.

2. To screen the patients for syphilis with these various testing methods.

MATERIALS AND METHODS

MATERIALS AND METHODS

STUDY DESIGN

Comparative study

STUDY GROUP

400 cases of adults (both males and females) of high risk group attending the STI Out Patient Department, Institute of Venereology, Madras Medical College/RGGGH, Chennai – 600003 and 400 cases of adults (both males and females) of low risk group. The institute ethics committee clearance was obtained and informed consent was taken from all the patients included in study group.

INCLUSION CRITERIA

All patients attending STI outpatient department belonging to above 18 years age group with high risk behaviours like :

1. Commercial sex workers
2. Partners of VDRL reactive patients
3. Transgenders
4. Homosexuals
5. Victims of sexual abuse

EXCLUSION CRITERIA

1. Patients who refuse to participate in the study
2. Patients with previous H/O syphilis
3. Patients less than 18 years and above 60 years.

PROCEDURE

All patients attending STI outpatient department would be included in the study. All patients would sign an Informed Consent Form stating that their participation in the research is voluntary. Detailed history including last sexual contact, extra marital contact and high risk behaviors shall be documented along with clinical examination. After adequate counselling, the blood samples are collected and tested for the presence of antibody to treponema pallidum by VDRL test, TPHA,RPR and rapid card test.

History of patients attending STI outpatient department in Madras Medical College/ RGGGH would be carefully documented as well as a complete physical examination done. Under aseptic precautions, from each participant 5ml of venous blood was drawn in vacutainer tubes. From this total 1ml was immediately used for evaluating the rapid tests in the clinic, while the rest was sent to the laboratory for centrifugation.

Blood samples are then subjected to the following tests:

1. VDRL test

The centrifuged serum is inactivated by keeping in hot water bath for 30min at 56°C the test is usually carried out qualitatively and if qualitative test shows positivity it is subjected to quantitative test

In qualitative test 0.05ml of serum is added to one drop of antigen. The mixture is then rotated for 4min at 180RPM in a VDRL rotator, along with this positive and negative control samples will be tested, the wells are then observed through microscope to detect any flocculation reaction and reported as follows

1. No clumps or slight roughness - Non Reactive

2. Small clumps-weakly positive

3. Medium and large clumps-reactive,

Reactive cases are then subjected to quantitative test which is done by slide flocculation or tube flocculation test.

Slide flocculation test:

0.5ml of normal saline is pipetted out in each well of slide starting from 2nd well

In well 1, 0.5ml of undiluted serum is taken

0.5ml of test serum is pipetted out in well in 1:2 dilution

0.5ml from well 2 is taken and added to well 3.1:4 dilution continue upto 1:64

Positive and negative controls for each test is incorporated

1 drop of viral antigen is added to each ring with 18 gauge needle

The wells are then rotated for 4min at 180RPM and seen under microscope and the highest dilution that has flocculation is reported reactive titre. The positive result is usually obtained one to two weeks after the primary lesion has appeared.

2.TPHA test

ASSAY PROCEDURE:

Allow samples and reagents to reach room temperature and ensure that samples and all reagents are fully resuspended before use. Samples do not require any pretreatment.

Each test requires 4 wells of a microtitre plate.

1. Dispense Diluent into the microtitration plate as follows:

   25µl in rows 1, 3 & 4 and 100µl of each sample into a well in row 2.

2. Dispense 25µl of each sample into a well in row 1.

   Mix well and transfer 25µl from row 1 to row 2.

   Mix well and transfer 25µl from row 2 to row 3.

   Mix well and discard 25µl from row 3.

   Transfer 25µl from row 2 to row 4

   Mix well and discard 25µl from row 4.

3. Add 75µl of well mixed Control Cells to row 3.
4. Add 75µl of well mixed Test Cells to row 4.

   Tap plate gently to mix.

   The final dilutions in row 3 and 4 are 1/80.

5. Cover and let stand at room temperature for 45 to 60 minutes (alternatively the plates can be left overnight).

6. Examine for agglutination patterns.

3. RPR test which is done as follows

Bring RPR Antigen Suspension, Positive Control, Negative control and samples to room temperature (20–30°C) before use.

All reagents are ready for use as supplied. Gently mix the reagents before use and avoid foaming.

Qualitative RPR Test Procedure:

1. Label a RPR card with patient and control information being careful not to interfere with the test areas of the card.
2. Using disposable serum dispensers or droppers, dispense one free-falling drop (0.05 ml) of serum or plasma sample onto a circle on the test card. When using droppers/dispensers, keep it in a vertical position to ensure accurate delivery.
3. Repeat by adding one free-falling drop of positive control and Negative control using a new dispenser for each sample.
4. Spread the sample smoothly across the circle area using the paddle side of the Dispenser as shown by instructor. Take care not to scratch the test area.
5. After mixing the antigen solution by swirling, add one drop of the antigen suspension to each sample / control testing area. Note: hold the antigen container upside down directly over the test area such that the drop falls directly onto the center of the circle. DO NOT STIR OR SPREAD THE ANTIGEN.
6. Place the card on an automatic rotator and cover to maintain humidity. Rotate at 100 ± 5 rpm for 8 minutes (7 minutes 50 seconds to 8 minutes 30 seconds). Following rotation, a brief hand

rotation and tilting of the card (3–4 times) should be performed to aid in differentiating nonreactive from minimally reactive results.

7. Immediately read results macroscopically in the “wet” state under a high intensity light source.

Interpretation of RPR Test

1. Non-reactive (NR) – smooth suspension, no clumping or slight roughness
2. Reactive (R) – any degree of clumping

4. Rapid card test which is done as follows

Whole Blood as sample:

Fresh blood from finger prick / puncture may be used as a test specimen. For collection of whole blood as a test specimen, EDTA or Heparin or Oxalate can be used as a suitable anticoagulant. The specimen should be collected in a clean glass or plastic container. If immediate testing is not possible then the specimen may be stored at 2-8□C for upto 72 hours before testing. Do not use haemolysed, clotted or contaminated blood samples for performing the test.

Serum or Plasma as sample:

No special preparation of the patient is necessary prior to specimen collection by approved techniques. Though fresh serum/plasma is

preferable, serum/ plasma specimens may be stored at 2-8□C for upto 24 hours in case of delay in testing. Do not use haemolysed or contaminated specimens. Turbid specimens should be centrifuged or allowed to settle and only the clear supernatant should be used for testing.

Bring kit components specimen to room temperature prior to testing.

1. Bring the sealed pouch to room temperature, if the pouch of the test device is damaged, discard the device and take a new one for the test. Open the pouch, remove the device and place it on a flat surface. Once opened, the device must be used immediately. Check the colour of the desiccant. It should be blue, if it has turned colourless or faint blue or Pink, discard the device and use another device. ***Once opened, the device must be used immediately.***
2. Tighten the vial cap of the diluent buffer provided with the kit in the clock wise direction to pierce the dropper bottle nozzle.
3. With the help of the dropper provided dispense one drop (approx. 25 µl) of serum / plasma or whole blood to the sample port ‘A’. Alternatively 25 µl of serum / plasma or whole blood specimen may be delivered in the sample port ‘A’ using a micropipette.
4. Immediately add four drops of diluent buffer from the diluent buffer bottle to reagent port ‘B’

5.Read the results at the end of 15 minutes as follows:

Negative: Appearance of only one pink to deep pink/purple coloured band at the control window ‘C’.

Positive: In addition to the control band, a distinct pink/purple coloured band also appears at the test window ‘T’.

Invalid: The test should be considered invalid if neither the test band nor the control band appear. Repeat the test with a new device.

OBSERVATIONS AND RESULTS

OBSERVATION AND RESULTS

SEX DISTRIBUTION OF STUDY POPULATION

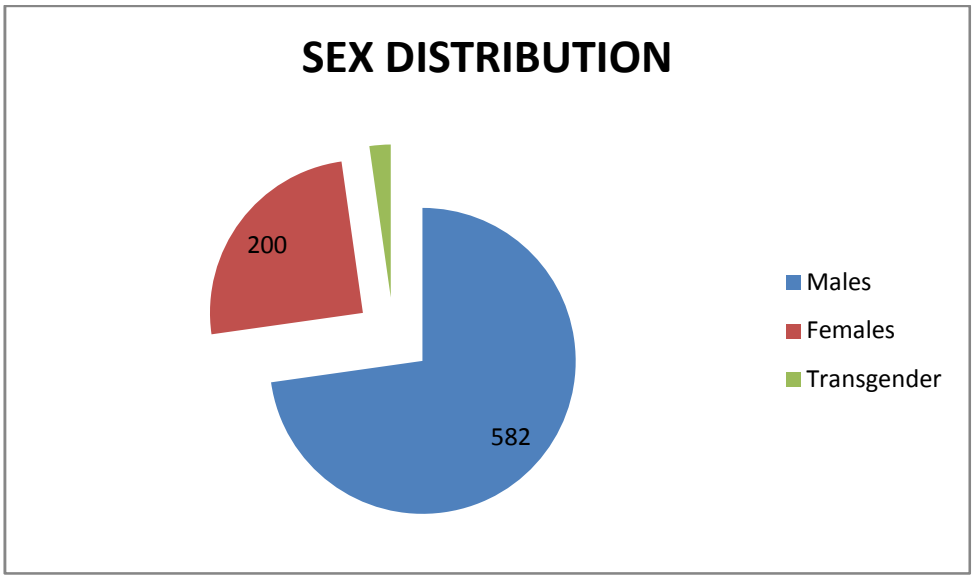
400 patients from high risk category and 400 patients from low risk category fulfilling the inclusion criteria were enrolled in the study.

Out of these 800 patients, 582 were males, 200 were females and 18 were Transgender.

Table 1: SEX DISTRIBUTION (N = 800)

MALES	FEMALES	TRANSGENDER
582	200	18

FIGURE 1

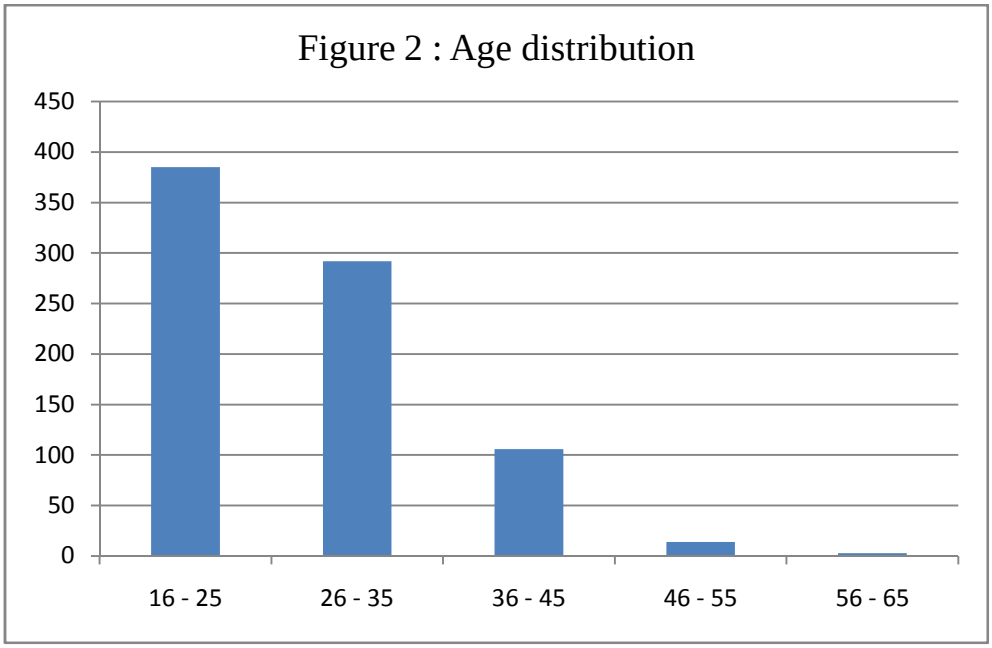


AGE DISTRIBUTION OF STUDY POPULATION

The age of the patients ranges from 19 years to 58 years. Most commonly affected age group was 16 years to 25 years

Table 2: Age Distribution

AGE	N = 800
16-25	385
26-35	292
36-45	106
46-55	14
56-65	3



SEX WISE AGE DISTRIBUTION OF STUDY POPULATION

Maximum number of affected males were in the age group of 16 - 25 years which comprises 273 males

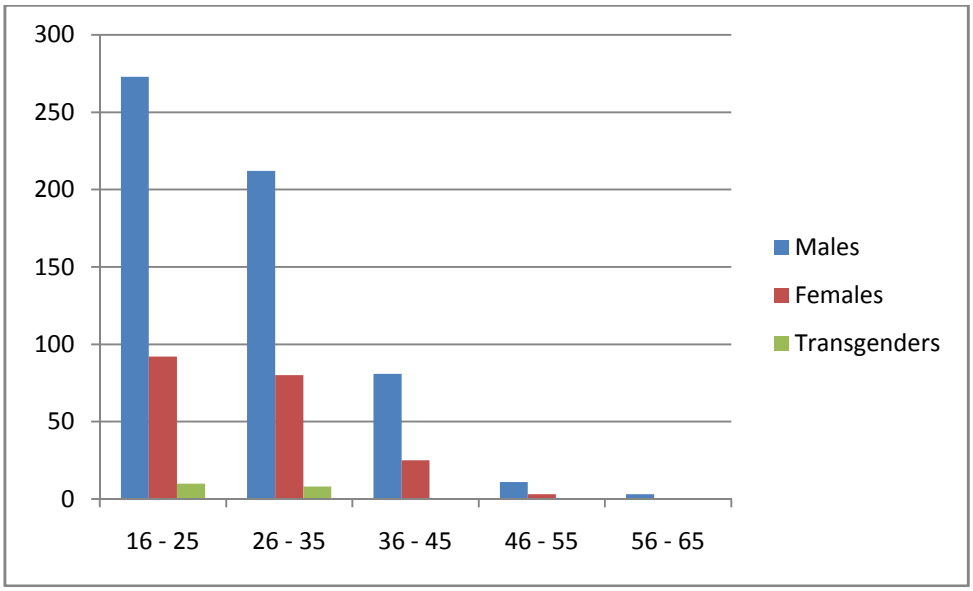
It was followed by 26 – 35 years with 212 male patients

Females were also affected more in the age group of 16 – 25 years with a total of 92 in this group followed by 26 – 35 years with 80 patients

Table 3: Sex Wise Age Distribution

Age	Males	Females	Transgenders
16-25	273	82	10
26-35	209	90	8
36-45	86	25	0
46-55	11	3	0
56-65	3	0	0

Figure 3: Sex Wise Age Distribution



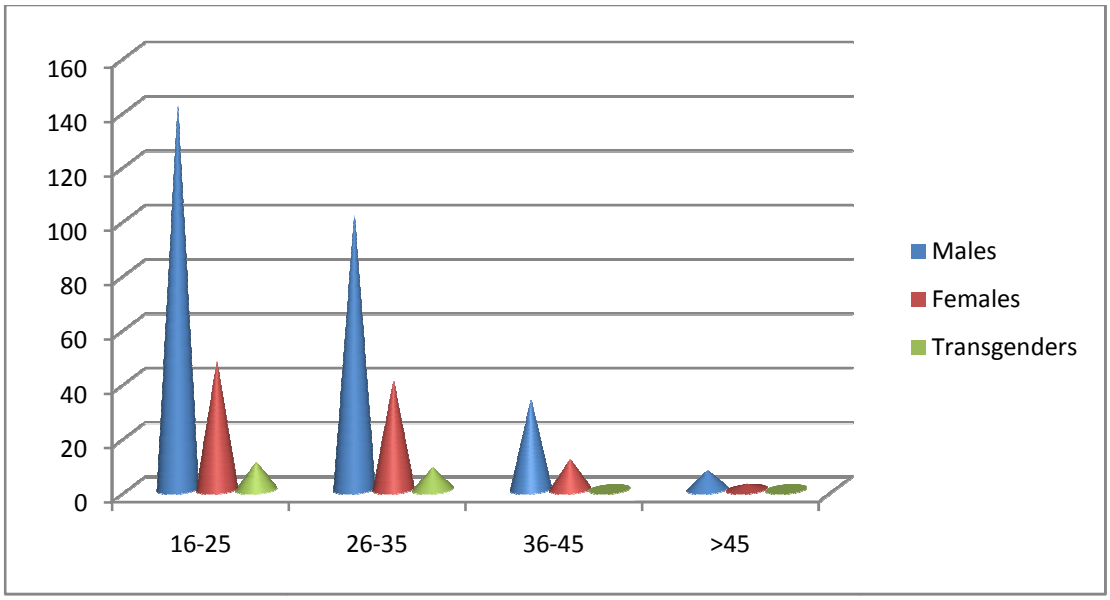
SEX WISE AGE DISTRIBUTION IN HIGH RISK GROUP

Maximum percentage of patients in high risk group distributed in 2nd and 3rd decade.

Table 4: Sex Wise Age Distribution in High Risk Group

	Males	Females	Transgenders
16-25	141	47	10
26-35	101	40	8
36-45	33	11	0
>45	7	2	0

Figure 3: Sex Wise Age Distribution in High Risk Group



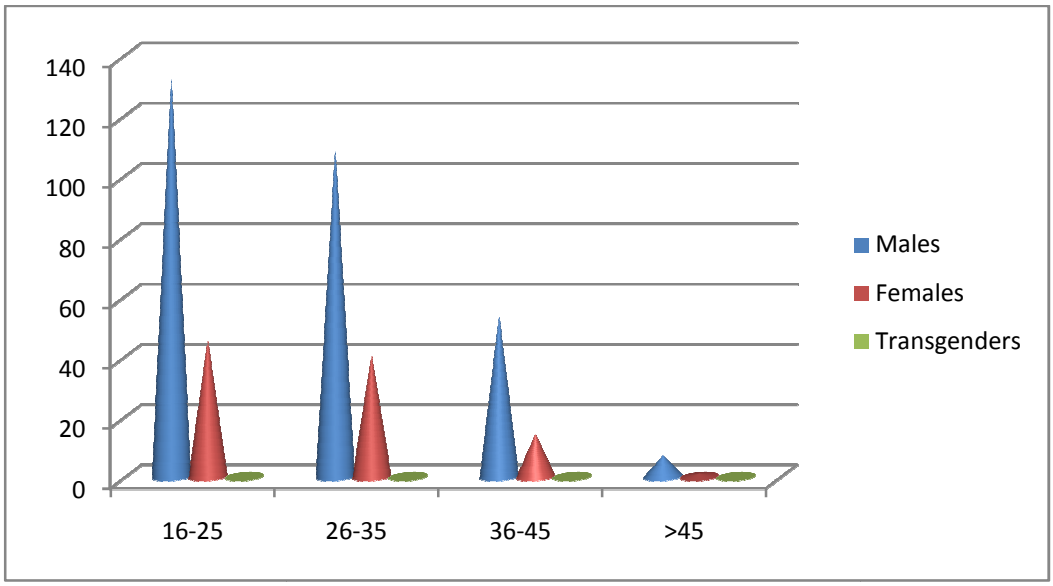
SEX WISE AGE DISTRIBUTION IN LOW RISK GROUP

Among the low risk group most of the patients belong to the age group of 16 years to 25 years , which is followed by 26 years to 35 years.

