REPRODUCTIVE TRACT INFECTIONS AND TREATMENT SEEKING BEHAVIOUR IN TAMIL NADU: LEVELS, PATTERNS, AND DIFFERENTIALS

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CERTIFICATE

I, C. Ramesh, certify that the dissertation entitled "REPRODUCTIVE TRACT INFECTIONS AND TREATMENT SEEKING BEHAVIOUR IN TAMIL NADU: LEVELS, PATTERNS AND DIFFERENTIALS" for the degree of MASTER OF PHILOSOPHY is my bonafide work and may be placed before the examiners for evaluation.

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*Dedicated
To
My Brother and Sister*

ACKNOWLEDGEMENTS

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LIST OF ACRONYMS

AIDS: Acquired Immune Deficiency Syndrome

HIV: Human Immunodeficiency Virus

ICPD: International Conference on Population and Development

IIPS: International Institute for Population Science

IUD: Inter Uterine Device

LAP: Lower Abdominal Pain

LGTI: Lower Genital Tract Infection

MCH-FP: Maternal and Child Health –Family Planning

NACO: National AIDS Control Organization

NFHS: National Family Health Survey

NPP: National Population Policy

OBC: Other Backward Caste

PHC: Primary Health Center

PID: Pelvic Inflammatory Diseases

PPC: Post Partum Center

RCH: Reproductive and Child Health

RCH –RHS: Reproductive and Child Health-Rapid Household Survey

RH: Reproductive Health

RM: Reproductive Morbidity

RTI: Reproductive Tract Infection

SC: Scheduled Caste

ST: Scheduled Tribe

STD: Sexually Transmitted Diseases

STI: Sexually Transmitted Infection

TNVHA: Tamil Nadu Voluntary Health Association

UTI: Urinary Tract Infection

UVP: Utero Vaginal Prolepses

VVC: Vulvo Vaginal Candidiasis

Chapter-1

Introduction

CHAPTER-1
INTRODUCTION

1.1 INTRODUCTION

In the recent years, there has been growing concern about women's empowerment and health issues, specially, women's reproductive health. This has been expressed by major international organizations like the United Nations especially for developing countries. In industrialized countries, gynaecological morbidity is frequently diagnosed and treated at the beginning stage, but in many developing countries access to diagnosis and treatment is very poor (Althaus, 1991). Generally, the high prevalence rates and mortality rates in the developing countries are associated with poverty, illiteracy, malnutrition, lack of quality care and lack of good sanitation (Wasserheit, 1989).

The International Conference on Population and Development (ICPD) held in Cairo during 5th to 13th September 1994 came up with a Programme of Action (POA). It has mainly focused on population polices such as women's reproductive health and rights. The ICPD recognized issues of reproductive health and rights for all couple's and individual's physical and mental well-being. Reproductive health is defined as *"a state of complete physical and mental, and social well-being and not merely absence of diseases or infirmity in all matters relating to reproductive system and to its functions and processes"* (United Nations, 1994). The above definition of reproductive health means that good quality of care and services need to be provided towards well-being through preventing and curing reproductive health problems. Reproductive health also implies that people can reproduce and regulate their fertility, women can go through pregnancy and childbirth safely, and couples are able to have sexual relations without any fear of pregnancy and diseases (Pachuari, 1991).

The ICPD Programme of Action states that all the countries should have primary health care and good reproductive health care infrastructure for all individuals by 2015 (UNFPA, 1995). Reproductive health information and services are also to be provided to adolescents that can help them understand their reproductive behaviour, protect from unwanted pregnancy, reproductive tract infection, sexually transmitted infection (STI), and risk of infertility (Johnson, 1995).

After the ICPD, the Family Planning Programmes (FPP) of the Government of India shifted emphasis to the Reproductive and Child Health (RCH) Programmes beginning October 1997

and this is being implemented through the networks of health centers all over the country. It has aimed at providing integrated health care services to women in the reproductive age group and to children as well as men (Ramachandran and Visaria, 1997). The Reproductive and Child Health Programme differs from the other programmes such as Family Planning Programme, Maternal and Child Health Programme (MCH) and Child Survival and Safe Motherhood (CSSM) Programme. All the programmes are focused on specific aspects of women's reproductive health. For example, the family planning programme was primarily concentrated on providing information and services on contraceptive methods for lowering fertility. The MCH programme was mainly focused on promotion of mother's health and child health for reducing maternal and infant mortality and the CSSM programme focused on the child and maternal health, especially antenatal, neonatal and post-natal care and safe delivery.

The Reproductive and Child Health Programme components are as follows: (i) effective maternal and child health care, (ii) increased access to contraceptive method use, (iii) safe management of unwanted pregnancy, (iv) nutritional services to vulnerable groups, (v) prevention and treatment for RTI/STI, (vi) reproductive health services for adolescents, (vii) prevention and treatment for gynaecological problems, (viii) screening and treatment of cancers especially that of uterus, cervix and breast (Ramachandran, 2002). Since the 1960s, the national programme has provided services for the prevention and control of STIs, but questions have been raised about the quality of care and socially acceptability (Mamdani, 1999). The lack of reproductive health services and poor medical care poses high risk of RTI for both sexes from sexual activity. Generally, women are more vulnerable to reproductive tract infection because of gender power imbalance (Antrobus *et al*, 1994).

Reproductive morbidity (RM) is defined as "*any morbidity or dysfunction of the reproductive tract or any morbidity which is a consequence of reproductive behaviour including pregnancy, abortions, childbirths, or sexual behaviour*" (World Health Organization, 1990). Reproductive morbidity refers to physical conditions of being unwell related to the reproductive development during the childbearing and outside of childbearing period (Zurayk *et al*, 1993, Oomman, 2000a). Reproductive morbidity has been divided into three broad categories viz: *Obstetric morbidity, Gynaecological morbidity and Contraceptive morbidity*. Obstetric morbidity is known as sickness related to pregnancy episode, which include pregnancy, delivery, and post delivery complications. Gynaecological morbidity refers to physical illness not related to pregnancy, abortion or childbearing but which may be related to

sexual behaviour. It includes RTI, endocrinal disorders, infertility, gynaecological cancers, congenital malformations, injuries, sexual dysfunction, menopausal symptoms and others (Younis *et al*, 1993, Bhatia *et al*, 1997, and Van de wijgert and Elias, 2003). Contraceptive morbidity refers to health problems due to effect of specific contraceptive methods such as intrauterine devices (IUD) insertion and unhygienic sterilization etc. Obstetric morbidity and contraceptive morbidity are not discussed in detail in this dissertation. It has mainly focused on gynaecological morbidity especially reproductive tract infections.