Table 4: Sex wise age distribution in low risk group

	Males	Females	Transgender
16-25	132	45	0
26-35	108	40	0
36-45	53	14	0
>45	7	1	0

Figure 4: Sex wise age distribution in low risk group



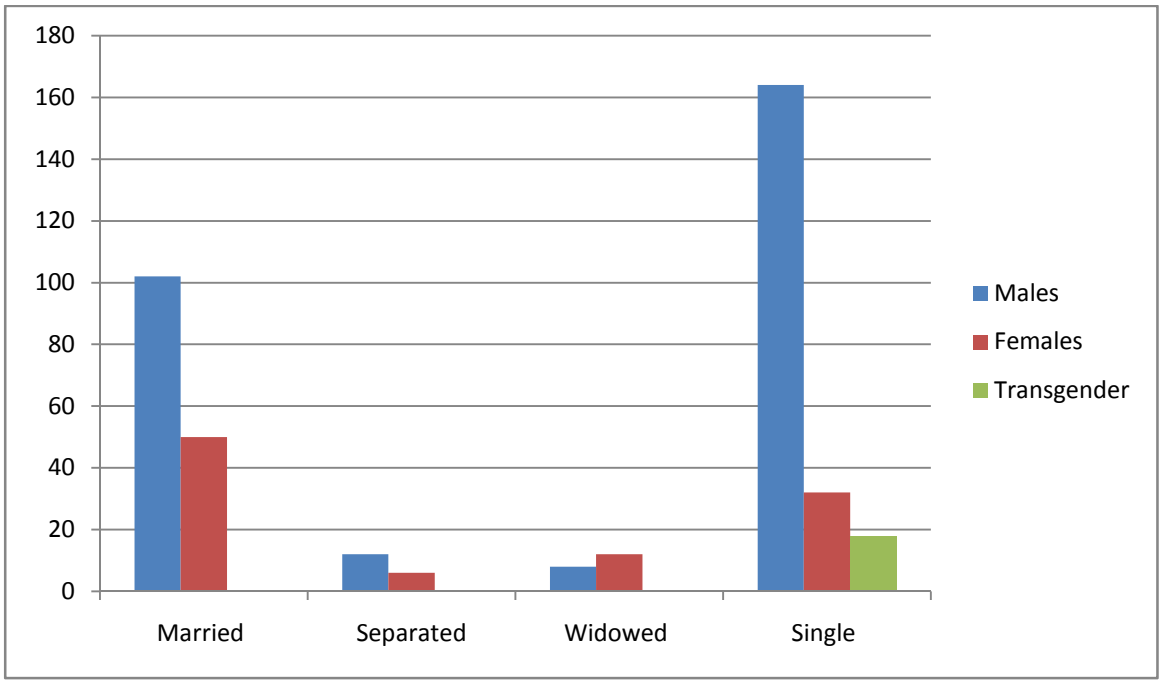
MARITAL STATUS IN HIGH RISK GROUP

Most of the patients in the study population are unmarried. All transgenders included in the study population are also unmarried.

Table 5: Marital Status in High Risk Group

Marital status	Males	Females	Transgender
Married	102	50	0
Separated	12	6	0
Widowed	8	12	0
Single	164	32	18

Figure 5: Marital Status in High Risk Group

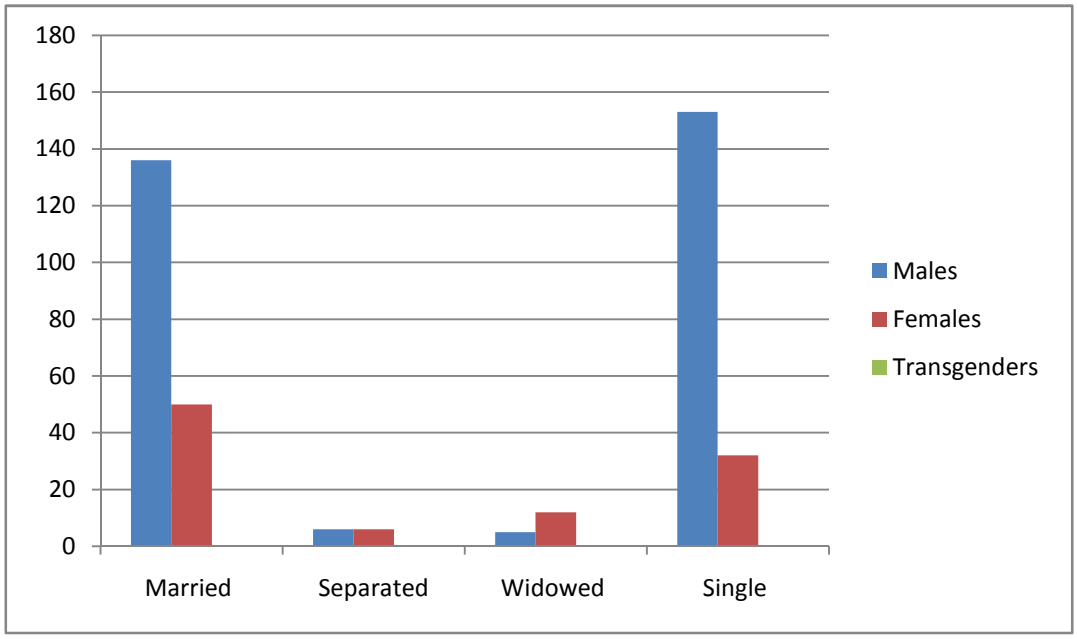


MARITAL STATUS IN LOW RISK GROUP

Table 6: Marital Status in Low Risk Group

Marital status	Males	Females	Transgender
Married	136	50	0
Separated	6	6	0
Widowed	5	12	0
Single	153	32	0

Figure 5: Marital Status in Low Risk Group



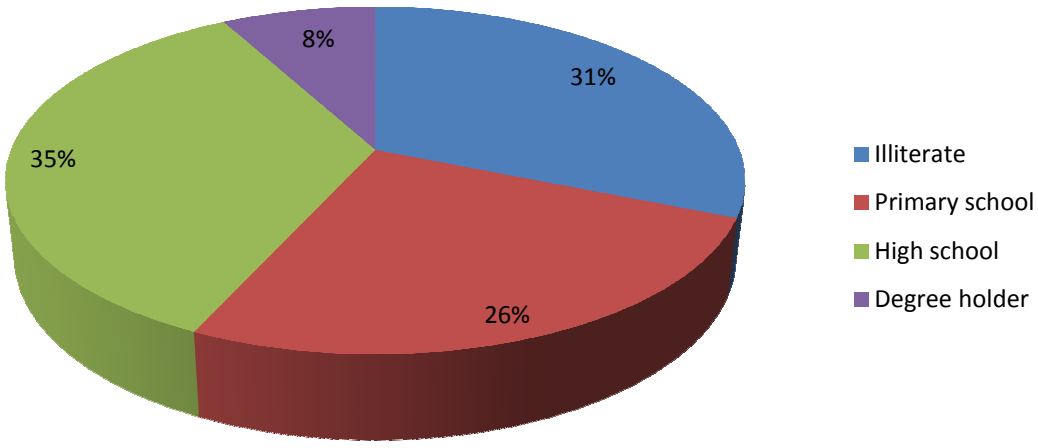
LITERACY LEVEL IN HIGH RISK GROUP

Most of the patients in high risk group are educated and completed high school.

Table 6: Literacy Level in High Risk Group

Literacy level	Number	Percentage
Illiterate	125	31.25 %
Primary school	103	25.75%
High school	141	35.25%
Degree holder	32	8%

Figure 6: Literacy level among high risk group



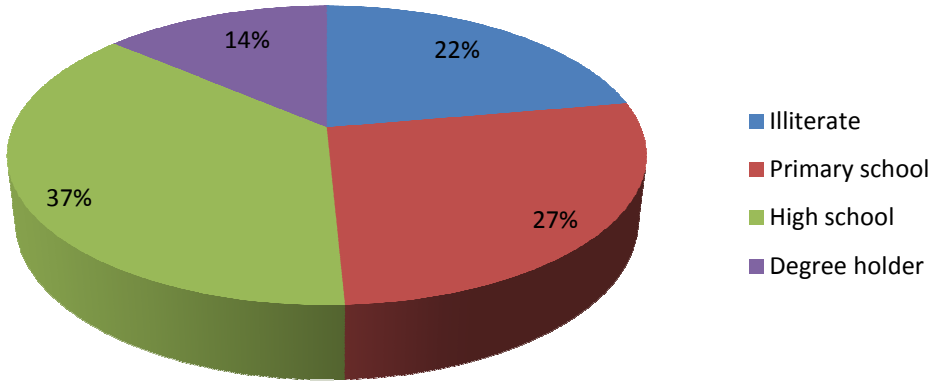
Literacy Level in Low Risk Group

13.75 % of the patients in low risk group are degree holders. 37% of them completed till high school.

Table 7: Literacy Level in Low Risk Group

Literacy level	Number	Percentage
Illiterate	89	22.25%
Primary school	108	27%
High school	148	37%
Degree holder	55	13.75%

Figure 7: Literacy level in low risk group

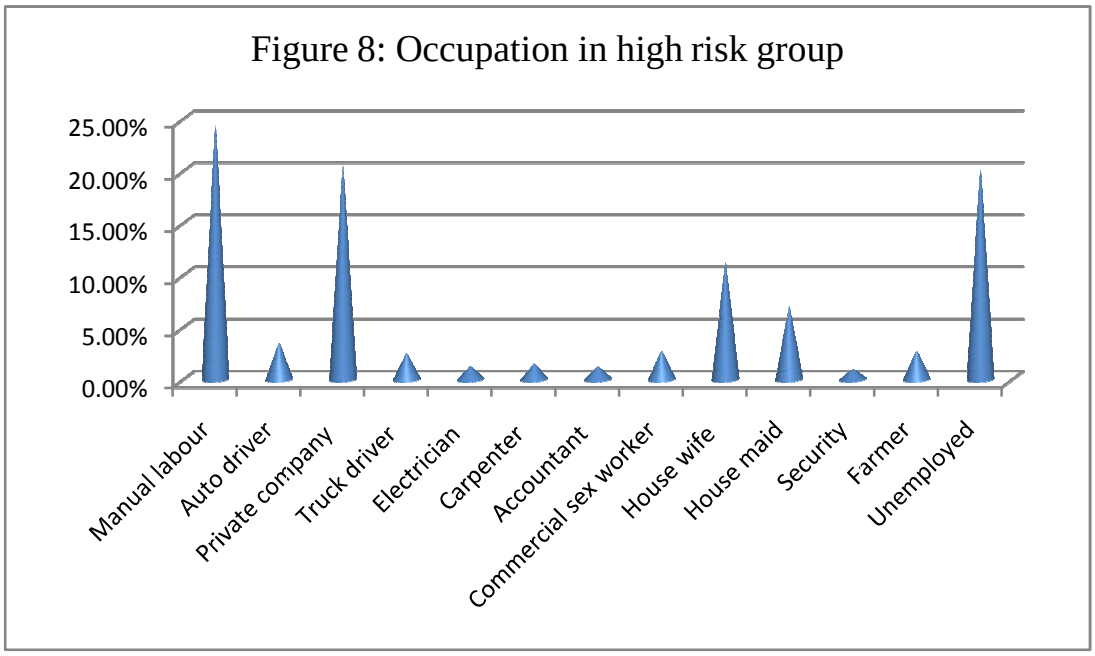


OCCUPATION IN HIGH RISK GROUP

Table 8: Occupation in High Risk Group

Occupation	Number of patients	Percentage
Manual labour	98	24.5%
Auto driver	14	3.5%
Private company	82	20.5%
Truck driver	10	2.5%
Electrician	5	1.25%
Carpenter	6	1.5%
Accountant	5	1.25%
Commercial sex worker	11	2.75%
House wife	45	11.25%
House maid	28	7%
Security	4	1%
Farmer	11	2.75%
Unemployed	81	20.25%

Figure 8: Occupation in high risk group

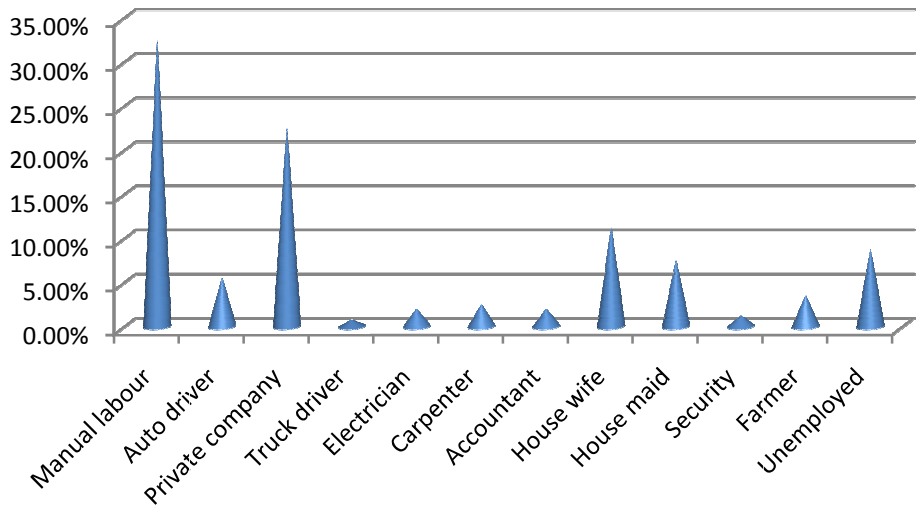


OCCUPATION IN LOW RISK GROUP

Table 9: Occupation in Low Risk Group

Occupation	Number of patients	Percentage
Manual labour	130	32.5%
Auto driver	22	5.5%
Private company	90	22.5%
Truck driver	3	0.75%
Electrician	8	2%
Carpenter	10	2.5%
Accountant	8	2%
House wife	45	11.25%
House maid	30	7.5%
Security	5	1.25%
Farmer	14	3.5%
Unemployed	35	8.75%

Figure 9:Occupation in low risk group



SEX DISTRIBUTION OF SYPHILITIC PATIENTS IN HIGH RISK GROUP

The occurrence of syphilis is more among the sexually active age group, i.e 19 years to 29 years.

Table 10: Sex Distribution of Syphilitic Patients in High Risk Group

	Males	**Females**	**Transgender**
Number of patients tested	282	100	18
Number of positive patients	124	26	12
Percentage of positive patients	41.3 %	26.0 %	66.7 %

Sex Distribution of Syphilitic Patients in Low Risk Group

Table 11: Sex Distribution of Syphilitic Patients in Low Risk Group

	Males	**Females**	**Transgenders**
Number of patients tested	300	100	0
Number of positive patients	10	5	0
Percentage of positive patients	3.3 %	5 %	0 %

Figure 10: Sex distribution in syphilitic patients

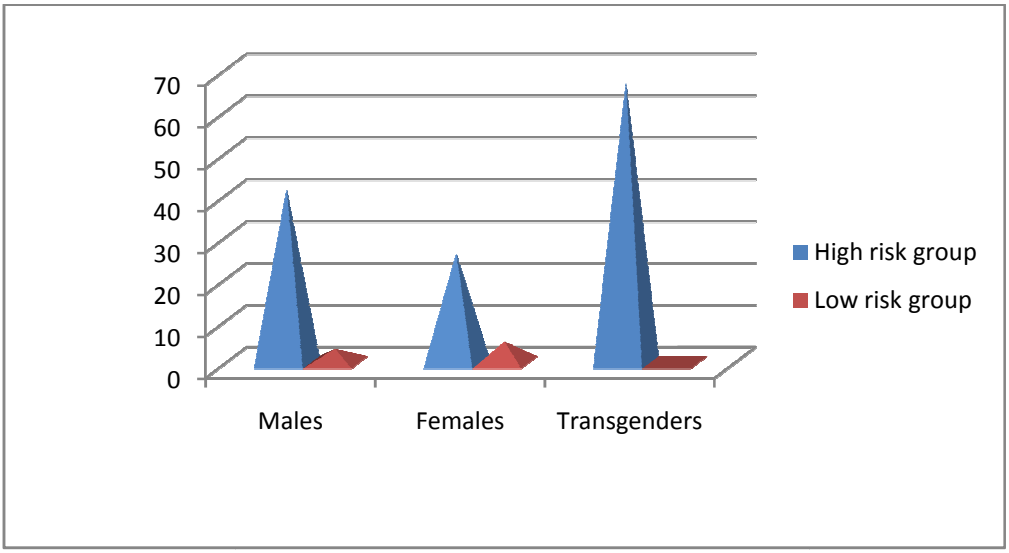
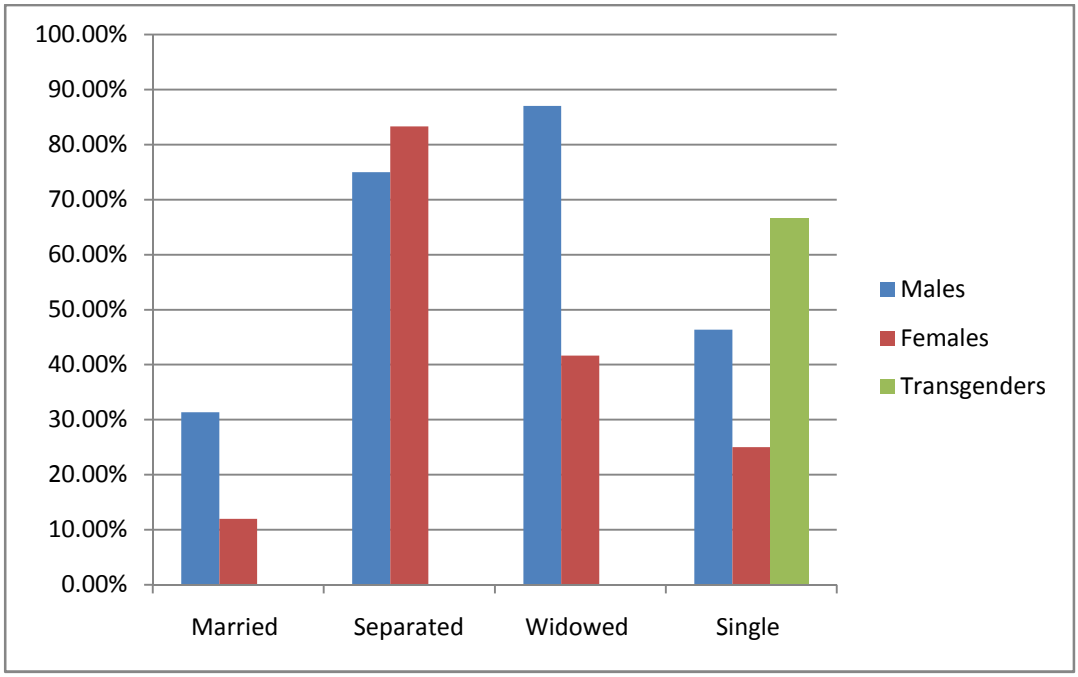


Table 12: Marital status in syphilitic patients in high risk group

Marital status	Males	Females	Transgenders
Married	31.37%	12%	0
Separated	75%	83.3%	0
Widowed	87%	41.67%	0
Single	46.34%	25%	66.67%

Figure 11: Marital status in syphilitic patients in high risk group



LITERACY LEVEL IN SYPHILITIC PATIENTS IN HIGH RISK GROUP

Table 13: Literacy Level in Syphilitic Patients in High Risk Group

Literacy level	Number
Illiterate	45%
Primary school	47.57%
High school	26.24%
Degree holder	59.37%

Figure 12: Literacy level in syphilitic patients in high risk group

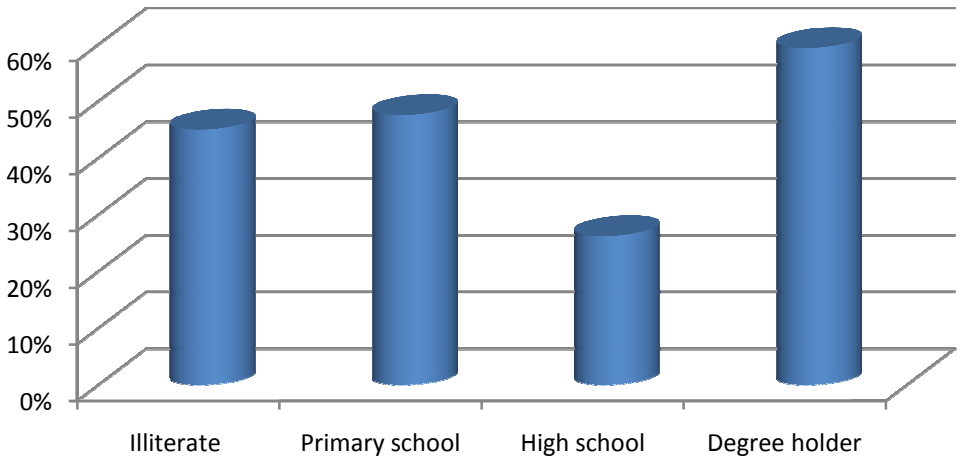


TABLE 14: LITERACY LEVEL IN SYPHILITIC PATIENTS IN LOW RISK GROUP

Literacy level	Number
Illiterate	5.61%
Primary school	3.7%
High school	2.02%
Degree holder	5.45%

Figure 13: Literacy level of syphilitic patients in low risk group

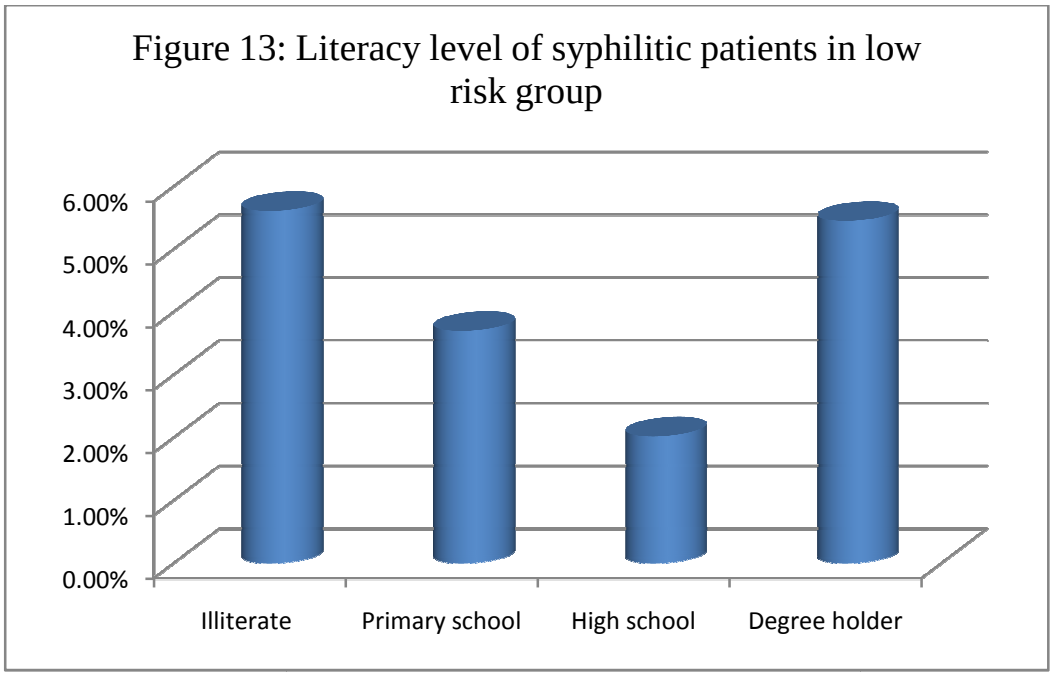


Table 15: Occupation of syphilitic patients in High risk group

Occupation	Total number of patients	Number of positive patients	Percentage of positive patients
Manual labourer	98	36	36.7%
Auto driver	14	7	50%
Private company	82	30	36.58%
Truck driver	10	6	60%
Electrician	5	3	60%
Carpenter	6	2	33.33%
Accountant	5	1	20%
Commercial sex worker	11	10	90.9%
House wife	45	28	62.2%
House maid	28	4	14.28%
Security	4	1	25%
Farmer	11	2	18.18%
Unemployed	81	32	39.5%

Table 16: Occupation of syphilitic patients in low risk group

Occupation	Total number of patients	Number of positive patients	Percentage of positive patients
Manual labourer	130	4	3.07 %
Auto driver	22	2	9.09 %
Private company	90	2	2.22 %
Truck driver	3	1	33 %
Electrician	8	0	0
Carpenter	10	0	0
Accountant	8	0	0
House wife	45	3	6.66%
House maid	30	1	3.33%
Security	5	0	0
Farmer	14	0	0
Unemployed	35	2	5.71%

Table 17: Distribution of Risk Activity In High Risk Group

Risk activity	No of patients	Percentage
Homosexuals (anoinsertive and anoreceptive)	211	52.75%
Heterosexuals	184	46%
Bisexual	22	5.5%
Commercial sex worker	18	4.5%

Figure 14: Distribution of Risk Activity in high risk group

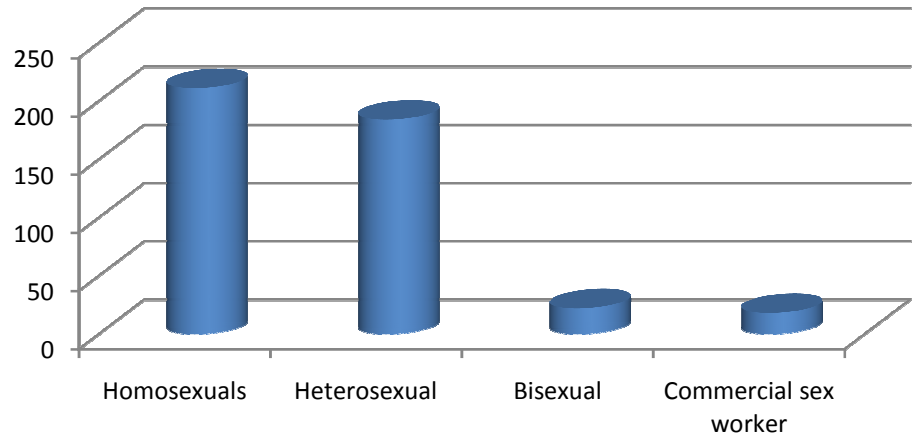
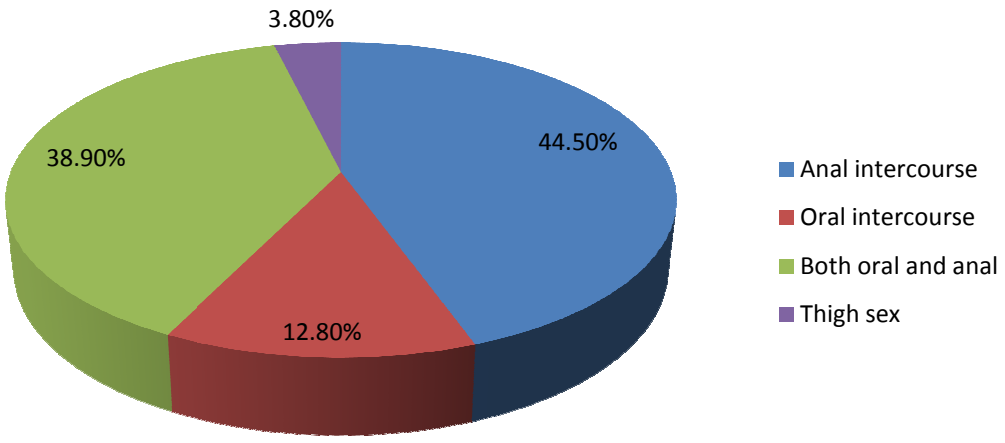


Table 18: Sexual Practice among Homosexuals

Practice	No of Patients	Percentage
Anal intercourse	94	44.5%
Oral intercourse	27	12.8%
Both oral and anal	82	38.9%
Thigh sex	8	3.8%

Figure15: Sexual practice among homosexuals



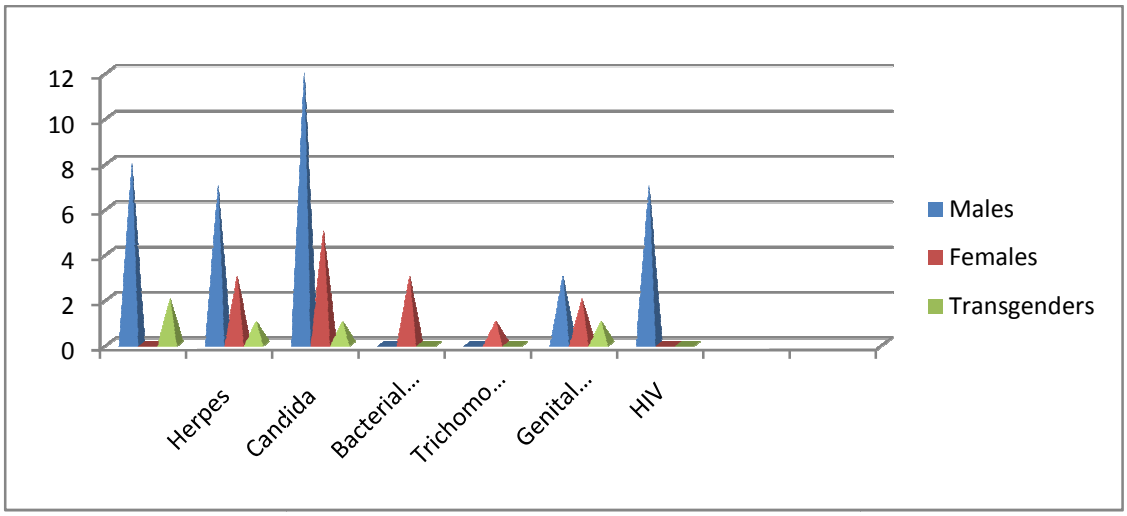
Occurrence of Other STI among High Risk Group

14% of the high risk population is associated with other STIs. In this group 12.5% of the coinfected patients infected with HIV.

Table 19: Other STI among High Risk Group

STI	Males	Females	Transgenders	Total
Gonorrhoea	8	0	2	10
Herpes	7	3	1	11
Candida	12	5	1	18
Bacterial vaginosis	0	3	0	3
Trichomoniasis	0	1	0	1
Genital wart	3	2	1	6
HIV	7	0	0	7

Figure 16: other STI among high risk group



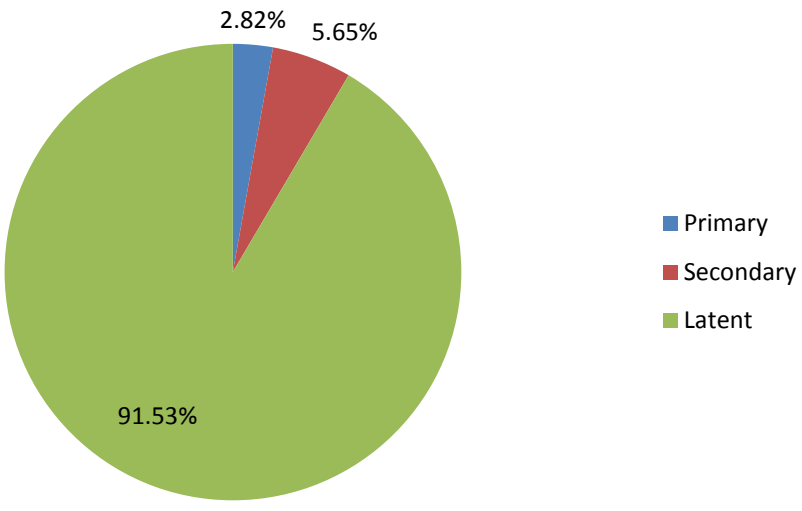
Incidence of Various Stages of Syphilis in Study Population

Prevalence of syphilis among study population is 22 %, majority of them occurring in the high risk population. Around 90% of them have low titre of VDRL (<1:8).

Table 20: stages of syphilis in study population

Stage	No of Patients	Percentage
Primary	4	2.25 %
Secondary	8	4.5%
Latent	163	92%
Tertiary	0	0%
Cardiovascular syphilis	1	0.56%
Neuro syphilis	1	0.56%

Figure 17: Incidence of various stages of syphilis



Presenting Complaints among Males in High Risk Group

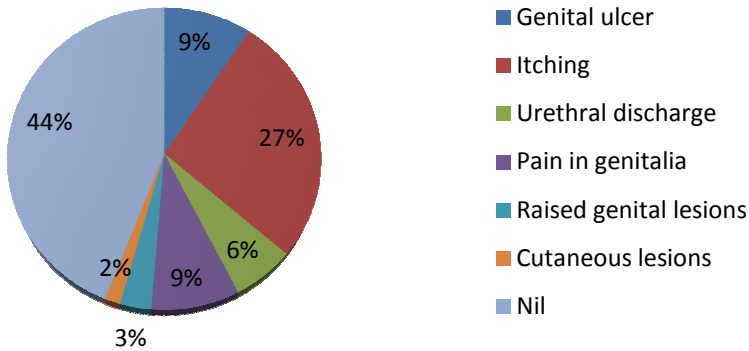
Out of 18 patients with genital ulcer 7 was diagnosed to have syphilis.

Presenting complaints among males in high risk patients

Table 21: complaints of males in high risk group

Symptoms	Number of patients	Percentage
Genital ulcer	18	6 %
Itching	52	17.3 %
Urethral discharge	12	4 %
Dysuria	43	14.3 %
Pain in the genitalia	17	5.66 %
Raised genital lesions	6	2 %
Cutaneous lesions	3	1 %
Nil complaints	85	28.33 %

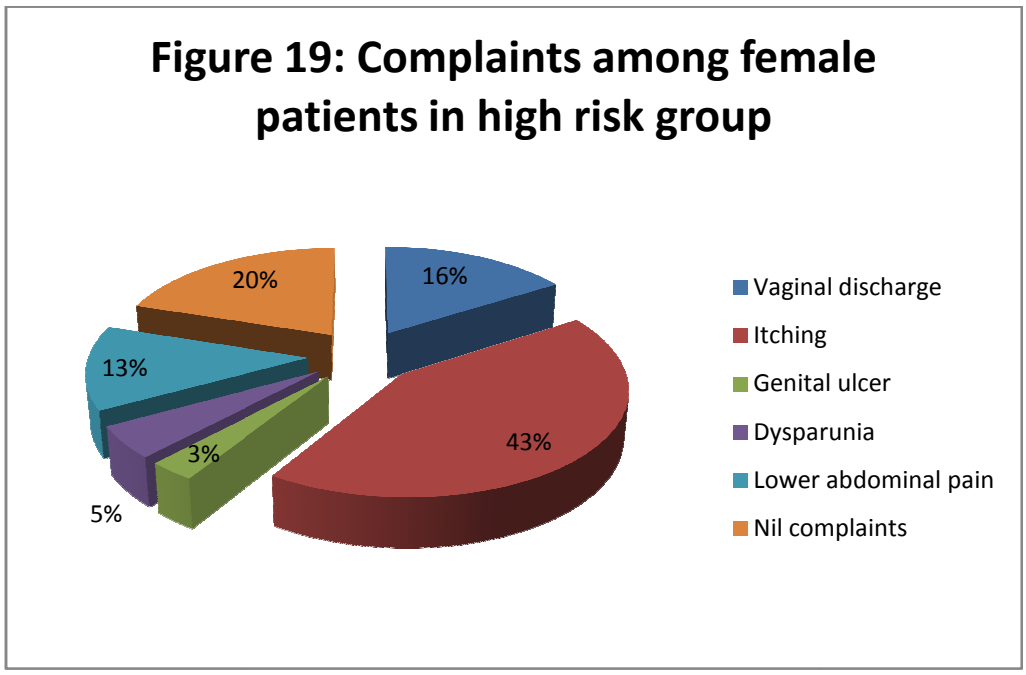
Figure 18: Complaints among males in high risk group



Presenting complaints among females in high risk group

Table 22: complaints in females in high risk group

Females	Number of cases	Percentage
Vaginal discharge	16	16 %
Itching	43	43%
Genital ulcer	3	3%
Dysparunia	5	5%
Lower abdominal pain	13	13%
Nil	20	20%



Two patients presented with multiple chancre and one presented with condyloma lata.

Six secondary syphilis patients presented with asymptomatic skin rashes and palmoplantar syphilide.

Four out of twelve patients of secondary syphilis had mucosal lesions

400 patients from high risk group and 400 patients from low risk group were subjected to various serological tests for syphilis which includes TPHA, VDRL, RPR and Syphicheck.

Keeping TPHA as the gold standard test, the accuracies of VDRL, RPR and Syphicheck tests were compared.

Table 23: Number of test positivity in High Risk Group

Tests	No of positives
VDRL	164
RPR	158
SYPHICHECK	161
TPHA	162

The results were tabulated and the various parameters determining the validity of the individual tests which include sensitivity, specificity, positive predictive value and negative predictive value are calculated by the following method.

Table 24:

Screening test results	**Diseased**	**Not diseased**	**Total**
Positive	a (True positive)	b (False positive)	a + b
Negative	c (False negative)	d (True negative)	c + d
Total	a + c	b + d	a + b + c+ d

Sensitivity = a / (a + c) x 100

Specificity = d / (b + d) x 100

Positive predictive value = a / (a + b) x 100

Negative predictive value = d / (c + d) x 100

Percentage of false negatives = c / (a + c) x 100

Percentage of false positive = b / (b + d) x 100

Table 25: Validity of VDRL against TPHA in High risk group

Tests	TPHA positive	TPHA negative	Total
VDRL positive	159	5	164
VDRL negative	3	233	236
Total	162	238	400

Sensitivity = 98.1 %

Specificity = 97.8%

Positive predictive value = 96.9%

Negative predictive value = 98.7%

Percentage of false negatives = 1.85%

Percentage of false positives = 2.1%

Table 26: Validity of RPR against TPHA in High risk group

Tests	TPHA positive	TPHA negative	Total
RPR positive	152	6	158
RPR negative	10	232	242
Total	162	238	400

Sensitivity = 93.8 %

Specificity = 97.47%

Positive predictive value = 96.25%

Negative predictive value = 95.8%

Percentage of false negatives = 6.1%

Percentage of false positives = 2.52%

Table 27: Validity of Syphicheck against TPHA in High risk group

Tests	TPHA positive	TPHA negative	Total
Syphicheck positive	156	5	161
Syphicheck negative	6	233	239
Total	162	238	400

Sensitivity = 96.29%

Specificity = 97.8%

Positive predictive value = 96.89%

Negative predictive value = 97.48%

Percentage of false negatives = 3.7%

Percentage of false positives = 2.1%

Table 28 : Number of test positivity in Low Risk Group

Tests	No of positives
VDRL	18
RPR	19
SYPHICHECK	17
TPHA	15

Table 29: Validity of VDRL against TPHA in Low risk group

Tests	TPHA positive	TPHA negative	Total
VDRL positive	13	5	18
VDRL negative	2	380	382
Total	15	385	400

Sensitivity = 86.6 %

Specificity = 98.7%

Positive predictive value = 72.22%

Negative predictive value = 99.47%

Table 30: Validity of RPR against TPHA in Low risk group

Tests	TPHA positive	TPHA negative	Total
RPR positive	13	6	19
RPR negative	2	379	381
Total	15	385	400

Sensitivity = 86.66%

Specificity = 98..4%

Positive predictive value = 68.6%

Negative predictive value = 99.47%

Table 31: Validity of Syphicheck against TPHA in low risk group

Tests	TPHA positive	TPHA negative	Total
Syphicheck positive	13	4	17
Syphicheck negative	2	381	383
Total	15	385	400

Sensitivity = 86.6%

Specificity = 98.9%

Positive predictive value = 76.4%

Negative predictive value = 99.4%

Chancre

Secondary Syphilis – Cutaneous Manifestations

Secondary Syphilis – Face

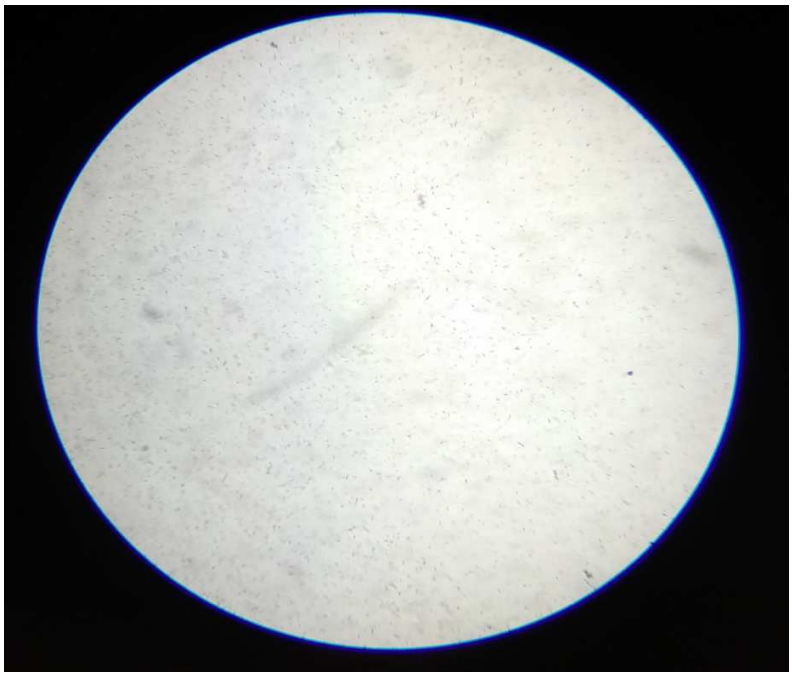
Secondary Syphilis – Genital Manifestation