1.2 REPRODUCTIVE TRACT INFECTIONS

1.2.1 Concept

Reproductive tract infections are infections in the reproductive (genital) tract. The concept of reproductive tract infection was formulated by International Women's Health Coalition (IWHC) in 1987 (Antrobus *et al*, 1994). RTI refers to infections caused by overgrowth of organisms (bacterial, virus and protozoa) that normally appear in the genital tract (Wasserheirt, 1989). It originates in the lower tract (external genital, vagina, and cervix). RTI has often great impact on woman's status within the family and her community (Faundes, 1994) and Wasserheirt, 1989).

1.2.2 Types of Reproductive Tract Infections

Reproductive tract infections are divided into three types of infection according to the mode of transmission (see figure 1.1) that affect reproductive tract (genital tract) (Antrobus *et al*, 1994)

- Endogenous infection
- Iatrogenic infection and
- Sexually transmitted infection.

Endogenous Infections: These are caused by overgrowth of organism normally present in the genital tract (reproductive tract) such as bacterial vaginosis, candidiasis and others. These infections can appear without any symptoms. Endogenous infections are curable with appropriate medical services. If the person having endogenous infection does not seek medical help, severity could increase and can reach the Human Immune Deficiency (HIV) stage.

Iatrogenic Infections: These are caused by the introduction of microorganisms into the reproductive tract through medical procedures such as abortion, IUD insertion and vaginal examination etc carried without hygienic conditions. Iatrogenic infections are preventable and curable by good quality medical services.

Sexually Transmitted Infections: These are caused by bacteria, virus, parasitic and other microorganisms (communicable diseases) that are transmitted mainly through sexual contact or sexual intercourse, and also can enter a person's utethra, vagina, and mouth or anus, for instance gonorrhoea, genital ulcers, genital warts, abdominal genital tract discharge, pelvic pain, chlamydia, trichomoniasis, syphilis, HIV and chancorid. Some of the STIs do not have any symptoms. STIs caused by bacterial and protozal agents are curable by appropriate treatment, but STIs caused by viruses are not curable at present because there is no good medicine for that.

In addition, according to the site of the infection, reproductive tract infections are classified into two types of infection (Zurayk *et al*, 1993)

- Lower reproductive tract infection (LRTI) and
- Upper reproductive tract infection (URTI).

Lower Reproductive Tract Infection: Lower reproductive tract infections are caused by inflammation of external genital areas appearing from vagina and cervix. The major symptoms are discharge and genital ulceration. Lower reproductive tract infections are curable by appropriate medicine.

Upper Reproductive Tract Infection: Upper reproductive tract infections are also called pelvic inflammatory disease (PID). Upper reproductive tract infections can occur when a person does not seek any treatment for lower tract infection such as bacterial vaginosis, gonorrhea and Chlamydia. Upper reproductive tract infections can appear in the uterus, fallopian tubes and ovaries and may also occur without any symptoms. These infections are facilitated by IUD insertion, unsafe abortion and childbirth. The major symptoms are discharge and lower abdominal pain.

Figure 1.1 Types of Reproductive Tract Infections

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                    ┌──────────────────────────────────────────┐
                    │ Reproductive Tract infection             │
                    │ Upper: uterus, fallopian tubes, ovaries  │
                    │ Lower: vulva, vagina, Cervix             │
                    └──────────────────────────────────────────┘
                                     │
              ┌──────────────────────┼──────────────────────────┐
              ▼                      ▼                           ▼
   ┌──────────────────┐   ┌──────────────────┐   ┌──────────────────────────┐
   │ Endogenous       │   │ Iatrogenic       │   │ Sexually transmitted     │
   │ infection        │   │ infection        │   │ infection                │
   └──────────────────┘   └──────────────────┘   └──────────────────────────┘
            │                                               │
            ├──────► ┌──────────────┐          ├──────► ┌──────────────┐
            │        │ Candidiasis  │          │        │ Bacterial    │
            │        └──────────────┘          │        └──────────────┘
            │                                  │
            ├──────► ┌──────────────┐          ├──────► ┌──────────────┐
            │        │ Bacterial    │          │        │ Viral        │
            │        │ vaginosis    │          │        └──────────────┘
            │        └──────────────┘          │
            │                                  ├──────► ┌──────────────┐
            │                                  │        │ Parasitic    │
            │                                  │        └──────────────┘
            └──────► ┌──────────────┐          │
                     │ Others       │          └──────► ┌──────────────┐
                     └──────────────┘                   │ Others       │
                                                        └──────────────┘
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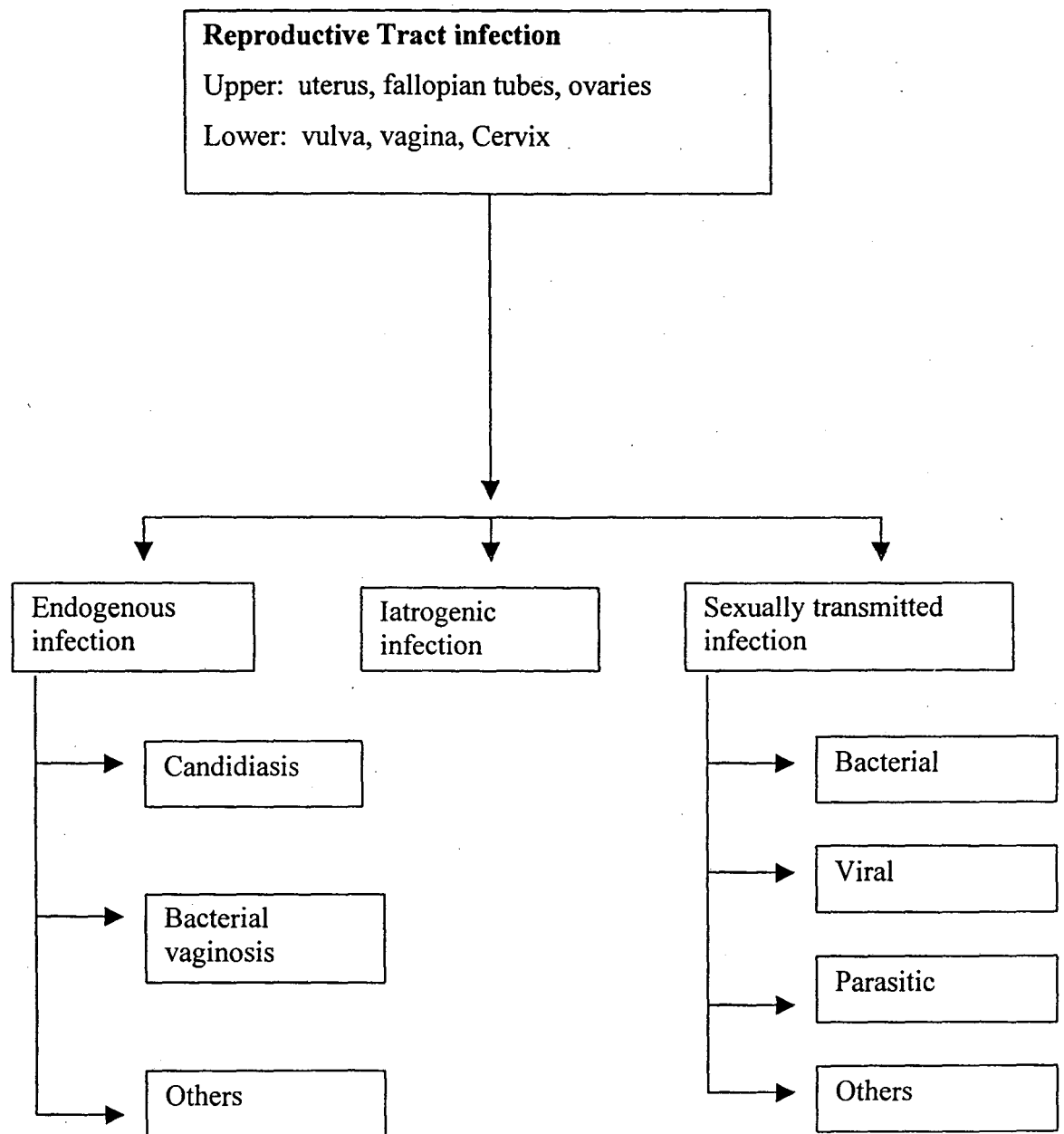
Source: Van de wijgert and Elias, 2003