Secondary Syphilis – Mucosal Lesions

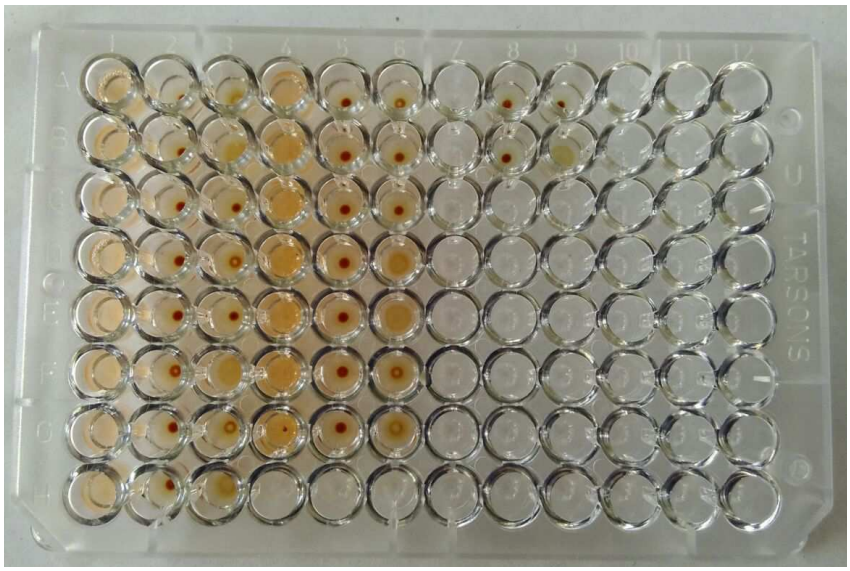
Condyloma lata

Palmo Plantar syphilide

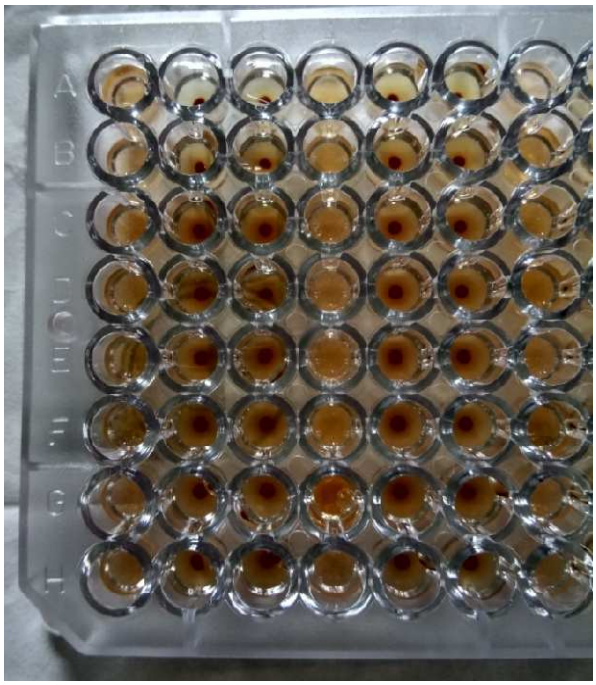
VDRL - Reactive



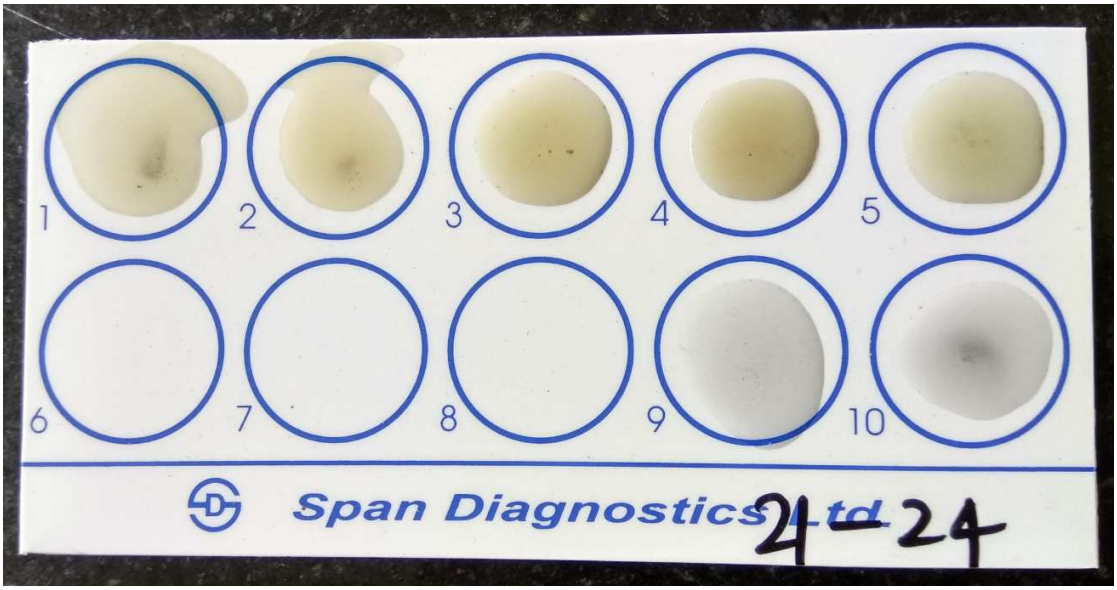
VDRL Non reactive



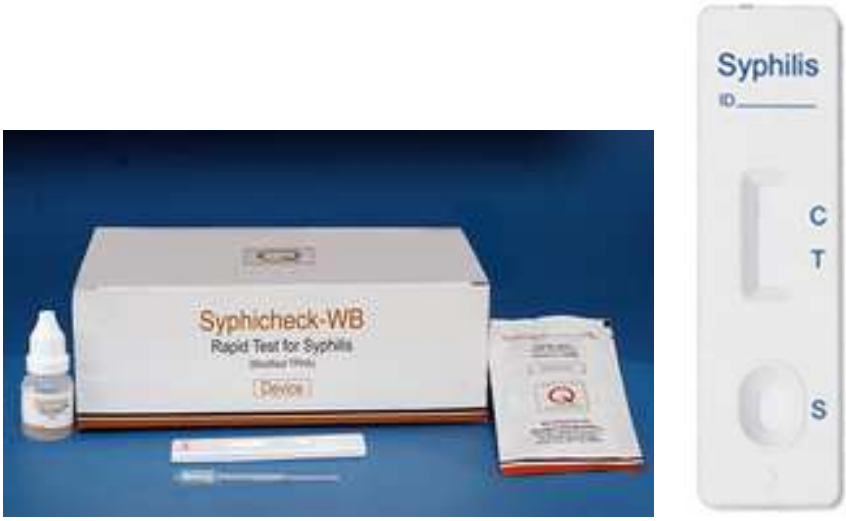
TPHA - Reactive



TPHA – Non Reactive



RPR Test



Syphicheck – Rapid Card

DISCUSSION

DISCUSSION

In this comparative study, 400 patients from high risk group and 400 patients from low risk group were included and screened for syphilis using different serological tests.

Considering TPHA as a gold standard test, the validity of other tests i.e. VDRL test, RPR test and Syphicheck test for screening, were compared.

In our study, the prevalence of syphilis among the study population is 22%.

In a study conducted in 2008 at West Bengal, the prevalence of syphilis among patients attending STD clinic was 17.5% which is similar to our study[48].

In a similar study conducted by Jonathan M. Snowden et al., and colleagues in Peru, the prevalence of syphilis among high risk group is 10.5% which is much lower than our study[49].

54.8% of the syphilitic male patients fall between the age group of 16 years to 25 years. Among the female syphilitic patients 53.84% of them come under the age group of 26 years to 35 years.

2013-2014 CDC statistic results are similar with our study showing more clustering of syphilis cases in the age group of 16-25 years[50,51].

By using the TPHA test as gold standard in our study group, the overall incidence of syphilis among males is 41.3%, among females is 26% and among transgenders is 66.7%.

The incidence of syphilis among married patients in males is 31.37% and in females is 12%. TPHA positivity among separated male and female patients is 75% and 83.3% respectively. Among widowed patients the incidence of syphilis is 87% in males and 41.67% in females.

It is to be noted that the incidence of syphilis is higher among the separated and widowed patients. 'The overview of selected curable STDs' by WHO in 2011 also signifies similar result[52].

Commercial sex workers hold the highest risk of harbouring syphilis infection with an incidence of 90% among them. Syphilis positivity of about 60% was noted among the long distance truck drivers. These findings are parallel to the findings given in a study by Bwayo JJ, Omari AM et al and also by 'The overview of selected curable STDs' by WHO syphilis estimates [5].

Illiterates and those who have completed their primary schooling contribute to most of the cases of syphilis which was similar to the study by singh and romanowski et al. [53]

More occurrence of syphilis is also noticed among the educated patients. 59.37% (19/55) of the degree holders found to have harbouring the infection.

Among the high risk group, homosexuals had the highest incidence of syphilis which is 52.75%.The recent 2014 CDC - sexually transmitted disease statistics states that men account for the most cases of syphilis with the vast majority of those cases occurring among the homosexuals[46] which is in par with our study.

Among the homosexuals 44.5% of them were practicing ano-receptive and ano-insertive type of intercourse and 38.9% of them were practicing anal and oral sex. Because of this high risk behaviour the transmission HIV is also increased among the homosexuals especially among those who are practicing ano-receptive type of sex.

Risk activities like homosexuality and promiscuity contribute to huge number of syphilis cases. Thus it is mandatory to emphasize the role of screening of syphilis among the high risk group.

A study done by oglesby et al., also recommended the importance of screening in high risk patients[54].

41% of the secondary syphilis patients presented with asymptomatic skin rashes and palmoplantar syphilide.

A study by singh and romanowski et al[52, 55]. showed skin lesions in 35% to 52% of secondary syphilis patients which correlate well with our study.

In the same study they noticed mucous lesions in 5 % to 20% of secondary syphilis patients. We noticed a slightly higher level of 33.3% of mucous lesions in secondary syphilis patients of our study population.

Around 90% of the patients showed low titre (<1:8) of VDRL could be due to primary stage of the disease or decline in antibody titre during the later stages of the disease.

High VDRL titre of 1: 128 dilutions seen in 3 patients with secondary syphilis correlates well with the disease activity.

14% of the high risk population is associated with other STI s. In this group 12.5% of the co-infected patients infected with HIV. 2.4% of the syphilitic patients co-infected with HIV. Syphilis and other STI s increase the chance of HIV transmission[56].

162 patients from high risk group gave a positive result for TPHA test.

164 patients showed positivity for VDRL test in high risk group. Out of these 164, 96.9% (159/164) patients gave a positive result for TPHA.

158 patients were found to be positive for RPR test in high risk group among which only 96.2% (152/158) patients showed positive results with TPHA.

Syphicheck positivity was noted in 161 patients in high risk group. But only 96.8% (156/161) patients were found to be positive for TPHA.

15 patients from low risk group were found to be positive for TPHA test.

18 patients were found to be positive for VDRL test in low risk group among which only 72.2% (13/18) patients were simultaneously positive for TPHA.

RPR positivity was noted in 19 patients in low risk group. But only 68.4% (13/19) patients were found to be positive for TPHA.

17 patients showed positivity for Syphicheck test in low risk group. Out of these 17 patients only 76.4% (13/17) patients gave a positive result for TPHA.

Out of 162 patients tested positive with TPHA, 3 tested negative with VDRL, 10 tested negative RPR and 6 tested negative with syphicheck. The number of patients likely to be missed with RPR test and rapid card test is slightly higher than VDRL.

Sensitivity of VDRL, RPR and syphicheck are 98.1%, 93.8% and 96.29% in high risk group respectively. Sensitivity of VDRL, RPR and syphicheck are 86.6%, 86.6% and 86.6% in low risk group respectively.

Specificity of VDRL, RPR and syphicheck are 97.8%, 97.5% and 97.8% in high risk group respectively. Specificity of VDRL, RPR and syphicheck are 98.7%, 98.4% and 98.9% in low risk group respectively.

Positive predictive value of VDRL, RPR and syphicheck are 96.9%, 96.25% and 96.9% in high risk group respectively. Positive predictive value of VDRL, RPR and syphicheck are 72.22%, 68.41% and 76.4% in low risk group respectively.

Negative predictive value of VDRL, RPR and syphicheck are 98.7%, 95.8% and 97.48% in high risk group respectively. Negative predictive value of VDRL, RPR and syphicheck are 99.4%, 99.4% and 99.4% in low risk group respectively.

Percentage of false negative of VDRL, RPR and syphicheck are 1.85 %, 6.1% and 3.7% in high risk group respectively.

Percentage of false positive of VDRL, RPR and syphicheck are 2.1%, 2.52% and 2.1% in high risk group respectively.

The biological false positivity of non treponemal tests can be attributed to the presence of other physiological and pathological conditions like pregnancy, ageing, connective tissue disorders, lepromatous leprosy, tuberculosis, malaria and certain malignancies.

In a study 'It is time to use treponema specific antibody screening test for diagnosis of syphilis' conducted by Michael J loeffelholz et al., in 2011, the sensitivity of VDRL and RPR were 78% and 86% respectively[3]. In our study the sensitivity of VDRL in high risk group is 98.1% which is higher than the above study.

In the same study conducted by Michael J Loeffelholz et al., the treponemal specific immunoassays showed specificities of 98 to 99% which is similar to the specificity of all three tests in our study[53].

The study conducted in Papua New Guinea by Yakep Angue, Appolonia Yauieb et al. to compare the validity of RPR and Immunoassay with VDRL showed specificities of 96.5% and 94.6% for RPR and immunoassay respectively. It is similar to the specificities of our study[54].

In a study conducted in tamilnadu by M Bala, V Singh, S Muralidhar, V Ramesh et al.[55], positivity of treponemal tests in non-treponemal negative cases was observed to be more in high risk group than other subject groups. Among the high risk patients, increased sensitivity and specificity of treponemal tests were noted over RPR and the findings are consistent with our study[5].

Sensitivity of VDRL test is highest among the three tests which indicate, though VDRL test seems to be the better screening test.

The biological false positive rate of 1% to 2% was seen in a study by Surajit Nayak and Basanti Acharjya et al. One more study by M Bala, V Singh, S Muralidhar, V Ramesh et al., showed a biological false positivity rate of 0.2% which is lower than our study[55].

Augenbraun MH, DeHovitz JA et al[56]. in their study showed a biological false positive rate of upto 4% which is higher than our study[57].

Inspite of being highly sensitive in detecting syphilis, the main drawbacks of using it as a screening test include the necessity of well trained laboratory technicians, inactivation of serum, microscopy, centrifuge and rotator and delay in reporting.

RPR test is also a non treponemal test like VDRL test, but the advantages over VDRL test are the non requirement of skilled

technicians, microscopy, centrifuge and rotator. It can be rotated manually and the results can be made macroscopically.

The reporting time is lesser when compared to VDRL test. Because of the simplicity of performing RPR test, it is widely used as a screening test in most of the centres.

During the early stage or in the latent stage of disease, where the antibody levels are low, the RPR test sometimes show non reactive test result thereby mandating the use of treponemal specific confirmatory tests.

The inclusion of specific treponemal antigen detection tests like Rapid card test as screening test for syphilis showed promising outcomes in detection of syphilis by being almost equally sensitive and specific to non treponemal tests like VDRL and RPR.

The merits of using rapid card test as a screening test are its ability to produce instant results within few minutes, non requirement of trained persons, microscopy and centrifuge.

Being a treponemal specific antigen test, the results can be misleading when the patient conceals the previous history of treatment. In

cases like this we have to go for another test to identify the disease activity, which is not possible with rapid card test.

In VDRL and RPR test titration of anti-cardiolipin antibodies are possible, which correlates with the disease activity.

CONCLUSION

CONCLUSION

The prevalence of syphilis was 22% in our study group with 400 high risk and 400 low risk patients and it was contributed predominantly by patients in high risk group.

Syphilis was most commonly seen in second and third decades of age.

Males (41%) were predominantly affected than females (24%).

Prevalence of syphilis was equally distributed among educated and uneducated.

Most of the patients in high risk group were homosexuals practicing both ano-receptive and insertive intercourse.

Fourteen percent of the patients in high risk group were associated with other sexually transmitted infections.

2.4% of the syphilitic patients were co infected with HIV.

Among the three tests done, VDRL (98.1%) was found to have a slightly higher sensitivity than RPR (93.8%) and Rapid card test (96.29%). The specificities of VDRL, RPR and Rapid card test were 97.8%, 97.5% and 97.8% respectively, which was almost equivalent.

Among syphilitic patients 2.25% had primary syphilis, 4.5% had secondary syphilis and 92% had latent syphilis.

From the findings of the study, we conclude the following

- The validity parameters of VDRL test, RPR test and Rapid card tests were almost similar.
- The choice of the screening can be made based on the available infrastructure.
- VDRL can be used as a screening test in tertiary centres where the adequate laboratory set up is available.
- There is no single best test to arrive at the diagnosis of syphilis.
- RPR test and Rapid card test can be considered in resource poor settings like primary and secondary health sectors in the screening of antenatal cases, mass screening, research purposes and in places where the follow up is questionable.
- It is mandatory to confirm the screening test results with confirmatory tests to decide about the disease activity, staging of disease and also to decide the appropriate management.

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ANNEXURES

Abbreviations

STI	–	SEXUALLY TRANSMITTED INFECTIONS
M	–	MARRIED
UM	–	UNMARRIED
H	–	HOMOSEXUAL
P	–	PROMISCUITY
POS	–	POSITIVE
NEG	–	NEGATIVE
PS	–	PARTNER SCREENING
NSU	–	NON SPECIFIC URETHRITIS
UE	–	UNEMPLOYED
PVT	–	PRIVATE
CSW	–	COMMERCIAL SEX WORKER
TG	–	TRANSGENDER
EIA	–	ENZYME IMMUNE ASSAY
VDRL	–	VENEREAL DISEASE RESEARCH LABORATORY
TPHA	–	TREPONEMA PALLIDUM HEMAGGULITINATION TEST
RPR	–	RAPID PLASMA REAGIN TEST

TB	–	TUBERCULOSIS
LAP	–	LOWER ABDOMINAL PAIN
DM	–	DIABETES MELLITUS
TV	–	TRICHOMONAS VAGINITIS
BV	–	BACTERIAL VAGINOSIS
DFA – TP	–	DIRECT FLUORESCENT ANTIBODY TREPONEMA PALLIDUM TEST
PCR	–	POLYMERASE CHAIN REACTION
CSF	–	CEREBROSPINAL FLUID
TPPA	–	TREPONEMA PALLIDUM PRECIPITATION TEST
TPI	–	TREPONEMA PALLIDUM IMMOBILISATION TEST

PROFORMA

Name:

Age/ Sex:

Occupation:

Address:

OP no/ Patient ID no:

Complaints:

H/o present illness:

H/o vaginal / urethral discharge:

H/o abdominal pain:

H/o dyspareunia:

Menstrual history:

Marital History: Single/ married/ divorced/ widow/ widower

Living together or alone:

Sexual history:

Last marital contact:

Premarital contact:

Extra marital contact:

Previous STI infections / treatments:

Obstetric history:

Past History:

Tuberculosis:

Diabetes:

Hypertension:

Bronchial asthma:

Previous surgeries:

Blood transfusions:

Jaundice:

Family History:

Personal History:

IV drug abuse/Smoker/alcoholic

Aberrant sexual practice

General examination:

Built:

Pallor:

Jaundice:

Pedal edema:

Generalised lymphadenopathy:

Pulse:

BP:

Systemic examination:

CVS:

RS:

Abdomen:

CNS:

Local examination:

Female:

Any significant inguinal lymphadenopathy:

Inspection:

Vaginal discharge:

Any genital abnormalities:

Per vaginal examination: Position of cervix and uterus

Cervical motion tenderness

Per speculum examination:

Cervical discharge

Cervical erosion

Skin:

Mucosa:

Bones and Joints:

Male:

Inguinal lymphadenopathy:

Circumcised/ uncircumcised:

Phimosis:

Urethral discharge:

Subprepucial discharge:

Glans penis:

Testis/ scrotum:

Any ulcer/ erosion/ scars:

Skin:

Mucosa:

Bones and Joints:

Investigations

Urine routine:

Urethral/ vaginal / cervical discharge : Grams stain/ wet mount with normal saline

and KOH

Ulcers/erosions: Tzanck smear/ Dark field microscopy/ Grams stain

Urine/ pharyngeal swab/ cervical culture for gonococci

VDRL test

TPHA test

RPR test

Rapid card test

Diagnosis:

Clinical:

Microbiological:

INFORMATION SHEET

- Your specimen (Blood) has been accepted.
- We are conducting a comparative study of various testing methodologies for the screening of syphilis in high risk and low risk group among patients attending Rajiv Gandhi Government General Hospital, Chennai and for that your specimen (blood) may be valuable to us.
- The purpose of this study is to screen the patients for syphilis with these various testing methods.
- We are selecting certain cases and if your specimen is found eligible, we may be using your specimen to perform extra tests and special studies which in any way do not affect your final report or management.
- The privacy of the patients in the research will be maintained throughout the study. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared.
- Taking part in this study is voluntary. You are free to decide whether to participate in this study or to withdraw at any time; your decision will not result in any loss of benefits to which you are otherwise entitled.
- The results of the special study may be intimated to you at the end of the study period or during the study if anything is found abnormal which may aid in the management or treatment.

Signature of investigator Signature of participant

Date:

PATIENT CONSENT FORM

Title of the study : **"COMPARATIVE STUDY OF VARIOUS TESTING METHODOLOGIES FOR THE SCREENING OF SYPHILIS IN HIGH RISK AND LOW RISK GROUP"**

Name of the participant :

Name of the principal investigator : Dr. Thangam V

Name of the Institution : Institute of Venereology, Madras Medical College & Rajiv Gandhi Government General Hospital, Chennai – 3.

Documentation of the informed consent:

I ---------- have read the information in this form (or it has been read to me). I was free to ask any questions and they have been answered. I am over 18 years of age and exercising my free power of choice, hereby consent to be included as a participant in the study.

1. I have read and understood this consent form and the information provided to me

2. I have had the consent document explained to me

3. I have been explained about the nature of the study

4. My rights and responsibilities have been explained to me by the investigator

5. I agree to co operate with the investigator and I will inform him/her immediately if I suffer unusual symptoms

6. I have not participated in any research study at any time

7. I am unaware of the fact that I can opt out of the study at any time without having to give any reason and this will not affect my future treatment in this hospital

8. I hereby give permission to the investigator to release the information obtained from me as a result of participation in this study to the sponsors, regulatory authorities, Government agencies and institutional ethics committee. I understand that they are publicly presented.

9. My identity will be kept confidential if my data are publicly presented

10. I am aware that if I have any question during the study, I should contact at one of the addresses listed above. By signing this consent form I attest that the information given in this document has been clearly explained to me and apparently understood by me, I will b given a copy of this consent document.

Participant initials:

For adult participants:

Name and signature/ thumb impression of the participant (or legal representative if participant incompetent)

_____ _____ ----------

Name Signature Date

Name and signature of impartial witness (required for illiterate patients):

_____ _____ _____

Name Signature Date

Address and contact number of the impartial witnesss :

Name and signature of the investigator or his representative obtaining consent:

_____	_____	_____
Name	Signature	Date

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI 600 003

EC Reg.No.ECR/270/Inst./TN/2013
Telephone No.044 25305301
Fax: 011 25363970

CERTIFICATE OF APPROVAL

To
Dr.V.Thangam
IInd Year P.G. in MD DVL
Madras Medical College/RGGGH
Chennai 600 003

Dear Dr.V.Thangam ,

The Institutional Ethics Committee has considered your request and approved your study titled " **COMPARATIVE STUDY OF VARIOUS TESTING METHODOLOGIES FOR THE SCREENING OF SYPHILIS IN HIGH RISK AND LOW RISK GROUP "** - **NO.17012016.**

The following members of Ethics Committee were present in the meeting hold on **05.01.2016** conducted at Madras Medical College, Chennai 3

1.Dr.C.Rajendran, MD.,	:Chairperson
2.Dr.R.Vimala,MD.,Dean,MMC,Ch-3	:Deputy Chairperson
3.Prof.Sudha Seshayyan,MD., Vice Principal,MMC,Ch-3	: Member Secretary
4.Prof.B.Vasanthi,MD.,Inst.of Pharmacology,MMC,Ch-3	: Member
5.Prof.Md.Ali,MD.,DM.,HOD-MGE, MMC,Ch-3	: Member
6.Prof.K.Ramadevi,MD, Director, Inst. of Bio-Chem,MMC,Ch-3	: Member
7.Prof.M.Saraswathi, MD.,Director, Inst.of Path,MMC,Ch-3	: Member
8.Prof.Srinivasagalu,MD.Director,Inst.of Int.Med.MMC,Ch-3	:Member
9.Tmt.J.Rajalakshmi,JAO,MMC,Ch-3	: Lay Person
10.Thiru S.Govindasamy, BA.,BL,High Court,Chennai	: Lawyer
11.Tmt.Arnold Saulina, MA.,MSW.,	:Social Scientist

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

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

MADRAS MEDICAL COLLEGE * CHENNAI-600 003 * 21 JAN 2016

Member Secretary – Ethics Committee

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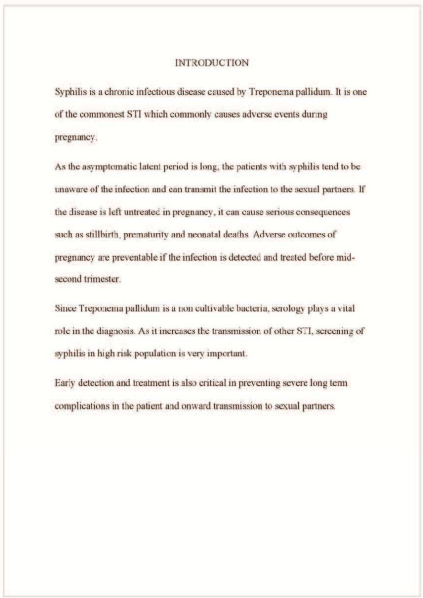

INTRODUCTION

Syphilis is a chronic infectious disease caused by Treponema pallidum. It is one of the commonest STI which commonly causes adverse events during pregnancy.

As the asymptomatic latent period is long, the patients with syphilis tend to be unaware of the infection and can transmit the infection to the sexual partners. If the disease is left untreated in pregnancy, it can cause serious consequences such as stillbirth, prematurity and neonatal deaths. Adverse outcomes of pregnancy are preventable if the infection is detected and treated before mid-second trimester.

Since Treponema pallidum is a non cultivable bacteria, serology plays a vital role in the diagnosis. As it increases the transmission of other STI, screening of syphilis in high risk population is very important.

Early detection and treatment is also critical in preventing severe long term complications in the patient and onward transmission to sexual partners.

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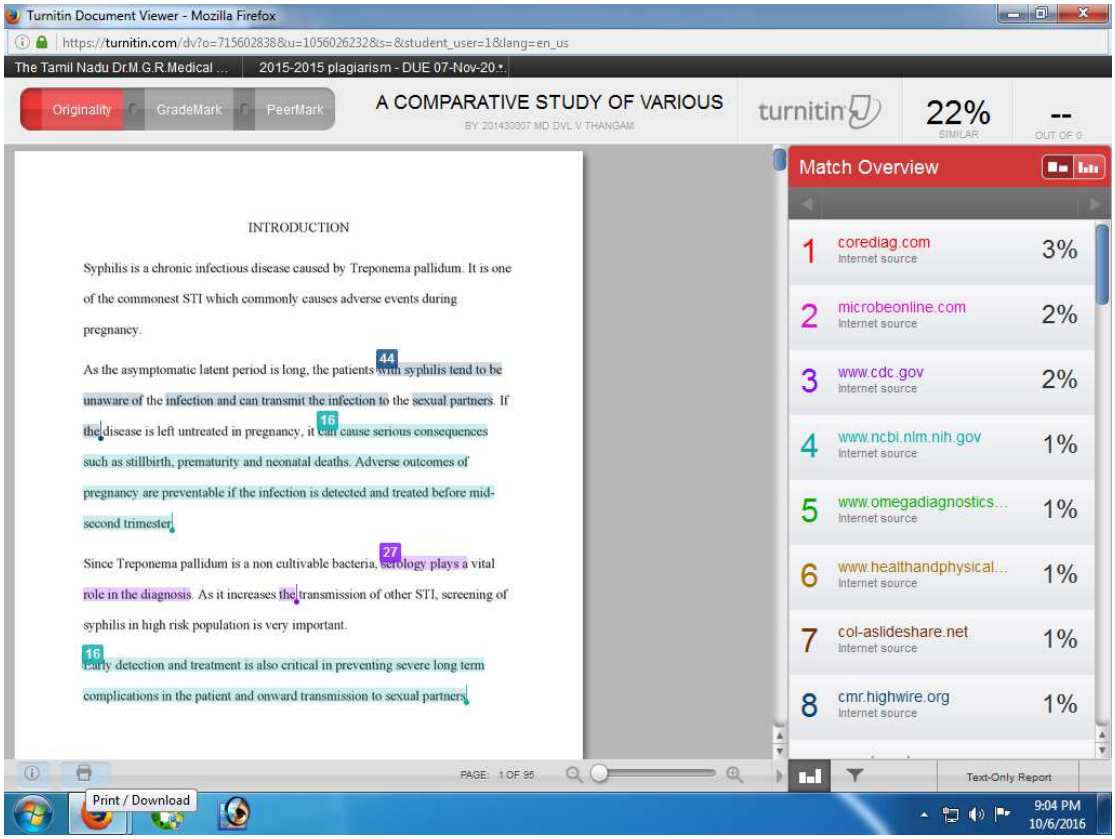
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INTRODUCTION
Syphilis is a chronic infectious disease caused by Treponema pallidum. It is one of the commonest STI which commonly causes adverse events during pregnancy.
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MASTER CHART

SERIAL NO	NAME	AGE	SEX	MARITAL STATUS	EDUCATION	OCCUPATION	RISK ACTIVITY	SYMPTOMS	OTHER STI	HIV	ASSOCIATED ILLNESS	TPHA	VDRL	RPR	SYPHI CHECK	FOLLOW UP
1	Babu	39	Male	M	-	Manual labourer	H(P)	-	-	Neg	-	-	-	-	-	No
2	Arjun	24	Male	UM	10th	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
3	Sathish	26	Male	UM	10th	UE	P	-	-	Neg	-	+	+	+	+	No
4	Ajmal	25	Male	UM	10th	Pvt	P	Painful micturition	-	Neg	-	+	+	-	+	No
5	Rajan	36	Male	M	12th	Pvt	P	Skin lesions	-	Pos	-	+	+	+	+	Yes
6	Roja	28	TG	UM	-	UE	H	-	Herpes	Neg	-	-	-	-	-	Yes
7	Mahesh	38	Male	M	B Com	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
8	Vadivel	27	M ale	UM	12th	UE	H	-	-	Neg	-	-	-	-	-	No
9	Velu	29	Male	M	BSc	Pvt	H	Fissure in penis	Candida	Neg	-	+	+	+	+	Yes
10	Saravanan	44	Male	M	7th	Auto driver	P	-	-	Neg	-	-	-	-	-	Yes
11	Muthu	26	Male	UM	BA	Electrician	H(P)	-	-	Neg	-	-	-	-	-	Yes
12	Murali	42	Male	M	7th	Manual labourer	PS	Ulcer	Wart	Neg	-	-	-	-	-	Yes
13	Vadivel	24	Male	UM	9th	Auto driver	P	-	-	Neg	TB	+	+	+	+	No
14	Balwir	53	M ale	M	9th	Auto driver	H(P)	-	-	Neg	-	-	-	-	-	No
15	Chakravarthi	29	Male	UM	10th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
16	Pandiaraj	30	M ale	UM	12th	Pvt	H	Urethral discharge	NSU	Neg	-	+	+	-	+	Yes
17	Shankar	50	Male	M	6th	Auto driver	PS	-	-	Neg	-	-	-	-	-	No
18	Krishnan	24	M ale	UM	12th	Artist	H	-	-	Neg	-	-	-	-	-	No
19	Venkatesh	41	Male	M	10th	Pvt	PS(P)	-	-	Neg	-	+	+	+	-	No
20	Natraj	24	M ale	UM	6th	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
21	Veeramani	26	M ale	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
22	Marimuthu	28	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
23	Nazriya	24	TG	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
24	Moses	27	M ale	UM	10th	Pvt	H	-	-	Neg	-	+	+	-	+	No

25	Prabahar	26	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
26	Riyaz	28	M ale	M	10th	Pvt	P	-	-	Neg	-	-	-	-	-	No
27	Mohan Krishna	30	Male	UM	12th	UE	P	Ulcer	-	Pos	-	-	+	-	-	No
28	Rajesh	27	M ale	UM	12th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
29	Vijay	47	M ale	UM	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
30	Ravi	25	M ale	UM	12th	Pvt	H	-	-	Neg	-	-	-	-	-	Yes
31	Ponraj	27	Male	M	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	Yes
32	Rayar	39	Male	UM	BA	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
33	Ram	31	Male	UM	10th	UE	H	-	-	Neg	-	+	+	+	+	No
34	Ettaiyan	25	Male	UM	10th	Pvt	P	Itching	-	Neg	-	-	-	-	-	No
35	Soundar	24	Male	UM	5th	Manual labourer	H	-	-	Neg	-	+	+	+	+	Yes
36	Meena	25	TG	UM	-	CSW	H(P)	-	-	Neg	-	+	+	+	+	No
37	Abilash	39	Male	M	B Com	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
38	Siva	43	M ale	M	12th	UE	H(P)	-	-	Neg	-	-	-	-	-	No
39	Munusamy	33	Male	M	-	Auto driver	H	Urethral discharge	Gonorrhea	Neg	-	+	+	+	+	Yes
40	Jeeva	44	Male	M	7th	Auto driver	P	-	-	Neg	-	-	-	-	-	Yes
41	Vairavan	26	Male	UM	BA	Electrician	H	-	-	Neg	-	-	-	-	-	Yes
42	Ramesh	45	Male	UM	5th	Manual labourer	H	Myalgia	-	Neg	-	-	-	-	-	Yes
43	Sivakumar	29	Male	UM	9th	Auto driver	H	-	-	Neg	-	+	+	-	+	Yes
44	Dhanaraj	55	M ale	M	9th	Manual labourer	H(P)	-	-	Neg	-	-	-	-	-	No
45	Ganesh	25	Male	UM	B Sc	Pvt	H	-	-	Neg	-	-	-	-	-	No
46	Arif	30	M ale	UM	12th	Pvt	H	-	-	Neg	-	+	+	+	+	Yes
47	Shankar	22	Male	M	12th	UE	H	-	-	Neg	-	-	-	-	-	No
48	Umar	24	M ale	UM	12th	Electrician	H	-	-	Neg	-	-	-	-	-	No
49	Elango	28	Male	M	10th	Pvt	P	Itching	Candida	Neg	-	+	+	+	+	No
50	Gokul	24	M ale	UM	6th	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
51	Lokesh	27	M ale	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
52	Naveen	26	M ale	UM	B Sc	Pvt	H	-	-	Neg	-	-	-	-	-	No
53	Rasathi	25	TG	UM	-	UE	P	Pain in genitals	-	Neg	-	+	+	+	+	No
54	Prem	30	M ale	UM	10th	Truck driver	P	-	-	Neg	-	+	+	-	-	Yes
55	Vetrichelvan	41	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No

56	Surendar	28	M ale	M	10th	Pvt	P	-	-	Neg	-	-	-	-	-	No
57	Mohan	30	Male	M	-	UE	P	-	-	Neg	-	-	-	-	-	No
58	Jegan	27	M ale	UM	12th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
59	Salmon	37	M ale	UM	-	Manual labourer	P	-	-	Neg	-	-	-	-	-	Yes
60	Divakar	27	M ale	UM	12th	UE	H	-	-	Neg	-	-	-	-	-	No
61	Raja	26	M ale	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
62	Jayahar	28	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
63	Gowri	24	TG	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
64	Rakesh	27	M ale	UM	10th	Pvt	H	-	-	Neg	-	+	+	-	+	No
65	Praveen	26	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
66	Mahesh	28	M ale	M	10th	Pvt	P	-	-	Neg	-	-	-	-	-	No
67	Krishnan	30	Male	UM	12th	UE	P	Ulcer	-	Pos	-	-	+	-	-	No
68	Suresh	27	M ale	UM	12th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
69	Sudhakar	47	M ale	UM	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
70	Lokesh	25	M ale	UM	12th	Pvt	H	-	-	Neg	-	-	-	-	-	Yes
71	Ramasamy	27	Male	M	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	Yes
72	Mukesh	39	Male	UM	BA	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
73	Ramkumar	31	Male	UM	10th	UE	H	-	-	Neg	-	+	+	+	+	No
74	Ganapathy	25	Male	UM	10th	Pvt	P	Itching	-	Neg	-	-	-	-	-	No
75	Sundar	24	Male	UM	5th	Manual labourer	H	-	-	Neg	-	+	+	+	+	Yes
76	Julie	25	TG	UM	-	CSW	H(P)	-	-	Neg	-	+	+	+	+	No
77	Christopher	39	Male	M	B Com	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
78	Sivanesh	43	M ale	M	12th	UE	H(P)	-	-	Neg	-	-	-	-	-	No
79	Periasamy	33	Male	M	-	Auto driver	H	Urethral discharge	Gonorrhea	Neg	-	+	+	+	+	Yes
80	Kamalraj	44	Male	M	7th	Auto driver	P	-	-	Neg	-	-	-	-	-	Yes
81	Muthukumar	26	Male	UM	BA	Electrician	H	-	-	Neg	-	-	-	-	-	Yes
82	Thangaraj	45	Male	UM	5th	Manual labourer	H	Myalgia	-	Neg	-	-	-	-	-	Yes
83	Gnanaganesh	29	Male	UM	9th	Auto driver	H	-	-	Neg	-	+	+	-	+	Yes
84	Dhandapani	55	M ale	M	9th	Manual labourer	H(P)	-	-	Neg	-	-	-	-	-	No
85	Murugan	25	Male	UM	B Sc	Pvt	H	-	-	Neg	-	-	-	-	-	No
86	Kaja	30	M ale	UM	12th	Pvt	H	-	-	Neg	-	+	+	+	+	Yes

87	Dharman	22	Male	M	12th	UE	H	-	-	Neg	-	-	-	-	-	No
88	Rubesh	24	M ale	UM	12th	Electrician	H	-	-	Neg	-	-	-	-	-	No
89	Pradeep	28	Male	M	10th	Pvt	P	Itching	Candida	Neg	-	+	+	+	+	No
90	Gautam	24	M ale	UM	6th	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
91	Deepak	27	M ale	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
92	Karthik	26	M ale	UM	B Sc	Pvt	H	-	-	Neg	-	-	-	-	-	No
93	Vikram	25	TG	UM	-	UE	P	Pain in genitals	-	Neg	-	+	+	+	+	No
94	Naveen	30	M ale	UM	10th	Truck driver	P	-	-	Neg	-	+	+	-	-	Yes
95	Rajasekar	41	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
96	Samson	28	M ale	M	10th	Pvt	P	-	-	Neg	-	-	-	-	-	No
97	Sivaraj	30	Male	M	-	UE	P	-	-	Neg	-	-	-	-	-	No
98	Varun	27	M ale	UM	12th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
99	Balamurugan	37	M ale	UM	-	Manual labourer	P	-	-	Neg	-	-	-	-	-	Yes
100	Vignesh	27	M ale	UM	12th	UE	H	-	-	Neg	-	-	-	-	-	No
101	Rajan	26	Male	M	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	Yes
102	Prakash	38	Male	UM	BA	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
103	Sivakumar	31	Male	UM	10th	UE	H	-	-	Neg	-	+	+	+	+	No
104	Kadhivel	25	Male	UM	10th	Pvt	P	Itching	-	Neg	-	-	-	-	-	No
105	Vinoth	24	Male	UM	5th	Manual labourer	H	-	-	Neg	-	+	+	+	+	Yes
106	Prashanth	28	Male	UM	-	Pvt	P	Ulcer	Chancre	Neg	-	+	+	+	+	No
107	Kandan	40	Male	M	B Com	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
108	Siva	43	Male	M	12th	UE	H(P)	-	-	Neg	-	-	-	-	-	No
109	Gurumani	33	Male	M	-	Auto driver	H	Urethral discharge	Gonorrhea	Neg	-	+	+	+	+	Yes
110	Senthilraja	34	M ale	M	-	UE	H(P)	Itching	Candida	Neg	-	+	+	+	+	No
111	Mugundhan	26	Male	UM	BA	Electrician	H(P)	-	-	Neg	-	-	-	-	-	Yes
112	Kavin	42	Male	M	7th	Manual labourer	PS	Ulcer	Wart	Neg	-	-	-	-	-	Yes
113	Ashok kumar	24	Male	UM	9th	Auto driver	P	-	-	Neg	TB	+	+	+	+	No
114	Nasser	53	M ale	M	9th	Auto driver	H(P)	-	-	Neg	-	-	-	-	-	No
115	Jegadeesh	29	Male	UM	10th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
116	Sabarish	30	M ale	UM	12th	Pvt	H	Urethral discharge	NSU	Neg	-	+	+	-	+	Yes
117	Sheriff	50	Male	M	6th	Auto driver	PS	-	-	Neg	-	-	-	-	-	No