1.3 MEASUREMENT OF REPRODUCTIVE TRACT INFECTION

Several social scientists, medical scientists and researchers have measured the prevalence reproductive tract infection and other related morbidity through three types of methods (Zurayk *et al*, 1993, and Zurayk *et al*, 1995)

- Self reported symptoms
- Clinical examination (Physical examination) and
- Laboratory test.

All the three types cannot apply to all the diseases. However, some of the diseases may have symptoms that can be easily perceived by women. Self reported symptoms are easily measured through interview questions for collecting information on related reproductive tract infection from respondent. These symptoms are discharge, lower abdominal pain, menstrual problems, problems with intercourse and urinary tract infection etc. Measurement using self reported symptoms may not give accurate results because many women having RTI show no symptom for it and hence these are not reported in prevalence rates. On the other hand, physical examination (clinical examination) and laboratory test are not easy to conduct in the community because medical instruments are very expensive and such examinations need medical professionals. Hence, though the latter methods give accurate results, these cannot be used in most surveys.

The current study provides details on prevalence rates in Tamil Nadu. An understanding of the relationships between prevalence rates and socio-economic and demographic factors can provide valuable information for social scientists, policy makers and health professionals who are concerned with improving the quality of life of the women in India.

1.4 THE STUDY AREA

Tamil Nadu is one of the largest states in India (figure 1.2). The population of Tamil Nadu was 62.11 millions at the time of the 2001 census accounting for 6.05 percent of the total population in India (India, Registrar General, 2001). Tamil Nadu is one of developed states in terms of demographic characteristics. According to the SRS (Sample Registration Systems) estimates, Tamil Nadu experienced gradual decline in fertility during 1971 -2002. The crude birth rate fell from 31.4 in 1971 to 19.0 in 2000 (India, Registrar General, 1999, 2002b). The decline has been rapid especially in the 1980s. The decadal population growth rate gradually declined from 17.5 percent in 1971-81 to 15.3 percent in 1981-91 and 11.1 percent in 1991-

2001. There has been a remarkable improvement in couple protection rate in Tamil Nadu, from 13.3 percent in 1971 to 50.8 percent in 1998 (Ministry of Health and Family Welfare, 1999).

According to the 2001 census, Tamil Nadu has become one of the most urbanized states in the country. The total population living in urban areas increased from 33 percent in 1981 to 34 percent in 1991 and then rapidly increased to 43.8 percent in 2001. The level of urbanization is much higher in Tamil Nadu than the all India level, which is 28.1 percent (India, Registrar General, 2002a).

Educationally, Tamil Nadu is one of the more developed states in India. According to the 2001 census, the literacy rate among the population age seven and above was 73.4 percent in the state compared with 65.3 percent in India. The literacy rates were 82.3 percent for males and 64.5 for females in Tamil Nadu compared to 75.8 percent of males and 54.1 percent for females in the country (India, Registrar General, 2001).

The planning commission estimated that in 1999-2000 population living the below poverty line were 20.5 percent in rural areas and 22.2 percent in urban areas in Tamil Nadu (Government of India, 2002).

Tamil Nadu has very good health infrastructure in rural and urban areas. The Infant Mortality Rate (IMR) is 49 per 1000 live births in Tamil Nadu, much lower compared to the all India level of 72 per 1000 live births. The IMR in Tamil Nadu has gradually declined from 113 per 1000 live births in 1971 to 49 per 1000 live births in 2002. The Crude Death Rate (CDR) also declined from 14.4 per 1000 population in 1971 to 7.6 in 2002 (India, Registrar General, 1999, 2002b).

Figure 1.2

STUDY AREA: TAMIL NADU

Tamil Nadu

1.5 OBJECTIVES

The broad objective of the study is to understand the various factors affecting women's reproductive health and treatment seeking behaviour in Tamil Nadu. The specific objectives are:

1. To examine inter-state variations in the prevalence of reproductive tract infections and treatment seeking behaviour in India.
2. To examine the prevalence of reproductive tract infections and treatment seeking behaviour in Tamil Nadu.
3. To study inter-district variations in the prevalence of reproductive tract infections and treatment seeking behaviour in Tamil Nadu.
4. To examine differentials by the selected social-economic and demographic factors in the prevalence of reproductive tract infections and treatment seeking behaviour in Tamil Nadu.
5. To examine the determinants of reproductive tract infections and treatment seeking behaviour in the state.

1.6 ORGANIZATION OF THE DISSERTATION

The dissertation is divided into seven chapters. **Chapter-I** gives an introduction. It also includes concept, types of reproductive tract infection, description about study area and objectives of the study. **Chapter- II** presents the literature and related findings in earlier studies. **Chapter -III** discusses the conceptual framework, methodology, data sources, hypothesis and variables. **Chapter-IV** provides the prevalence of reproductive tract infections and treatment seeking behaviour at the state level in India and also looks at spatial variations. A comparison between two major sources of data, RCH-RHS and NFHS-2, data is done. **Chapter-V** presents the prevalence of reproductive tract infections and treatment seeking behaviour at district levels in the state of Tamil Nadu. It also tries to see the regional pattern. **Chapter-VI** deals with the issue of socio economic and demographic differentials in reproductive tract infections and treatment seeking behaviour. **Chapter-VII** presents conclusions on the basis of analysis.

Chapter-2

Review of Literature

CHAPTER 2
REVIEW OF LITERATURE

Researchers have identified a number of factors that can affect women's reproductive health and, in particular, the prevalence of reproductive tract infection. Many researchers suggest that important variables that influence reproductive tract infections are: place of residence, religion, caste, educational level of women, educational level of husband, types of house, age of women, age at first marriage, parity, experience of pregnancy wastage, currently using contraceptive methods, awareness of RTI/STI, husband's awareness of RTI/STI, husband's experience of RTI/STI, husband-wife discussion on reproductive health problems, and perceived quality of care at government health center etc. These variables can be grouped as socio- economic, demographic, and intermediate factors. We briefly examine the findings of various studies primarily in India though a few studies in other countries are also covered.

2.1 STUDIES ON THE PREVALENCE OF REPRODUCTIVE TRACT INFECTIONS BASED ON SELF-REPORTED SYMPTOMS

A large number of studies obtained information on reproductive tract infections solely from self-reported symptoms. In Tamil Nadu, Rangaiyan and Sureender (2000) studied women's perceptions of gynaecological morbidity on the basis of a sample of 484 ever married women. The study was conducted during the first quarter of 1996 and was based on self-reported gynaecological morbidity. One third of women reported any one or more symptoms of gynaecological morbidity, white or colored discharge (25 percent), menstrual problem (12percent), lower abdominal pain and discharge with fever (19 percent), and other infection less than 4 percent. Out of 368 women, 15 percent had treatment. Women having had abortion, sterilization, contraceptive users, and those who had many births reported greater symptoms of gynaecological morbidity. Women's who had sex during menstruation, frequent intercourse and whose husband had extramarital relations reported more symptoms of UTI than other women. Most of the women had used home remedies for treatment of gynaecological problems.

TNVHA, Tamil Nadu, conducted a camp in which they collected information from 413 women on reproductive tract infection symptoms (TNVHA, 1997). Information obtained was based on qualitative research methodologies, such as interviews, focus group discussion, health camp etc. The study observed that the prevalence of reproductive tract infections was 67 percent.

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A study covered 5214 women in the age groups (13-45 years) in rural Pondicherry in 2000 (CSC, 2001). The study was based on self-reported symptoms during the past three months (prior to interview). The prevalence of reproductive tract infection reported was 24 percent, vaginal discharge (70 percent), pelvic inflammatory disease (66 percent), lower abdominal pain (38 percent), itching or ulcers (37 percent) and burning sensation (24 percent). In the age groups 26-35 years the prevalence was very high.

A large-scale study of gynaecological morbidity and its treatment was undertaken in Karnataka in 1993 (Bhatia and Cleland, 1995). The sample included 3600 women, younger than 35 years and having at least one child younger than five years. Information was collected through structured interviews. The study found that one third of women reported symptoms of any one reproductive health problems at the time of survey. The most common infection was lower reproductive tract infection (17 percent) and pelvic inflammatory disease (PID). Nearly 20-25 percent of women reported their symptoms after one year. The proportion who had sought treatment or consultation ranged from 43-55 percent. Thirty percent of women had received treatment from government health facilities. Women with low level of economic status were more likely to report more symptoms. Urban and rural differences were insignificant but Hindus were less likely to report pelvic inflammatory diseases than others. The prevalence was greater among women who had accepted permanent contraception (sterilization) than others.

A large-scale study of violence against women and self-reported reproductive morbidity was undertaken in Andhra Pradesh in November 1998- March 1999 (Rangaiyan et al, 2003), that covered a sample of 3695 currently married women in the age groups 15-49 years. The study obtained data on self-reported symptoms of reproductive morbidity in the three months preceding the survey. Nearly half of the women reported any one or more symptoms of reproductive morbidity. The authors concluded that the prevalence of any one or more symptoms is high among women who are young, illiterate, Muslims, belonging to ST (scheduled tribe), with low standard of living, without a child, and having experience of abortion and violence.

Joshi et al (2000), on the basis of a survey of 122 women in rural Gujarat in the reproductive age groups, studied gynaecological morbidity. The study based on ethnographic surveys revealed that 45 percent of women reported white discharge; urinary tract infection was

reported by 39 percent, menstrual problems reported by 17 percent and other by less than 5 percent. Among women with reproductive health problems, only 24 percent had sought treatment.

In Mumbai, Ramasubban and Risyasringa (2000) studied treatment for reproductive morbidity on the basis of a sample of 66 ever married women. The study was based on self-reported morbidity. It was found that one third of women reported menstrual cycle problems. The most common complaints of irregular periods and white discharge were reported by 50 percent, and one third of women reported painful intercourse. Only about 40 percent had medical care for menstrual problem and 15 percent had treatment for painful intercourse but were not satisfied with it. The awareness of treatment is very poor in this study area.