118	Sanjeev	24	M ale	UM	12th	Artist	H	-	-	Neg	-	-	-	-	-	No
119	Anbazhagan	41	Male	M	10th	Pvt	PS(P)	-	-	Neg	-	+	+	+	-	No
120	Sakthivel	24	M ale	UM	6th	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
121	Raju	37	Male	M	-	Manual labourer	H(P)	-	-	Neg	-	-	-	-	-	No
122	Sameer	26	Male	UM	10th	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
123	Santhosh	23	Male	UM	ITI	Pvt	H	-	-	Neg	-	+	+	+	+	No
124	Vishal	27	Male	UM	10th	Pvt	P	Painful micturition	-	Neg	-	+	+	-	+	No
125	Palani	52	Male	M	12th	Pvt	P	Skin lesions	-	Pos	-	+	+	+	+	Yes
126	Shyam	22	Male	UM	10th	UE	H	-	Herpes	Neg	-	-	-	-	-	Yes
127	Siva	27	Male	UM	MSc	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
128	Boopalan	45	M ale	UM	12th	UE	H	-	-	Neg	-	-	-	-	-	No
129	Gandharuben	29	Male	M	BSc	Pvt	H	-	-	Neg	-	+	+	+	+	Yes
130	Babu	30	Male	UM	7th	Security	H	-	-	Neg	-	-	-	-	-	Yes
131	Santhosh	30	Male	UM	9th	Manual labourer	P	-	-	Neg	-	+	+	+	+	Yes
132	Kabali	47	Male	M	7th	Carpentar	H	Ulcer	Chancre	Neg	-	+	+	+	+	Yes
133	Alli	22	TG	UM	-	CSW	CSW	-	-	Neg	-	+	+	+	+	Yes
134	Vinoth	28	Male	M	9th	Auto driver	H(P)	-	-	Neg	-	+	+	+	+	No
135	Praveen	26	Male	M	10th	Manual labourer	H(P)	Itching	-	Neg	-	+	+	+	+	Yes
136	Sivakumar	46	Male	M	12th	Catering	H	Ulcer	Chancre	Neg	Palmar psoriasis	+	+	+	+	Yes
137	Senthil	25	Male	M	6th	Manual labourer	H	-	-	Neg	-	+	+	+	+	No
138	Ramesh kumar	28	M ale	UM	12th	Masson	H	-	-	Neg	-	+	+	+	+	No
139	Jeyaraj	41	Male	M	10th	Pvt	PS(P)	-	-	Neg	-	+	+	+	-	No
140	Jothilingam	45	Male	M	7th	Auto driver	P	-	-	Neg	-	-	-	-	-	Yes
141	Manivel	27	Male	UM	BA	Electrician	H	-	-	Neg	-	-	-	-	-	Yes
142	Mahendran	45	Male	UM	5th	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
143	Dharmdurai	29	Male	UM	9th	Auto driver	H	-	-	Neg	-	+	+	-	+	Yes
144	Mohanraj	54	M ale	M	9th	Manual labourer	H(P)	-	-	Neg	-	-	-	-	-	No
145	Madhavan	25	Male	UM	B Sc	Pvt	H	-	-	Neg	-	-	-	-	-	No
146	Bilal	30	M ale	UM	12th	Pvt	H	-	-	Neg	-	+	+	+	+	Yes

147	Chandrasekar	22	Male	M	12th	UE	H	-	-	Neg	-	-	-	-	-	No
148	Yasser	24	M ale	UM	12th	Electrician	H	-	-	Neg	-	-	-	-	-	No
149	Muthu	28	Male	M	10th	Pvt	P	Itching	-	Neg	-	+	+	+	+	No
150	Balraj	24	M ale	UM	6th	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
151	Thirupathi	27	M ale	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
152	Rahul	26	M ale	UM	B Sc	Pvt	H	-	-	Neg	-	-	-	-	-	No
153	Sakeela	25	TG	UM	-	UE	P	Itching	-	Neg	-	+	+	+	+	No
154	Rammohan	30	M ale	UM	-	Truck driver	P	-	-	Neg	-	+	+	-	-	Yes
155	Selladurai	41	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
156	Manoj	28	M ale	M	10th	Pvt	P	-	-	Neg	-	-	-	-	-	No
157	Prabhu	30	Male	M	-	UE	P	-	-	Neg	-	-	-	-	-	No
158	Nallathambi	27	M ale	UM	12th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
159	Kumar	37	M ale	UM	-	Manual labourer	P	-	-	Neg	-	-	-	-	-	Yes
160	Raman	27	M ale	UM	12th	UE	H	-	-	Neg	-	-	-	-	-	No
161	Chandran	26	M ale	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
162	Raghu	28	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
163	Ranjith	24	TG	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
164	Durai kannu	27	M ale	UM	10th	Pvt	H	-	-	Neg	-	+	+	-	+	No
165	Dinesh	26	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
166	Philip	28	M ale	M	10th	Pvt	P	-	-	Neg	-	-	-	-	-	No
167	Somu	30	Male	UM	12th	UE	P	Ulcer	-	Pos	-	-	+	-	-	No
168	Srinath	27	M ale	UM	12th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
169	Sarathi	47	M ale	UM	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
170	Bharath	25	M ale	UM	12th	Pvt	H	-	-	Neg	-	-	-	-	-	Yes
171	Gopal	27	Male	M	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	Yes
172	Madhu	39	Male	UM	BA	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
173	Premkumar	31	Male	UM	10th	UE	H	-	-	Neg	-	+	+	+	+	No
174	Nandha	25	Male	UM	10th	Pvt	P	Itching	-	Neg	-	-	-	-	-	No
175	Ilavarasan	24	Male	UM	5th	Manual labourer	H	-	-	Neg	-	+	+	+	+	Yes
176	Nagesh	25	M	UM	-	UE	H(P)	-	-	Neg	-	+	+	+	+	No
177	Iqbal	39	Male	M	B Com	Pvt	P	-	-	Neg	-	-	-	-	-	Yes

178	Sivaganesh	43	M ale	M	12th	UE	H(P)	-	-	Neg	-	-	-	-	-	No
179	Kuppusamy	33	Male	M	-	Auto driver	H	Urethral discharge	Gonorrhea	Neg	-	+	+	+	+	Yes
180	Kamaraj	44	Male	M	7th	Auto driver	P	-	-	Neg	-	-	-	-	-	Yes
181	Arun kumar	26	Male	UM	BA	Electrician	H	-	-	Neg	-	-	-	-	-	Yes
182	Thangavelu	45	Male	UM	5th	Manual labourer	H	Myalgia	-	Neg	-	-	-	-	-	Yes
183	Gnanasekar	29	Male	UM	9th	Auto driver	H	-	-	Neg	-	+	+	-	+	Yes
184	Palani	55	M ale	M	9th	Manual labourer	H(P)	-	-	Neg	-	-	-	-	-	No
185	Dennis	25	Male	UM	B Sc	Pvt	H	-	-	Neg	-	-	-	-	-	No
186	Arumugam	30	M ale	UM	12th	Pvt	H	-	-	Neg	-	+	+	+	+	Yes
187	Manickam	22	Male	M	12th	UE	H	-	-	Neg	-	-	-	-	-	No
188	Vetrivel	24	M ale	UM	12th	Electrician	H	-	-	Neg	-	-	-	-	-	No
189	Prakash	28	Male	M	10th	Pvt	P	Itching	Candida	Neg	-	+	+	+	+	No
190	Pranav	24	M ale	UM	6th	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
191	Mansoor	26	M ale	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
192	Saravanan	28	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
193	Mumtaj	27	TG	UM	-	CSW	CSW	-	-	Neg	-	-	-	-	-	No
194	Dinakar	25	M ale	UM	10th	Pvt	H	-	-	Neg	-	+	+	-	+	No
195	John	26	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
196	Deepanraj	29	M ale	M	10th	Pvt	P	-	-	Neg	-	-	-	-	-	No
197	Akash	30	Male	UM	12th	UE	P	Ulcer	-	Pos	-	-	+	-	-	No
198	Sanjay	27	M ale	UM	12th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
199	Ruthra	47	M ale	UM	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
200	Ramesh	25	M ale	UM	12th	Pvt	H	-	-	Neg	-	-	-	-	-	Yes
201	Ponnirajan	27	Male	M	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	Yes
202	Kumaresh	39	Male	UM	BA	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
203	Mohankumar	31	Male	UM	10th	UE	H	-	-	Neg	-	+	+	+	+	No
204	Pramoth	25	Male	UM	10th	Pvt	P	Itching	-	Neg	-	-	-	-	-	No
205	Kirubakaran	24	Male	UM	5th	Manual labourer	H	-	-	Neg	-	+	+	+	+	Yes
206	Michael	27	Male	UM	-	CSW	CSW	-	-	Neg	-	+	+	+	+	No
207	Kandan	40	Male	M	B Com	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
208	Siva	43	Male	M	12th	UE	H(P)	-	-	Neg	-	-	-	-	-	No

209	Munusamy	33	Male	M	-	Auto driver	H	Urethral discharge	Gonorrhea	Neg	-	+	+	+	+	Yes
210	Prasad	31	M ale	M	-	UE	H(P)	Itching	Genital scabies	Neg	-	+	+	+	+	No
211	Karthik	28	M ale	UM	BE	Pvt	P	Papules in penis	-	Neg	-	+	+	+	+	No
212	Bakianathan	46	Male	M	-	Manual labourer	PS	-	-	Neg	-	+	+	+	+	Yes
213	Senthilnathan	31	Male	M	MBA	Pvt	H(P)	-	-	Neg	-	+	+	+	+	No
214	Vasanth	29	Male	UM	BSc	Pvt	H(P)	Ulcer	NSGUD	Neg	-	+	+	+	+	Yes
215	Rathanraj	29	Male	UM	5th	UE	P	Ulcer	NSGUD	Neg	-	+	+	+	+	Yes
216	Munusamy	50	Male	M	-	Manual labourer	PS	-	-	Neg	-	+	+	+	+	No
217	Raja	21	Male	UM	BCom	Student	H	Ulcer	Chancre	Neg	-	+	+	+	+	Yes
218	Kumar	42	Male	M	3rd	Manual labourer	H	-	-	Neg	-	+	+	+	+	No
219	Vivek	25	Male	UM	10th	Painter	H	-	-	Neg	-	-	-	-	-	No
220	Meganathan	24	Male	UM	MA	UE	H	-	-	Neg	-	+	+	+	+	Yes
221	Raghavan	26	M ale	UM	-	UE	H	Myalgia	-	Neg	-	-	-	-	-	No
222	Mahendran	28	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
223	Nagaraj	37	Male	M	-	UE	P	-	-	Neg	-	-	-	-	-	No
224	Kishore	27	M ale	UM	12th	Pvt	H	-	-	Neg	-	+	+	-	+	No
225	Prabahar	26	M ale	UM	12th	Pvt	H	-	-	Neg	-	-	-	-	-	No
226	Senthur	28	M ale	M	12th	Pvt	P	-	-	Neg	-	-	-	-	-	No
227	Bharathi	30	Male	UM	12 th	UE	P	Ulcer	-	Pos	-	-	+	-	-	No
228	Sarath	27	M ale	UM	12th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
229	Vijaya kumar	47	M ale	UM	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
230	Raviraj	25	M ale	UM	12th	Pvt	H	-	-	Neg	-	-	-	-	-	Yes
231	Ponkumar	32	Male	M	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	Yes
232	Thangamani	39	Male	UM	BA	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
233	Muthuraj	32	Male	UM	5th	UE	H	-	-	Neg	-	+	+	+	+	No
234	Chiitibabu	26	Male	UM	10th	Pvt	P	Itching	-	Neg	-	-	-	-	-	No
235	Bala	23	Male	UM	-	Manual labourer	H	Fever	-	Neg	-	+	+	+	+	Yes
236	Keerthi	29	TG	UM	-	CSW	CSW	-	-	Neg	-	-	-	-	-	No
237	Jahangir	39	Male	M	B Com	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
238	Sivaraj	40	M ale	M	12th	Security	H(P)	-	-	Neg	-	-	-	-	-	No
239	Gurusamy	34	Male	M	-	Auto driver	H	Urethral discharge	-	Neg	-	+	+	+	+	Yes

240	Jeevan kumar	44	Male	M	7th	UE	P	-	-	Neg	-	-	-	-	-	Yes
241	Kathiravan	26	Male	UM	BA	Electrician	H	-	-	Neg	-	-	-	-	-	Yes
242	Rakesh	35	Male	UM	5th	Manual labourer	H	Skin lesions	Herpes	Neg	-	-	-	-	-	Yes
243	Sivakumar	29	Male	UM	9th	Auto driver	H	-	-	Neg	-	+	+	-	+	Yes
244	Dhanapal	48	M ale	M	9th	Manual labourer	H(P)	-	-	Neg	-	-	-	-	-	No
245	Ganeshraj	25	Male	UM	B Sc	Pvt	P	-	-	Neg	-	-	-	-	-	No
246	Perumal	31	M ale	UM	12th	Pvt	H	-	-	Neg	-	+	+	+	+	Yes
247	Shankar	22	Male	M	12th	UE	H	-	-	Neg	-	-	-	-	-	No
248	Manikam	29	M ale	UM	12th	Electrician	H	-	-	Neg	-	-	-	-	-	No
249	Perungo	28	Male	M	10th	Pvt	P	Itching	Candida	Neg	-	+	+	+	+	No
250	Ponnaiah	32	M ale	UM	4th	Manual labourer	H	-	-	Neg	-	-	-	-	-	No
251	Kamal	27	M ale	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
252	Mahesh	28	M ale	UM	B Sc	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
253	Raj	27	TG	UM	-	UE	P	Ulcer	Chancre	Neg	-	+	+	+	+	No
254	Premkumar	28	M ale	UM	10th	Bus conductor	P	-	-	Neg	-	+	+	-	-	Yes
255	Anbuchelvan	31	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
256	Narendar	28	M ale	M	10th	Pvt	P	-	-	Neg	-	-	-	-	-	No
257	Rammohan	30	Male	M	-	Manual labourer	P	-	-	Neg	-	-	-	-	-	No
258	Sampath	28	M ale	UM	12th	Salesman	H	-	-	Neg	-	-	-	-	-	No
259	Ameer	37	M ale	M	-	Auto driver	P	-	-	Neg	-	-	-	-	-	Yes
260	Arul	24	M ale	UM	12th	UE	H(P)	-	-	Neg	-	-	-	-	-	No
261	Rajkumar	26	M ale	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
262	Murali	24	M ale	UM	10th	Pvt	H	-	-	Neg	-	-	-	-	-	No
263	Josh	25	Male	UM	6th	UE	H	-	-	Neg	-	-	-	-	-	No
264	Rakesh	27	M ale	UM	10th	Pvt	H	-	-	Neg	-	+	+	-	+	No
265	Jai ganesh	27	M ale	UM	12th	Pvt	H	-	-	Neg	-	-	-	-	-	No
266	Logaraj	29	M ale	M	10th	Pvt	P	Itching	-	Neg	-	-	-	-	-	No
267	Dixon	32	Male	UM	BA	Security	P	-	-	Pos	-	-	+	-	-	No
268	Suresh	27	M ale	UM	12th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
269	Gobinath	42	M ale	UM	-	Taxi driver	H	-	-	Neg	-	-	-	-	-	No
270	Karthick	25	M ale	UM	12th	Pvt	H	-	-	Neg	-	-	-	-	-	Yes

271	Ranjith	27	Male	M	-	Manual labourer	H	-	-	Neg	-	-	-	-	-	Yes
272	Godwin	37	Male	UM	BA	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
273	Arun kumar	31	Male	UM	10th	UE	H	Itching	-	Neg	-	+	+	+	+	No
274	Sabapathy	26	Male	UM	10th	Pvt	P	-	-	Neg	-	-	-	-	-	No
275	Giridharan	24	Male	UM	B Sc	Accountant	H	-	-	Neg	-	+	+	+	+	Yes
276	Rani	28	TG	UM	-	CSW	CSW	-	-	Neg	-	+	+	+	+	No
277	Paulraj	39	Male	M	B Com	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
278	Sivaprakash	40	M ale	M	12th	UE	H(P)	-	-	Neg	-	-	-	-	-	No
279	Ponnusamy	31	Male	M	-	Auto driver	H	Urethral discharge	Gonorrhea	Neg	-	+	+	+	+	Yes
280	Raj	44	Male	M	7th	Auto driver	P	-	-	Neg	-	-	-	-	-	Yes
281	Kumar	26	Male	UM	BA	Electrician	H	-	-	Neg	-	-	-	-	-	Yes
282	Thangadurai	45	Male	M	5th	Manual labourer	H	Fever	-	Neg	-	-	-	-	-	Yes
283	Gnanavelu	29	Male	UM	9th	Auto driver	H	-	-	Neg	-	+	+	-	+	Yes
284	Sekar	53	M ale	M	9th	Manual labourer	H(P)	-	-	Neg	-	-	-	-	-	No
285	Murugan	25	Male	UM	B Sc	Pvt	H	-	-	Neg	-	-	-	-	-	No
286	Thamim	30	M ale	UM	12th	LIC agent	H	-	-	Neg	-	+	+	+	+	Yes
287	Eswaran	26	Male	M	12th	UE	H	-	-	Neg	-	-	-	-	-	No
288	Shah jahan	24	M ale	UM	12th	pvt	H	-	-	Neg	-	-	-	-	-	No
289	Ratheesh	28	Male	M	10th	Pvt	P	Itching	-	Neg	-	+	+	+	+	No
290	Sunil	24	M ale	UM	B Sc	pvt	H	-	-	Neg	-	-	-	-	-	No
291	Raja	26	M ale	UM	-	UE	H	-	-	Neg	-	-	-	-	-	No
292	Rithikesh	26	M ale	UM	B Sc	Pvt	H	-	-	Neg	-	-	-	-	-	No
293	Aasai nila	25	TG	UM	-	UE	P	Urethral discharge	-	Neg	-	+	+	+	+	No
294	praveen	31	M ale	UM	10th	Truck driver	P	-	-	Neg	-	+	+	-	-	Yes
295	Rajkumar	42	M ale	M	10th	Pvt	H(P)	-	-	Neg	-	-	-	-	-	No
296	Mahesh babu	36	M ale	M	10th	Taxi driver	P	-	-	Neg	-	-	-	-	-	No
297	Kavinraj	30	Male	M	-	UE	P	-	-	Neg	-	-	-	-	-	No
298	Tharun	25	M ale	UM	12th	Auto driver	H	-	-	Neg	-	-	-	-	-	No
299	Balavignesh	25	M ale	UM	-	Manual labourer	P	-	-	Neg	-	-	-	-	-	Yes
300	Ruben	29	M ale	UM	12th	UE	H	-	-	Neg	-	-	-	-	-	No
301	Rajakumari	24	Female	M	-	Housewife	P	Vaginal discharge	TV	Neg	-	-	-	-	-	Yes