Jaswal (2000) investigated gynaecological morbidity of urban slum women in Mumbai. The study covered 660 ever-married women in the reproductive age groups 16-45 years, and based on the interviews it was found that 33 percent of women had reproductive tract infections, 27 percent had menstrual problems, 14 percent urinary tract infections (UTI) and less than 12 percent had other reproductive health problems. The age group 26-35 experienced relatively high prevalence of reproductive morbidity. But the prevalence did not differ notably by religion and ethnic groups. Women were also asked about their perception of cause of morbidity and it was observed that white discharge was perceived as a result of frequent intercourse and lower abdominal pain as a result of heavy work.

A study was carried out in urban slum of South Delhi among 201 married women age groups 15-49 years on perception and practices regarding RTI/STI (Roy and Bhattacharya, 2002). The study was based on self-reported symptoms of reproductive morbidity. It found that nearly half of women were aware of RTI/STI, 43 percent of women reported symptom of abnormal vaginal discharge, 21 percent of women had treatment for RTI/STI, and 14 percent had effective treatment. The authors mentioned that knowledge and attitude are likely to influence treatment seeking behaviour for RTI/STI.

A large-scale study on vaginal discharge was undertaken in Chandigarh in 1992 (Palai et al, 1994). The sample included 1682 women of the reproductive age groups 15-44 years, and the information was obtained through self-reporting by women. The prevalence of vaginal discharge was found to be 22 percent. Out of 164 women, 45 percent had received treatment.

The remaining did not take any treatment, because of shyness, not being interested, not aware of infection and high cost. Seventy five percent of those who sought treatment did so after one year and 11 percent of husbands were advised to take treatment.

2.2 STUDIES ON THE PREVALENCE OF REPRODUCTIVE TRACT INFECTIONS BASED ON SELF-REPORTED SYMPTOMS AND CLINICAL EXAMINATION

In some studies, clinical examinations were used to diagnose reproductive tract infections. In Kerala, Shenoy *et al* (1997) studied reproductive health and gynaecological morbidity on the basis of a sample of 1383 women in the age group 13-68 years. All the information was obtained through structural interviews and clinical examinations. The study found that prevalence of lower abdominal pain was 28 percent, back pain was 51 percent, vaginal discharge was 27 percent and vaginal itching was 11 percent. Clinical diagnosis for vaginitis revealed that vaginal discharge had 75 percent of sensitivity and 76 percent of specificity. The authors mention that all the indicators are significantly higher in the age group of 20-39 years. Women who had parity more than 3 had high risk of morbidity compared to those at lower parties.

In Tamil Nadu, Ravindran *et al* (2000) studied women's experience of utero-vaginal prolapse (UVP) on the basis of a sample of 37 poor women. The study used interviews and clinical examination. The study revealed that the prevalence of utero-vaginal prolapses was 87 percent. Among those with such a condition, 50 percent had cervical erosion, 19 percent had white discharge or itching, 14 percent had backache, 13 percent had acute lower abdominal pain and urinary tract infection and 10 percent had heavy menstrual bleeding. Half of women reported did not take any treatment. The causes include lack of time, non-approval by husband, long time wait for treatment, ineffective treatment, fear of surgery and high monetary cost. Half of women were suffering for more than ten years because they are disadvantaged socially, economically and physically.

Visaria (1997), on the basis of a survey of 800 women in rural Gujarat in the age group 16-60 years, studied gynaecological morbidity. The study was based on self-reported morbidity and clinical examination. Seventy five percent of women reported problems with reproductive functions (including backache, vaginal discharge, painful intercourse, and itching in a vaginal area). Backache before or during menses was reported by 52 percent, vaginal discharge reported by 36 percent and 14 percent reported painful sexual intercourse and itching

sensation in the vaginal area. The majority of women discussed their problems with husband. Among those who had reproductive health problems, nearly 90 percent did not take any treatment, because of high cost of treatment and non-availability of any reproductive treatment at government hospital. Although not statistically significant, higher proportion of scheduled caste women discussed reproductive health problems with other members of household than other Hindu or Muslim women. Treatment seeking behavior did not indicate any relationship with women's education.

A study of reproductive tract infection was undertaken in the context of family planning programme in Baroda (Maitra and Maya, 1996). The study sample was 671 women in SSG medical college hospital, and was based on clinical examination. The study revealed that 85 percent reported reproductive tract infections, 52 percent of women reported vaginal infections, 19 percent reported pelvic inflammatory diseases and 14 percent cervical infections. Overall 98 percent of female users of contraceptive methods reported reproductive tract infections as compared to 30 percent of non-users. Among women who were users of contraceptive methods, 68 percent had vaginal infection and 24 percent had pelvic inflammatory diseases. The prevalence of reproductive tract infection was found to be more common among users of contraceptive method.

In Rajasthan, Oomman (2000b) studied gynaecological morbidity on the basis of a sample of 250 women, using structural interviews and clinical examination. The period of study was May 1993 to April 1994. The study found that 48 percent of women reported menstrual problems and 20 percent reported prolapse. The causes were weakness, abortion, problems of delivery and wearing a Copper-T. The economically poor condition was considered the significant cause of illness. Majority of the women did not seek any treatment for vaginal discharge and other problems.

A survey of 200 ever-married women age groups 15-45 years in Udaipur, Rajasthan, was based on self-reported morbidity and clinical examinations (Bansal et al, 2001). The study found the prevalence of reproductive tract infection as reported was 81 percent, 26 percent had bacterial vaginitis, 6 percent had candidial vaginitis and 5 percent had trichomonal vaginitis. Eighty one percent did not take any treatment for reproductive tract infection, because of shyness and ignorance of the infection. The Muslims, illiterate and intrauterine devices user women experienced relatively high prevalence of reproductive tract infection.

A community study of gynaecological morbidity was undertaken in four different sites in India, 1988-1991 (Latha *et al*, 1997). The sample covered 4127 ever-married women in the reproductive age groups 13-50 years. The study was based on self- reported morbidity and clinical examination. The study showed that the prevalence of any gynaecological problem was 64-84 percent. The prevalence of menstrual problems was high 34-59 percent, excessive discharge 22-57 percent and low backache 5-39 percent. The clinical examination revealed that 26-74 percent of women had one or more gynaecological morbidity, cervicitis 15-40 percent, genital prolepses 17-18 percent, pelvic inflammatory diseases 1-17 percent, and vaginitis 4-16 percent.

A large-scale study of reproductive morbidity was undertaken in Calcutta in 1999 (Sadhu *et al*, 2001). The study sample was 2658 ever-married women in the reproductive age group of 15-49 years. The study based on self-reported morbidity experience rather than clinical examination or test. The study found that the prevalence of menstruation problems was reported by 39 percent, pain in lower abdomen 3-5 days before menstruation reported by 29 percent, excessive bleeding reported by 16 percent. The study reveals that women who were illiterate and had parity more than 3 were more likely to report gynaecological problems.

A study in Maharashtra focused on the gynaecological morbidity (Char and Vaidya, 2000). The sample covered 511 currently married women over the period March 1997- June 1998. The study was based on interviews and clinical examination. The study found that the prevalence of at least one problem of gynaecological morbidity was 37 percent, 17 percent reported painful periods, 13 percent reported menorrhagia, 12 percent irregular periods and 7 percent reported abnormal discharge. The clinical results revealed that 29 percent of women had gynaecological morbidity, 26 percent had vaginal prolapse, 20 percent had abnormal discharge, 11 percent had vulva vagina abnormal (VVA), and 9 percent had syphilis and bacterial vaginosis. The authors mention that self-reported symptoms showed a higher prevalence than clinical and laboratory result.

In Haryana, Bali and Bhujwala, (1969) studied a sample of 105 currently married women in the age groups 18-45 years. The study based on interviews and clinical examinations, found that the prevalence of vaginal discharge reported was 49 percent. But clinical results revealed that of the symptomatic women 65 percent had vaginal discharge. The scheduled caste women

and those with low level of personal hygiene, husband's occupation and poor economic status had relatively high prevalence of morbidity.

A recent study about the treatment seeking behaviour for reproductive tract infection in rural women in Himalayas covered a sample of 1577 women and was based on interviews and clinical examinations (Gupta *et al*, 2002). The study found that 567 women had symptoms of RTI out of whom, 139 women went for clinical examination. Among these 139 women, bacterial vaginosis was diagnosed for 45 percent, followed by chlamydial cervicitis (38 percent), pelvic inflammatory diseases (36 percent), vaginal candidiasis (9 percent) and trichomoniasis (8 percent). Sixty five percent had treatment for RTI out of which 48 percent had complete relief of symptoms. The authors mentioned that symptomatic treatment is useful for a large number of patients.

Garg *et al* (2001) estimated the prevalence of reproductive tract infection in a slum at Delhi in 2000. The study sample was 231 ever-married women in the reproductive age group 15-49 years, and was based on self-reported morbidity and clinical examinations. Sixty two percent had one or more reproductive health problems in the past six months, low backache was reported by 51 percent, pain during menstruation by 41 percent and vaginal discharge by 32 percent. Of the sample that was subjected to clinical examination, 53 percent had pelvic inflammatory disease, 33 percent had vaginitis and 13 percent had urinary tract infection. Nearly, one third of women had sought reproductive health care. Urinary tract infection, vaginitis and pelvic inflammatory disease showed risk of reproductive morbidity. The study revealed that reproductive morbidity was high, but resort to treatment was very poor.

In Delhi, Mittal *et al* (1994) studied chlmydia trachomatis in female genital tract on the basis of a sample 200 non-pregnant women of reproductive age groups. The study based was on interviews and clinical examination. The entire respondents were women who had registered in a hospital. The study found that the prevalence of symptoms of Lower Genital Tract Infection (LGTI) was 75 percent. Out of 150 women, 70 percent had vaginal discharge, 32 percent pain in lower abdomen, 29 percent cervicitis, 15 percent low backache, 13 percent of cervical erosion, and 12 percent of pruritis. The study found that chlamydia trachomatis was associated with bacterial vaginosis and vaginal discharge.

A study focused on antenatal morbidity in Dakshinpuri slum, Delhi (Mayank *et al*, 2001). The sample covered 1396 pregnant women, and was based on self-reported morbidity and clinical examination. Ninety six percent of women reported at least one symptom of morbidity; urinary tract infection was reported by 26 percent and vaginal discharge by 17 percent. Of the 600 women clinically examined, the prevalence of lower reproductive tract infections (including, trichomoniaisis, candidasis, and bacterial vaginosis) was 35 percent; urinary tract infection was 6 percent. Out of 1396 women, less than 30 percent sought appropriate medical care. The study found that the prevalence of reproductive tract infection as obtained from self-reported symptoms of reproductive tract infection is lower than that ascertained by clinical diagnosis.

Purwar *et al* (2001) investigated bacterial vaginosis among pregnant women of between 12-28 weeks gestation period in Nagpur. The sample covered 1006 pregnant women in the age group 19-31 years. The study utilized interviews and clinical examination and also obtained information on age, parity, last menstrual period dates, medical disorders and last obstetric performance. The study found that the prevalence of physiological discharge was 41 percent, 10 percent had candidiasis, 7 percent had bacterial vaginosis, and 1 percent had trichomoniasis. The prevalence of bacterial vaginosis was 12 percent. It was noted that frequency of intercourse and experience with abortion are factors that highly influence bacterial vaginosis. The authors mention that bacterial vaginosis is common in asymptomatic pregnant women.

In Brazil, Teles *et al* (1997) studied reproductive tract infections among new contraceptive users on the basis of a sample of 407 sexually active women. The period of study was between November 1991 and July 1992. The study was based on interviews and clinical examinations. The study revealed that two thirds of women were completely free of reproductive tract infection. The prevalence of reproductive tract infection was 35 percent, 26 percent of women had bacterial vaginosis; chlamydia was 7 percent and other reproductive tract infections less than 4 percent. A history of STD (Sexually Transmitted Diseases) infections and elementary educational levels were associated with the likelihood of any reproductive tract infections.

In Turkey, (Hodoglul *et al*, 1999) studied reproductive tract infection in family planning clinic on the basis of a sample of 410 female patients of age groups 16-57 years. The study observed that the prevalence of any reproductive tract infection was 46 percent, bacterial vaginosis was 28 percent, chlamydia trachomatis was 12 percent, vulvovaginal candidiasis (VVC) was 11 percent, and other reproductive tract infection less than 5 percent.