302	Meenakshi	29	Female	M	5th	House wife	P	-	-	Neg	-	-	-	-	-	No
303	Priya	31	Female	UM	10th	House wife	P	-	-	Neg	-	-	-	-	-	No
304	Rizwana	25	Female	M	10th	House wife	P	Itching	Candida	Neg	DM	-	-	-	-	No
305	Anuradha	24	Female	UM	5th	Tailor	P	-	-	Neg	-	-	-	-	-	Yes
306	Tamilvani	20	Female	UM	-	House wife	P	Ulcer	Chancre	Neg	-	+	+	+	+	No
307	Sundari	27	Female	M	B Com	House wife	P	-	-	Neg	-	-	-	-	-	Yes
308	Shantha	40	Female	M	4th	House wife	P	-	-	Neg	-	-	-	-	-	No
309	Kalaiselvi	33	Female	M	-	House wife	P	LAP	-	Neg	-	+	+	+	+	Yes
310	Venda	34	Female	M	-	House wife	P	Itching	-	Neg	-	+	+	+	+	No
311	Nagarani	26	Female	UM	3rd	House wife	P	-	-	Neg	-	-	-	-	-	Yes
312	Banu	32	Female	M	7th	Shopkeeper	P	-	-	Neg	-	-	-	-	-	Yes
313	Nageshwari	24	Female	UM	9th	House wife	P	Ulcer	Chancre	Neg	-	+	+	+	+	No
314	Venkatamma	34	Female	M	3rd	House wife	P	-	-	Neg	-	-	-	-	-	No
315	Anitha	25	Female	M	10th	House wife	P	-	-	Neg	-	-	-	-	-	No
316	Suguna	30	Female	M	12th	House wife	P	-	-	Neg	-	+	+	-	+	Yes
317	Mariammal	26	Female	M	2nd	House wife	P	-	-	Neg	-	-	-	-	-	No
318	Geetha	24	Female	UM	-	CSW	CSW	-	-	Neg	-	+	+	+	-	No
319	Kalaivani	31	Female	M	-	House maid	P	-	-	Neg	-	-	-	-	-	No
320	Radhika	24	Female	M	4th	House wife	P	-	-	Neg	-	-	-	-	-	No
321	Alamelu	33	Female	M	-	House maid	P	-	-	Neg	-	-	-	-	-	No
322	Radha	26	Female	M	10th	House wife	P	-	-	Neg	-	-	-	-	-	No
323	Lakshmi	23	Female	UM	-	CSW	CSW	-	-	Neg	-	+	+	+	+	No
324	Kala	27	Female	M	3rd	House wife	P	Vaginal discharge	-	Neg	-	-	-	-	-	No
325	Jayalakshmi	34	Female	M	-	House wife	P	Vaginal discharge	Candida	Pos	TB	+	+	+	+	Yes
326	Jothi	22	Female	M	-	House wife	P	Ulcer	Herpes	Neg	-	-	-	-	-	Yes
327	Lalitha	27	Female	M	BSc	House wife	P	-	-	Neg	-	-	-	-	-	Yes
328	Malini	26	Female	M	12th	House maid	P	-	-	Neg	-	-	-	-	-	No
329	Sathya	25	Female	M	10th	House wife	P	-	-	Neg	-	-	-	-	-	Yes
330	Usharani	27	Female	UM	7th	House wife	P	-	-	Neg	-	-	-	-	-	Yes
331	Indhumathi	32	Female	M	-	House wife	P	-	-	Neg	-	-	-	-	-	Yes

332	Kumari	39	Female	M	-	House wife	P	-	-	Neg	-	-	-	-	-	No
333	Naziya	32	Female	M	-	Tailor	P	-	-	Neg	-	+	+	+	+	No
334	Sindhuja	26	Female	M	10th	House wife	P	Itching	-	Neg	-	-	-	-	-	No
335	Mahalakshmi	23	Female	UM	BA	House wife	P	LAP	-	Neg	-	-	-	-	-	Yes
336	Esther	29	Female	M	-	House wife	P	-	-	Neg	-	-	-	-	-	No
337	Vennila	25	Female	M	10th	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
338	Chinnaponnu	40	Female	M	12th	House wife	P	-	-	Neg	-	-	-	-	-	No
339	Rosy	34	Female	UM	-	CSW	CSW	Vaginal discharge	BV	Neg	-	+	+	+	+	Yes
340	Kanmani	38	Female	M	7th	Agriculture	P	-	-	Neg	-	-	-	-	-	Yes
341	Chellamal	26	Female	M	-	House wife	P	-	-	Neg	-	-	-	-	-	Yes
342	Laksmi	35	Female	M	5th	House maid	P	Skin lesions	Herpes	Neg	-	-	-	-	-	Yes
343	Kanaga	29	Female	UM	-	Pvt	P	-	-	Neg	-	+	+	-	+	Yes
344	Nithya	33	Female	M	9th	House wife	P	-	-	Neg	-	-	-	-	-	No
345	Maheshwari	25	Female	UM	B Sc	Accountant	P	-	-	Neg	-	-	-	-	-	No
346	Sumathi	31	Female	M	12th	House wife	P	-	-	Neg	-	-	-	-	-	Yes
347	Radha	22	Female	M	4th	House wife	P	-	-	Neg	-	-	-	-	-	No
348	Padma	29	Female	M	12th	House wife	P	-	-	Neg	-	-	-	-	-	No
349	Sunitha	28	Female	M	10th	House wife	P	Itching	Candida	Neg	-	+	+	+	+	No
350	Asmath	32	Female	M	4th	House wife	P	-	-	Neg	-	-	-	-	-	No
351	Priya	37	Female	M	-	House maid	P	-	-	Neg	-	-	-	-	-	No
352	Adilakshmi	26	Female	M	10th	House wife	P	-	-	Neg	-	-	-	-	-	No
353	Kanmani	27	Female	UM	-	CSW	CSW	-	-	Neg	-	+	+	+	+	No
354	Kalarani	27	Female	M	3rd	House wife	P	Vaginal discharge	-	Neg	-	-	-	-	-	No
355	Jayalakshmi	35	Female	M	-	House wife	P	Vaginal discharge	TV	Neg	-	-	-	-	-	Yes
356	Jothipriya	22	Female	M	-	House wife	P	Ulcer	Herpes	Neg	-	-	-	-	-	Yes
357	Meena	27	Female	M	BSc	House wife	P	-	-	Neg	-	-	-	-	-	Yes
358	Shalini	42	Female	M	12th	House maid	P	-	-	Neg	-	-	-	-	-	No
359	Sathyapriya	32	Female	M	10th	House wife	P	-	-	Neg	-	-	-	-	-	Yes
360	Kumari	30	Female	UM	7th	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
361	Indhu	32	Female	M	-	House wife	P	-	-	Neg	-	-	-	-	-	Yes
362	Banupriya	39	Female	M	-	House wife	P	-	-	Neg	-	-	-	-	-	No

363	Kavitha	32	Female	M	-	Tailor	P	-	-	Neg	-	+	+	+	+	No
364	Chitra	26	Female	UM	10th	Pvt	P	Itching	-	Neg	-	-	-	-	-	No
365	Lakshmi	21	Female	UM	BA	Student	P	LAP	-	Neg	-	-	-	-	-	Yes
366	Josphine	29	Female	M	-	House wife	P	-	-	Neg	-	-	-	-	-	No
367	Malar	39	Female	M	10th	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
368	Chinthamani	43	Female	M	12th	House wife	P	-	-	Neg	-	-	-	-	-	No
369	Fathima	34	Female	M	-	House wife	P	Vaginal discharge	Candida	Neg	-	+	+	+	+	Yes
370	Roja	35	Female	M	7th	Agriculture	P	-	-	Neg	-	-	-	-	-	Yes
371	Ashwini	23	Female	M	-	House wife	P	-	-	Neg	-	-	-	-	-	Yes
372	Lavanya	35	Female	M	5th	House maid	P	Ulcer	Herpes	Neg	-	-	-	-	-	Yes
373	Kanchana	29	Female	UM	-	Pvt	P	-	-	Neg	-	-	-	-	-	Yes
374	Nithya	35	Female	M	9th	House wife	P	-	-	Neg	-	-	-	-	-	No
375	Kavipriya	25	Female	UM	B com	Accountant	P	-	-	Neg	-	-	-	-	-	No
376	Lakshmi	31	Female	M	12th	House wife	P	-	-	Neg	-	-	-	-	-	Yes
377	Ramya	22	Female	UM	4th	UE	P	-	-	Neg	-	-	-	-	-	No
378	Kayalvizhi	25	Female	M	12th	House wife	P	-	-	Neg	-	-	-	-	-	No
379	Saranya	28	Female	M	10th	House wife	P	Itching	Candida	Neg	-	+	+	+	+	No
380	Aysha	32	Female	M	4th	House wife	P	-	-	Neg	-	-	-	-	-	No
381	Rajeshwari	24	Female	M	-	Housewife	P	Vaginal discharge	TV	Neg	-	-	-	-	-	Yes
382	Meenakshi	29	Female	M	5th	House wife	P	-	-	Neg	-	-	-	-	-	No
383	Priya	31	Female	UM	10th	UE	P	-	-	Neg	-	-	-	-	-	No
384	Lavanya	-	-	-	-	House wife	P	Itching	Candida	Neg	-	-	-	-	-	No
385	Bindhu	24	Female	UM	5th	Tailor	P	-	-	Neg	-	-	-	-	-	Yes
386	Selvi	20	Female	UM	-	UE	P	Ulcer	Chancre	Neg	-	+	+	+	+	No
387	Pachaiammal	27	Female	M	B Com	House wife	P	-	-	Neg	-	-	-	-	-	Yes
388	Shanthi	40	Female	M	4th	House wife	P	-	-	Neg	-	-	-	-	-	No
389	Tamilselvi	33	Female	M	-	House wife	P	LAP	-	Neg	-	+	+	+	+	Yes
390	Veena	23	Female	UM	-	UE	P	Itching	Candida	Neg	-	+	+	+	+	No
391	Nagarani	26	Female	UM	3rd	House wife	P	-	-	Neg	-	-	-	-	-	Yes
392	Banu	32	Female	M	7th	Shopkeeper	P	-	-	Neg	-	-	-	-	-	Yes

393	Eswari	24	Female	UM	9th	UE	P	Vaginal discharge	BV	Neg	-	-	-	-	-	No
394	Usha	34	Female	M	3rd	House wife	P	-	-	Neg	-	-	-	-	-	No
395	Anitha	25	Female	M	10th	House wife	P	-	-	Neg	-	-	-	-	-	No
396	Suguna	30	Female	M	12th	House wife	P	-	-	Neg	-	+	+	-	+	Yes
397	Thenmozhi	23	Female	UM	B Sc	Pvt	P	-	-	Neg	-	-	-	-	-	No
398	Seetha	24	Female	UM	-	CSW	CSW	-	-	Neg	-	-	-	-	-	No
399	Kanimozhi	30	Female	M	-	House maid	P	LAP	-	Neg	-	-	-	-	-	No
400	Krithika	32	Female	M	4th	House wife	P	-	-	Neg	-	-	-	-	-	No

SERIAL NO	NAME	AGE	SEX	MARITAL STATUS	EDUCATION	OCCUPATION	RISK ACTIVITY	SYMPTOMS	TYPE OF SYPHILIS	OTHER STI	HIV	ASSOCIATED ILLNESS	TPHA	VDRL	RPR	SYPHICHECK
1	Gopi	27	Male	M	ITI	Pvt	-	-	-	-	Neg	-	-	-	-	-
2	Prakash	38	Male	UM	BA	Pvt	-	-	-	-	Neg	-	-	-	-	-
3	Sivakumar	31	Male	UM	10th	UE	-	-	-	-	Neg	-	-	-	-	-
4	Kadhivel	25	Male	UM	10th	Pvt	-	-	Latent	-	Neg	-	+	+	+	+
5	Vinoth	24	Male	UM	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
6	Prashanth	28	Male	UM	-	Pvt	-	-	Latent	-	Neg	-	+	+	+	+
7	Kandan	40	Male	M	B Com	Pvt	-	-	-	-	Neg	-	-	-	-	-
8	Siva	43	Male	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-
9	Gurumani	33	Male	M	-	Auto driver	-	-	-	-	Neg	-	-	-	-	-
10	Senthilraja	34	M ale	M	-	UE	-	-	-	-	Neg	-	-	-	-	-
11	Mugundhan	26	Male	UM	BA	Electrician	-	-	-	-	Neg	-	-	-	-	-
12	Kavin	42	Male	M	7th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
13	Ashok kumar	24	Male	UM	9th	Auto driver	-	-	-	-	Neg	TB	-	-	-	-
14	Nasser	53	M ale	M	9th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
15	Jegadeesh	29	Male	UM	10th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
16	Sabarish	30	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
17	Sheriff	50	Male	M	6th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
18	Sanjeev	24	M ale	UM	12th	Artist	-	-	-	-	Neg	-	-	-	-	-
19	Anbazhagan	41	Male	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
20	Sakthivel	24	M ale	UM	6th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
21	Raju	37	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
22	Sameer	26	Male	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
23	Santhosh	23	Male	UM	ITI	Pvt	-	-	-	-	Neg	-	-	-	-	-
24	Vishal	27	Male	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
25	Palani	52	Male	M	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
26	Shyam	22	Male	UM	10th	UE	-	-	-	-	Neg	-	-	-	-	-

27	Siva	27	Male	UM	MSc	Pvt	-	-	-	-	Neg	-	-	-	-	-
28	Boopalan	45	M ale	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
29	Gandharuben	29	Male	M	BSc	Pvt	-	-	-	-	Neg	-	-	-	-	-
30	Babu	30	Male	UM	7th	Security	-	-	-	-	Neg	-	-	-	-	-
31	Santhosh	30	Male	UM	9th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
32	Kabali	47	Male	M	7th	Carpentar	-	-	-	-	Neg	-	-	-	-	-
33	Alli	22	TG	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
34	Vinoth	28	Male	M	9th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
35	Praveen	26	Male	M	10th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
36	Siva	46	Male	M	12th	Catering	-	-	-	-	Neg	-	-	-	-	-
37	Senthil	25	Male	M	6th	Manual labourer	-	-	Latent	-	Neg	-	+	+	+	+
38	Ramesh	28	M ale	UM	12th	Masson	-	-	-	-	Neg	-	-	-	-	-
39	Jeyavel	41	Male	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
40	Pornalingam	45	Male	M	7th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
41	Rajinikanth	27	Male	UM	BA	Electrician	-	-	-	-	Neg	-	-	-	-	-
42	Mahesh	45	Male	UM	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
43	Dharmdurai	29	Male	UM	9th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
44	Mohanraj	54	M ale	M	9th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
45	Madhavan	25	Male	UM	B Sc	Pvt	-	-	-	-	Neg	-	-	-	-	-
46	Bilal	30	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
47	Chandrasekar	22	Male	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-
48	Yasser	24	M ale	UM	12th	Electrician	-	-	-	-	Neg	-	-	-	-	-
49	Muthu	28	Male	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
50	Balraj	24	M ale	UM	6th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
51	Thirupathi	27	M ale	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
52	Rahul	26	M ale	UM	B Sc	Pvt	-	-	Latent	-	Neg	-	+	+	+	+
53	Sarath kumar	25	Male	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
54	Rammohan	30	M ale	UM	-	Truck driver	-	-	-	-	Neg	-	-	-	-	-
55	Selladurai	41	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
56	Manoj	28	M ale	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
57	Prabhu	30	Male	M	-	UE	-	-	-	-	Neg	-	-	-	-	-

58	Nallathambi	27	M ale	UM	12th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
59	Kumar	37	M ale	UM	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
60	Raman	27	M ale	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
61	Chandran	26	M ale	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
62	Raghu	28	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
63	Ranjith	24	Male	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
64	Durairaj	27	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
65	Dinesh	26	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
66	Julesh	28	M ale	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
67	Kumaresh	30	Male	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
68	Srinath	27	M ale	UM	12th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
69	Ganesh	47	M ale	UM	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
70	Bharath	25	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
71	Gopal	27	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
72	Madhu	39	Male	UM	BA	Pvt	-	-	-	-	Neg	-	-	-	-	-
73	Premkumar	31	Male	UM	10th	UE	-	-	-	-	Neg	-	-	-	-	-
74	Nandha	25	Male	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
75	Ilavarasan	24	Male	UM	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
76	Nagesh	25	Male	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
77	Irsad	39	Male	M	B Com	Pvt	-	-	-	-	Neg	-	-	-	-	-
78	Sivaganesh	39	M ale	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-
79	Kuppusamy	33	Male	M	-	Auto driver	-	-	-	-	Neg	-	-	-	-	-
80	Kamal	28	Male	M	7th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
81	Arun prasath	26	Male	UM	BA	Electrician	-	-	-	-	Neg	-	-	-	-	-
82	Rakesh	45	Male	UM	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
83	Gunaseelan	29	Male	UM	9th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
84	Palani	55	M ale	M	9th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
85	Frederick	25	Male	UM	B Sc	Pvt	-	-	-	-	Neg	-	-	-	-	-
86	Arumugam	30	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
87	Manickam	22	Male	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-

88	Vetrimani	24	M ale	UM	12th	Electrician	-	-	-	-	Neg	-	-	-	-	-
89	Prakash	28	Male	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
90	Prajan	24	M ale	UM	6th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
91	Hariharan	26	M ale	UM	-	UE	-	-	Latent	-	Neg	-	+	+	+	+
92	Saravanan	28	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
93	Nawaz	27	Male	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
94	Dinakar	25	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
95	Farook	26	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
96	Deepanraj	29	M ale	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
97	Akash	30	Male	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
98	Sanjay	27	M ale	UM	12th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
99	Ruthra	47	M ale	UM	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
100	Kamesh	25	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
100	Babu	39	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
101	Arjun	24	Male	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
102	Sathish	26	Male	UM	10th	UE	-	-	-	-	Neg	-	-	-	-	-
103	Ajmal	25	Male	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
104	Rajan	36	Male	M	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
105	Roja	28	TG	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
106	Mahesh	38	Male	M	B Com	Pvt	-	-	-	-	Neg	-	-	-	-	-
107	Vadivel	27	M ale	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
108	Velu	29	Male	M	BSc	Pvt	-	-	-	-	Neg	-	-	-	-	-
109	Saravanan	44	Male	M	7th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
110	Muthu	26	Male	UM	BA	Electrician	-	-	-	-	Neg	-	-	-	-	-
111	Murali	42	Male	M	7th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
112	Vadivel	24	Male	UM	9th	Auto driver	-	-	-	-	Neg	TB	-	-	-	-
113	Balwir	53	M ale	M	9th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
114	Chakravarthi	29	Male	UM	10th	Auto driver	-	-	Latent	-	Neg	-	+	+	+	+
115	Pandiaraj	30	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
116	Shankar	50	Male	M	6th	Auto driver	-	-	-	-	Neg	-	-	-	-	-

117	Krishnan	24	M ale	UM	12th	Artist	-	-	-	-	Neg	-	-	-	-	-
118	Venkatesh	41	Male	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
119	Natraj	24	M ale	UM	6th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
120	Veeramani	26	M ale	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
121	Marimuthu	28	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
122	Nazriya	24	TG	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
123	Moses	27	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
124	Prabahar	26	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
125	Riyaz	28	M ale	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
126	Mohan Krishna	30	Male	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
127	Rajesh	27	M ale	UM	12th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
128	Vijay	47	M ale	UM	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
129	Ravi	25	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
130	Ponraj	27	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
131	Rayar	39	Male	UM	BA	Pvt	-	-	-	-	Neg	-	-	-	-	-
132	Ram	31	Male	UM	10th	UE	-	-	-	-	Neg	-	-	-	-	-
133	Ettaiyan	25	Male	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
134	Soundar	24	Male	UM	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
135	Meena	25	TG	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
136	Abilash	39	Male	M	B Com	Pvt	-	-	-	-	Neg	-	-	-	-	-
137	Siva	43	M ale	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-
138	Munusamy	33	Male	M	-	Auto driver	-	-	-	-	Neg	-	-	-	-	-
139	Jeeva	44	Male	M	7th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
140	Vairavan	26	Male	UM	BA	Electrician	-	-	-	-	Neg	-	-	-	-	-
141	Ramesh	45	Male	UM	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
142	Sivakumar	29	Male	UM	9th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
143	Dhanaraj	55	M ale	M	9th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
144	Ganesh	25	Male	UM	B Sc	Pvt	-	-	-	-	Neg	-	-	-	-	-
145	Arif	30	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
146	Shankar	22	Male	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-

147	Umar	24	M ale	UM	12th	Electrician	-	-	-	-	Neg	-	-	-	-	-
148	Elango	28	Male	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
149	Gokul	24	M ale	UM	6th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
150	Lokesh	27	M ale	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
151	Naveen	26	M ale	UM	B Sc	Pvt	-	-	-	-	Neg	-	-	-	-	-
152	Rasathi	25	TG	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
153	Prem	30	M ale	UM	10th	Truck driver	-	-	-	-	Neg	-	-	-	-	-
154	Vetrichelvan	41	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
155	Surendar	28	M ale	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
156	Mohan	30	Male	M	-	UE	-	-	-	-	Neg	-	-	-	-	-
157	Jegan	27	M ale	UM	12th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
158	Salmon	37	M ale	UM	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
159	Divakar	27	M ale	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
160	Raja	26	M ale	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
161	Jayahar	28	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
162	Gowri	24	TG	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
163	Rakesh	27	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
164	Praveen	26	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
165	Mahesh	28	M ale	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
166	Krishnan	30	Male	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
167	Suresh	27	M ale	UM	12th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
168	Sudhakar	47	M ale	UM	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
169	Lokesh	25	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
170	Ramasamy	27	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
171	Mukesh	39	Male	UM	BA	Pvt	-	-	-	-	Neg	-	-	-	-	-
172	Ramkumar	31	Male	UM	10th	UE	-	-	-	-	Neg	-	-	-	-	-
173	Ganapathy	25	Male	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
174	Sundar	24	Male	UM	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
175	Julie	25	TG	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
176	Christopher	39	Male	M	B Com	Pvt	-	-	-	-	Neg	-	-	-	-	-

177	Sivanesh	43	M ale	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-
178	Periasamy	33	Male	M	-	Auto driver	-	-	-	-	Neg	-	-	-	-	-
179	Kamalraj	44	Male	M	7th	Auto driver	-	-	Latent	-	Neg	-	+	+	+	+
180	Muthukumar	26	Male	UM	BA	Electrician	-	-	-	-	Neg	-	-	-	-	-
181	Thangaraj	45	Male	UM	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
182	Gnanaganesh	29	Male	UM	9th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
183	Dhandapani	55	M ale	M	9th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
184	Murugan	25	Male	UM	B Sc	Pvt	-	-	-	-	Neg	-	-	-	-	-
185	Kaja	30	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
186	Dharman	22	Male	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-
187	Rubesh	24	M ale	UM	12th	Electrician	-	-	-	-	Neg	-	-	-	-	-
188	Pradeep	28	Male	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
189	Gautam	24	M ale	UM	6th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
190	Deepak	27	M ale	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
191	Karthik	26	M ale	UM	B Sc	Pvt	-	-	-	-	Neg	-	-	-	-	-
192	Vikram	25	TG	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
193	Naveen	30	M ale	UM	10th	Truck driver	-	-	-	-	Neg	-	-	-	-	-
194	Rajasekar	41	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
195	Samson	28	M ale	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
196	Sivaraj	30	Male	M	-	UE	-	-	-	-	Neg	-	-	-	-	-
197	Varun	27	M ale	UM	12th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
198	Balamurugan	37	M ale	UM	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
199	Vignesh	27	M ale	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
200	Ponnirajan	27	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
201	Kumaresh	39	Male	UM	BA	Pvt	-	-	-	-	Neg	-	-	-	-	-
202	Mohankumar	31	Male	UM	10th	UE	-	-	-	-	Neg	-	-	-	-	-
203	Pramoth	25	Male	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
204	Kirubakaran	24	Male	UM	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
205	Mithilesh	27	Male	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
206	Kandan	40	Male	M	B Com	Pvt	-	-	-	-	Neg	-	-	-	-	-

207	Siva	43	Male	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-
208	Munusamy	33	Male	M	-	Auto driver	-	-	-	-	Neg	-	-	-	-	-
209	Prasad	31	M ale	M	-	UE	-	-	-	-	Neg	-	-	-	-	-
210	Karthik	28	M ale	UM	BE	Pvt	-	-	-	-	Neg	-	-	-	-	-
211	Bakianathan	46	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
212	Senthilnathan	31	Male	M	MBA	Pvt	-	-	-	-	Neg	-	-	-	-	-
213	Vasanth	29	Male	UM	BSc	Pvt	-	-	-	-	Neg	-	-	-	-	-
214	Karthikeyan	29	Male	UM	5th	UE	-	-	-	-	Neg	-	-	-	-	-
215	Munusamy	50	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
216	Rajavel	21	Male	UM	BCom	Student	-	-	-	-	Neg	-	-	-	-	-
217	Kumar	42	Male	M	3rd	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
218	Vivek	25	Male	UM	10th	Painter	-	-	-	-	Neg	-	-	-	-	-
219	Jeganathan	24	Male	UM	MA	UE	-	-	-	-	Neg	-	-	-	-	-
220	Suresh	26	M ale	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
221	Mahendran	28	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
222	Nagarajan	37	Male	M	-	UE	-	-	-	-	Neg	-	-	-	-	-
223	Kapildev	27	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
224	Prabahar	26	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
225	Senthurvasan	28	M ale	M	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
226	Bharathi	30	Male	UM	12 th	UE	-	-	-	-	Neg	-	-	-	-	-
227	Sarathchandar	27	M ale	UM	12th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
228	Vijaya kumar	47	M ale	UM	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
229	Raviraj	25	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
230	Ponvelu	32	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
231	Thangamani	39	Male	UM	BA	Pvt	-	-	-	-	Neg	-	-	-	-	-
232	Muthukumar	32	Male	UM	5th	UE	-	-	-	-	Neg	-	-	-	-	-
233	Chiitibabu	26	Male	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
234	Balakumar	23	Male	UM	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
235	Keerthivasan	29	Male	UM	-	Auto driver	-	-	-	-	Neg	-	-	-	-	-
236	Jehan	39	Male	M	B	Pvt	-	-	-	-	Neg	-	-	-	-	-

					Com											
237	Sivaraj	40	M ale	M	12th	Security	-	-	-	-	Neg	-	-	-	-	-
238	Gurumani	34	Male	M	-	Auto driver	-	-	-	-	Neg	-	-	-	-	-
239	Jeevanantham	44	Male	M	7th	UE	-	-	-	-	Neg	-	-	-	-	-
240	Kathiravan	26	Male	UM	BA	Electrician	-	-	-	-	Neg	-	-	-	-	-
241	Rakesh	35	Male	UM	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
242	Sivakumar	29	Male	UM	9th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
243	Dhanarajan	48	M ale	M	9th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
244	Ganeshkumar	25	Male	UM	B Sc	Pvt	-	-	-	-	Neg	-	-	-	-	-
245	Perumal	31	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
246	Shankar	22	Male	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-
247	Manikam	29	M ale	UM	12th	Electrician	-	-	-	-	Neg	-	-	-	-	-
248	Nandha	28	Male	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
249	Muthaiah	32	M ale	UM	4th	Manual labourer	-	-	Latent	-	Neg	-	+	+	+	+
250	Kannan	27	M ale	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
251	Mahesh	28	M ale	UM	B Sc	Pvt	-	-	-	-	Neg	-	-	-	-	-
252	Rajesh	27	Male	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
253	Chandran	28	M ale	UM	10th	Bus conductor	-	-	-	-	Neg	-	-	-	-	-
254	Anbuchelvan	31	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
255	Surendar	28	M ale	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
256	Raman	30	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
257	Sampath	28	M ale	UM	12th	Salesman	-	-	-	-	Neg	-	-	-	-	-
258	Selvakumar	37	M ale	M	-	Auto driver	-	-	-	-	Neg	-	-	-	-	-
259	Arul kumar	24	M ale	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
260	Rajkumar	26	M ale	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
261	Murali	24	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
262	Josh	25	Male	UM	6th	UE	-	-	-	-	Neg	-	-	-	-	-
263	Rakesh	27	M ale	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
264	Jai ganesh	27	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
265	Logaraj	29	M ale	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
266	Karthik	32	Male	UM	BA	Security	-	-	-	-	Neg	-	-	-	-	-

267	Suresh	27	M ale	UM	12th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
268	Gobinath	42	M ale	UM	-	Taxi driver	-	-	-	-	Neg	-	-	-	-	-
269	Karthick	25	M ale	UM	12th	Pvt	-	-	-	-	Neg	-	-	-	-	-
270	Ranjith	27	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
271	Godwin	37	Male	UM	BA	Pvt	-	-	-	-	Neg	-	-	-	-	-
272	Arun kumar	31	Male	UM	10th	UE	-	-	-	-	Neg	-	-	-	-	-
273	Sabapathy	26	Male	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
274	Giridharan	36	Male	UM	12th	security	-	-	-	-	Neg	-	-	-	-	-
275	Mahesh	28	Male	UM	-	Pvt	-	-	-	-	Neg	-	-	-	-	-
276	Packiaraj	39	Male	M	B Com	Pvt	-	-	-	-	Neg	-	-	-	-	-
277	Sivaganesh	40	M ale	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-
278	Kuppusamy	31	Male	M	-	Auto driver	-	-	-	-	Neg	-	-	-	-	-
279	Rajesh	44	Male	M	7th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
280	Kumar	26	Male	UM	BA	Electrician	-	-	-	-	Neg	-	-	-	-	-
281	Thmabidurai	45	Male	M	5th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
282	Gnanavelu	29	Male	UM	9th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
283	Balamurali	53	M ale	M	9th	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
284	Murugan	25	Male	UM	B Sc	Pvt	-	-	Latent	-	Neg	-	+	+	+	+
285	Thamim	30	M ale	UM	12th	LIC agent	-	-	-	-	Neg	-	-	-	-	-
286	Eswaran	26	Male	M	12th	UE	-	-	-	-	Neg	-	-	-	-	-
287	Shah jahan	24	M ale	UM	12th	pvt	-	-	-	-	Neg	-	-	-	-	-
288	Ratheesh	28	Male	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
289	Sunilkumar	24	M ale	UM	B Sc	pvt	-	-	-	-	Neg	-	-	-	-	-
290	Raja	26	M ale	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
291	Rithikesh	26	M ale	UM	B Sc	Pvt	-	-	-	-	Neg	-	-	-	-	-
292	Rubesh	25	Male	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
293	Praveen	31	M ale	UM	10th	Truck driver	-	-	-	-	Neg	-	-	-	-	-
294	Rajkumar	42	M ale	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
295	Mahesh babu	36	M ale	M	10th	Taxi driver	-	-	-	-	Neg	-	-	-	-	-
296	Kavinraj	30	Male	M	-	UE	-	-	-	-	Neg	-	-	-	-	-

297	Tharun	25	M ale	UM	12th	Auto driver	-	-	-	-	Neg	-	-	-	-	-
298	Balachander	25	M ale	UM	-	Manual labourer	-	-	-	-	Neg	-	+	+	+	+
299	Ruben	29	M ale	UM	12th	UE	-	-	-	-	Neg	-	-	-	-	-
300	Ponnirajan	27	Male	M	-	Manual labourer	-	-	-	-	Neg	-	-	-	-	-
301	Meenakshi	29	Female	M	5th	House wife	-	-	-	-	Neg	-	-	-	-	-
302	Priya	31	Female	UM	10th	House wife	-	-	-	-	Neg	-	-	-	-	-
303	Rizwana	25	Female	M	10th	House wife	-	-	-	-	Neg	DM	-	-	-	-
304	Anuradha	24	Female	UM	5th	Tailor	-	-	-	-	Neg	-	-	-	-	-
305	Tamilvani	20	Female	UM	-	House wife	-	-	-	-	Neg	-	-	-	-	-
306	Sundari	27	Female	M	B Com	House wife	-	-	-	-	Neg	-	-	-	-	-
307	Shantha	40	Female	M	4th	House wife	-	-	-	-	Neg	-	-	-	-	-
308	Kalaiselvi	33	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
309	Venda	34	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
310	Nagarani	26	Female	UM	3rd	House wife	-	-	-	-	Neg	-	-	-	-	-
311	Banu	32	Female	M	7th	Shopkeeper	-	-	-	-	Neg	-	-	-	-	-
312	Nageshwari	24	Female	UM	9th	House wife	-	-	-	-	Neg	-	-	-	-	-
313	Venkatamma	34	Female	M	3rd	House wife	-	-	-	-	Neg	-	-	-	-	-
314	Anitha	25	Female	M	10th	House wife	-	-	-	-	Neg	-	-	-	-	-
315	Suguna	30	Female	M	12th	House wife	-	-	-	-	Neg	-	-	-	-	-
316	Mariammal	26	Female	M	2nd	House wife	-	-	-	-	Neg	-	-	-	-	-
317	Geetha	24	Female	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
318	Kalaivani	31	Female	M	-	House maid	-	-	-	-	Neg	-	-	-	-	-
319	Radhika	24	Female	M	4th	House wife	-	-	-	-	Neg	-	-	-	-	-
320	Alamelu	33	Female	M	-	House maid	-	-	-	-	Neg	-	-	-	-	-
321	Radha	26	Female	M	10th	House wife	-	-	-	-	Neg	-	-	-	-	-
322	Lakshmi	23	Female	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
323	Kala	27	Female	M	3rd	House wife	-	-	-	-	Neg	-	-	-	-	-
324	Jayalakshmi	34	Female	M	-	House wife	-	-	-	-	Neg	TB	-	-	-	-
325	Jothi	22	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
326	Lalitha	27	Female	M	BSc	House wife	-	-	-	-	Neg	-	-	-	-	-

327	Malini	26	Female	M	12th	House maid	-	-	-	-	Neg	-	-	-	-	-
328	Sathya	25	Female	M	10th	House wife	-	-	-	-	Neg	-	-	-	-	-
329	Usharani	27	Female	UM	7th	House wife	-	-	-	-	Neg	-	-	-	-	-
330	Indhumathi	32	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
331	Kumari	39	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
332	Naziya	32	Female	M	-	Tailor	-	-	-	-	Neg	-	-	-	-	-
333	Sindhuja	26	Female	M	10th	House wife	-	-	-	-	Neg	-	-	-	-	-
334	Mahalakshmi	23	Female	UM	BA	House wife	-	-	-	-	Neg	-	-	-	-	-
335	Esther	29	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
336	Vennila	25	Female	M	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
337	Chinnaponnu	40	Female	M	12th	House wife	-	-	-	-	Neg	-	-	-	-	-
338	Rosy	34	Female	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
339	Kanmani	38	Female	M	7th	Agriculture	-	-	-	-	Neg	-	-	-	-	-
340	Chellamal	26	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
341	Laksmi	35	Female	M	5th	House maid	-	-	-	-	Neg	-	-	-	-	-
342	Kanaga	29	Female	UM	-	Pvt	-	-	-	-	Neg	-	-	-	-	-
343	Nithya	33	Female	M	9th	House wife	-	-	-	-	Neg	-	-	-	-	-
344	Maheshwari	25	Female	UM	B Sc	Accountant	-	-	-	-	Neg	-	-	-	-	-
345	Sumathi	31	Female	M	12th	House wife	-	-	-	-	Neg	-	-	-	-	-
346	Radha	22	Female	M	4th	House wife	-	-	-	-	Neg	-	-	-	-	-
347	Padma	29	Female	M	12th	House wife	-	-	-	-	Neg	-	-	-	-	-
348	Sunitha	28	Female	M	10th	House wife	-	-	-	-	Neg	-	-	-	-	-
349	Asmath	32	Female	M	4th	House wife	-	-	-	-	Neg	-	-	-	-	-
350	Priya	37	Female	M	-	House maid	-	-	-	-	Neg	-	-	-	-	-
351	Adilakshmi	26	Female	M	10th	House wife	-	-	Latent	-	Neg	-	+	+	+	+
352	Kanmani	27	Female	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
353	Kalarani	27	Female	M	3rd	House wife	-	-	-	-	Neg	-	-	-	-	-
354	Jayalakshmi	35	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
355	Jothipriya	22	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
356	Meena	27	Female	M	BSc	House wife	-	-	-	-	Neg	-	-	-	-	-
357	Shalini	42	Female	M	12th	House maid	-	-	-	-	Neg	-	-	-	-	-

358	Sathyapriya	32	Female	M	10th	House wife	-	-	-	-	Neg	-	-	-	-	-
359	Kumari	30	Female	UM	7th	Pvt	-	-	-	-	Neg	-	-	-	+	-
360	Indhu	32	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
361	Banupriya	39	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
362	Kavitha	32	Female	M	-	Tailor	-	-	-	-	Neg	-	-	-	-	-
363	Chitra	26	Female	UM	10th	Pvt	-	-	-	-	Neg	-	-	-	-	-
364	Lakshmi	21	Female	UM	BA	Student	-	-	-	-	Neg	-	-	-	-	-
365	Josphine	29	Female	M	-	House wife	-	-	Latent	-	Neg	-	+	+	+	+
366	Malar	39	Female	M	10th	Pvt	-	-	Latent	-	Neg	-	+	+	-	+
367	Chinthamani	43	Female	M	12th	House wife	-	-	-	-	Neg	-	-	-	-	-
368	Fathima	34	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
369	Roja	35	Female	M	7th	Agriculture	-	-	-	-	Neg	-	-	-	-	-
370	Ashwini	23	Female	M	-	House wife	-	-	Latent	-	Neg	-	-	-	-	+
371	Lavanya	35	Female	M	5th	House maid	-	-	-	-	Neg	-	-	-	-	-
372	Kanchana	29	Female	UM	-	Pvt	-	-	-	-	Neg	-	-	-	-	-
373	Nithya	35	Female	M	9th	House wife	-	-	-	-	Neg	-	-	-	-	-
374	Kavipriya	25	Female	UM	B com	Accountant	-	-	-	-	Neg	-	-	-	-	-
375	Lakshmi	31	Female	M	12th	House wife	-	-	-	-	Neg	-	-	-	-	-
376	Ramya	22	Female	UM	4th	UE	-	-	-	-	Neg	-	-	-	-	-
377	Kayalvizhi	25	Female	M	12th	House wife	-	-	-	-	Neg	-	-	-	-	-
378	Saranya	28	Female	M	10th	House wife	-	-	-	-	Neg	-	-	-	-	-
379	Aysha	32	Female	M	4th	House wife	-	-	-	-	Neg	-	-	-	-	-
380	Rajeshwari	24	Female	M	-	Housewife	-	-	Latent	-	Neg	-	+	-	+	+
381	Meenakshi	29	Female	M	5th	House wife	-	-	-	-	Neg	-	+	+	+	-
382	Priya	31	Female	UM	10th	UE	-	-	-	-	Neg	-	-	-	-	-
383	Lavanya	-	-	-	-	House wife	-	-	-	-	Neg	-	-	-	-	-
384	Bindhu	24	Female	UM	5th	Tailor	-	-	-	-	Neg	-	-	-	-	-
385	Selvi	20	Female	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
386	Pachaiammal	27	Female	M	B Com	House wife	-	-	-	-	Neg	-	-	-	-	-

387	Shanthi	40	Female	M	4th	House wife	-	-	-	-	Neg	-	-	-	-	-
388	Tamilselvi	33	Female	M	-	House wife	-	-	-	-	Neg	-	-	-	-	-
389	Veena	23	Female	UM	-	UE	-	-	Latent	-	Neg	-	+	-	+	+
390	Nagarani	26	Female	UM	3rd	House wife	-	-	-	-	Neg	-	-	-	-	-
391	Banu	32	Female	M	7th	Shopkeeper	-	-	-	-	Neg	-	-	-	-	-
392	Eswari	24	Female	UM	9th	UE	-	-	-	-	Neg	-	-	+	-	-
393	Usha	34	Female	M	3rd	House wife	-	-	-	-	Neg	-	-	-	-	-
394	Anitha	25	Female	M	10th	House wife	-	-	-	-	Neg	-	-	-	-	-
395	Suguna	30	Female	M	12th	House wife	-	-	-	-	Neg	-	-	-	-	-
396	Thenmozhi	23	Female	UM	B Sc	Pvt	-	-	-	-	Neg	-	-	-	-	-
397	Seetha	24	Female	UM	-	UE	-	-	-	-	Neg	-	-	-	-	-
398	Kanimozhi	30	Female	M	-	House maid	-	-	-	-	Neg	-	-	-	-	-
399	Krithika	32	Female	M	4th	House wife	-	-	-	-	Neg	-	-	-	-	-
400	Roja	32	Female	M	6th	House wife	-	-	-	-	Neg	-	-	-	-	-