A population based study examined the nature of morbidity due to reproductive tract infections among users of various contraceptive methods and among non-users in a rural community in Bangladesh (Wasserheit *et al*, 1989). The sample covered 2929 currently married women, and was based on symptoms and clinical examination. The study detected the prevalence of reproductive tract infection to be 22 percent. Of the 472 symptomatic women examined, 68 percent had clinical evidence of reproductive tract infection. One third of intrauterine device users and tubectomised women reported symptoms. Contraceptive methods users of intrauterine device and tubectomy were approximately four times as likely to report and seven times as likely to have clinical confirmed infection as non-users. The authors found that intrauterine device users were more likely to be diagnosed with reproductive tract infection than non-intrauterine device users.

Hawkes *et al* (1999) investigated reproductive tract infection in women in Bangladesh. The study sample was 465 women attending the MCH-FP (Maternal and Child Health –Family Planning) center with symptoms. The study detected that the prevalence of abnormal vaginal discharge was very high 94 percent, genital itching 55 percent, lower abdominal pain 40 percent. Of the 320 women, the prevalence of any endogenous infection was 30 percent (including, bacterial vaginosis, and candida), 19 percent of women had bacterial vaginosis; 12 percent had candidosis and less than 3 percent had other reproductive tract infection. The study found that higher proportion of Hindu, intrauterine devices users, and sterilized women were likely to have an endogenous infection. Condoms users were less likely to be infected.

A community based investigation on reproductive morbidity was undertaken in rural Gambia in 1999 (Walraven *et al*, 2002). The sample covered 1348 women in the reproductive age groups and was based on self-reported morbidity with a reference period of three months, and clinical examination. Information was obtained on age, educational level, marital status, occupation, gynaecological and obstetric histories, current reproductive health symptoms and health seeking behavior. The prevalence of reproductive tract infections was reported by 47 percent (including bacterial vaginosis, trichomonas, candidia, and chlamydia). Of the 607 women menstruating and not using any hormonal contraceptive methods, 16 percent complained to gynaecologists of dysmenorrhea, spotting and heavy or prolonged bleeding. Only a few of women with menstrual problems had sought medical care or treatment. The self-reported symptoms were associated with other reproductive morbidity.

Harmanli *et al* (2000) investigated urinary tract infection in women in Pennsylvania in June 1998 and March 1999. The sample covered 129 women in the hospital, and was based on interviews and clinical examination. The study revealed that the prevalence of bacterial vaginosis was 52 percent and 23 percent had urinary tract infection with bacterial vaginosis. Women with bacterial infection had increased risk for urinary tract infections.

2.3 STUDIES ON THE PREVALENCE OF REPRODUCTIVE TRACT INFECTIONS BASED ON SELF-REPORTED SYMPTOMS, CLINICAL EXAMINATION AND LABORATORY TEST

A small number of investigations utilized laboratory tests to diagnose reproductive tract infections. A study of reproductive tract infections among adolescent women was carried out in 1996 in a rural community in Vellore, Tamil Nadu (Prasad *et al*, 2000). The study sample was 451 married women in the age group of 16-22 years and was based on self-reports as well as clinical and laboratory investigations. Information on the menstrual and sexual history, obstetric history, perceived gynaecological symptoms was obtained and urine and blood samples were collected. The study found that 59 percent of women had one or more gynaecological problems, 49 percent had reproductive tract infection and other infections less than 9 percent. Among the gynaecological problems, only 35 percent of the women had sought treatment from traditional practitioners, others did not take any treatment.

A study in Karnataka focused on gynaecological morbidity in 1993 (Bhatia *et al*, 1997). The study sample was 385 women having children between 6-12 months and married and younger than 35 years. The study was based on self-reported morbidity, clinical examination and laboratory tests. It was observed that the prevalence of gynaecological complaints as reported was 40 percent. The major gynaecological complaints were excessive weakness 23 percent, vaginal discharge with bad odour or itching or irritation 22 percent, lower abdominal pain or vaginal discharge with fever 16 percent, painful menstruation or menstrual bleeding discharges or spotting 55 percent. The clinical examination revealed that the prevalence of any reproductive tract infections was 40 percent, vaginitis 14 percent, cervicitis 24 percent, pelvic inflammatory diseases 11 percent and other reproductive tract infection less than 10 percent. The results of laboratory tests showed that 54 percent of women had any endogenous infection: bacterial vaginosis 18 percent, mucopurulent cervicitis 37 percent, and urinary tract infection 7 percent. Any sexually transmitted disease was 10 percent, trichonomal vaginalis 8 percent and

other infection less than 2 percent. There is a significant association between reproductive tract infection and number of pregnancies. The laboratory tests detected that sexually transmitted diseases were found to be significantly lower among Muslims than among Hindus and vaginitis (bacterial vaginosis, candida allbicans) was significantly high among urban and sterilized women.

In Bombay, Joshi *et al* (1996) studied reproductive tract infection in women attending family planning clinics on the basis of a sample of 302 ever-married women between the age groups 19-41 years. The period of study was October 1992 to March 1994, and was based on the self-reported morbidity, clinical and laboratory tests. The study observed that 20 percent of women reported white discharge, but other infections were reported by less than 8 percent. Overall, the prevalence of reproductive tract infections was 29 percent, bacterial vaginosis was 21 percent and chlamydia cervicitis was 18 percent. The Copper-T users experienced relatively high prevalence of gynaecological morbidity.

A survey of 650 women in the age group 13 years and above in Maharashtra obtained information from interviews, clinical examinations and laboratory tests (Bang *et al*, 1989). The study found that the prevalence of gynaecological morbidity was reported by 55 percent and 45 percent were symptom free. On the clinical examination and laboratory test it was observed that 92 percent had at least one gynaecological problem. Infection of the genital tract contributed half of the morbidity. Only 8 percent of the women underwent gynaecological examination and treatment in the past. The high prevalence of gynaecological morbidity was found to be more common among those using contraceptive method.

A study in New Delhi focused on reproductive morbidity during August 1996 to November 2000 (Garg *et al*, 2002). The 446 respondents were ever married and cohabitating women of 15-44 years. The results showed that the prevalence of gynaecological morbidity was 88 percent, 64 percent of women had low backache, 57 percent reported vaginal discharge, 42 percent reported pain in lower abdomen, 26 percent had menstrual problems, 21 percent reported urinary complaints and less than 16 percent had other reproductive tract infection. Of the 332 women who underwent laboratory examination, bacterial vaginosis was detected among 42 percent, chlamydia 29 percent, and candidiasis 19 percent. Among 301 women, 56 percent were found to have been infected with any of RTI/STIs (including bacterial vaginosis, trichomoniasis, and gonorrhea). The authors mention that women from poor communities were

at a high risk of gynaecological morbidity. Clinical examinations are nearer the truth than self reported and that laboratory test results are nearer the truth than clinical results.

Parashari *et al* (1995) investigated reproductive tract infections in Delhi. The sample of 144 women who attended the out patient clinic was studied. The study detected that the prevalence of reproductive tract infection as reported at 70 percent; lower abdominal pain 33 percent. Clinical observation found that 94 percent of women had cervical lesions, 45 percent had hypertrophy, 17 percent had cervicitis, and vulvo vaginal lesions were 23 percent. The laboratory tests showed that the prevalence of bacterial vaginosis was 40 percent and 31 percent had chlamydial antigen.

A study of STD patients was carried out in Delhi (Jain *et al*, 1996). The sample covered 40 females in the age groups 20-49 years, and was based on clinical and laboratory tests. The study revealed that 73 percent had vulvovaginitis, 58 percent of women reported burning sensation and dyspareunia, 45 percent reported lower abdominal pain, 43 percent reported genital ulcers, and 35 percent reported candidiasis. Nearly, 65 percent of women reported vaginal discharge in the age group 20-29. The clinical results found that 53 percent of women had vaginal discharge; bacterial vaginosis was 40 percent, chlamydia trachomatis 38 percent and trichomonas vaginosis 35 percent and other infections less than 10 percent. The use of clinical examination was less likely than laboratory testing to identify women with reproductive tract infection.

In Delhi, Mayank *et al* (2001b) studied reproductive tract infection on the basis of a sample 863 pregnant women of 24-28 weeks gestation. The study was based on self reported morbidity, clinical examination and laboratory investigation. The blood specimens and vaginal and cervical smears were collected. Out of 600 women, the clinical results found that the prevalence of any reproductive tract infection was 38 percent, lower reproductive tract infection 14 percent, syphilis 11 percent, trichomonas 10 percent, and other reproductive tract infection less than 4 percent. Out of 110 women with lower reproductive tract infections, 52 percent reported any vaginal discharge and 27 percent reported discharge with itching or foul smell. The authors mention that among the reproductive tract infection cases, half of women were reported asymptomatic. Women can perceive symptoms of reproductive tract infection during pregnancy.

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A study in New Delhi focused on vaginal discharge in a reproductive health clinic (Vishwanath *et al*, 2000). The study sample was 319 women and was based on interviews and gynaecological examination. The vaginal discharge and cervical samples were collected for laboratory test. The study found that the prevalence of vaginal discharge was 60 percent, bacterial vaginosis 26 percent, candidiasis 25 percent, chlamydia trichomatis 12 percent and trichomoniasis 10 percent. The study used gold standard method (sensitivity, specificity, positive predictive value). The sensitivity of gold standard was low for chlamydia, on the other infection sensitivity higher was than chlamydia infection and treatment.

A community study of reproductive health services in primary health care was undertaken in two different centers, Post Partum Center (PPC) and Primary Health Center (PHC) in Uttar Pradesh (Khan *et al*, 1998). The post partum center sample consisted of 5241 women in 1997. All the information was obtained through self-reported morbidity, clinical examination and laboratory tests. The study found that the prevalence of gynaecological problems was 29 percent and reproductive tact infection was 6 percent. Out of 278 cases of reproductive tact infections, 235 cases went for laboratory test. Six percent reported clinical evidence of reproductive tract infection. The primary health center consisted of 2873 women. Twenty two percent reported gynaecological problems (including, urinary tract infection, bleeding problem, infertility, and prolapse or menopausal problem). Out of 401 women with reproductive tract infection, 45 percent reported pelvic inflammatory diseases, 44 percent reported leuccorhoea, while others (less than 3 percent) reported vaginal discharge, lower abdominal pain, trachomatis.

A large-scale community study on reproductive tract infection was undertaken in Uttar Pradesh in 1997 (Nandan *et al*, 2001). The study covered 272 women in the reproductive age group. The study was based on self-reported morbidity, clinical as well as microbiological examination. The study shows that the prevalence of vaginal discharge was reported by 54 percent, pain in lower abdomen by 39 percent, and dyspareunia by 13 percent and other reproductive tact infection less than 9 percent. Out of 193 women, 47 percent of women had pelvic inflammatory diseases, 15 percent had vaginitis, and 14 percent had cervical erosion and vaginitis and other less than 2 percent. The microbiological diagnosis found that trichomoniasis was found among 12 percent, bacterial vaginitis 15 percent and other less than 9 percent.

A study of 509 non-pregnant ever-married women (14-60 of age) years in rural Egypt was carried out during November 1989 to July 1990 (Younis *et al*, 1993). The study was based on self-reported morbidity, clinical examination and laboratory tests. The study found a high prevalence of reproductive tract infection, 52 percent (including, bacterial vaginosis, trichomoniasis, candidiasis and chlamydia), 56 percent had genital prolapse, 14 percent had urinary tract infection, and 11 percent had an abnormal cervical cell. The Reproductive tract infections were observed to occur more frequently with intrauterine device users, unhygienic behavior and utero vaginal prolapse.

A study focused on bacterial vaginosis among pregnant women in Durban, South Africa (Govender *et al*, 1996). The study sample was 181 women 16-44 years, and was over the period August 1994 to January 1995. The study was based on clinical examination and microbiological examination. Information on age, parity, last menstrual period, pervious illness, number of lifetime sexual partners and past obstetric history was recorded and also specimen collected. Out of 168 women clinically examined, 43 percent of women had physiological discharge, 18 percent had trichomoniasis, 10 percent had candidiasis, and 7 percent had bacterial vaginosis. The microbiological results identified that the prevalence of vaginal and endocervical infection was 52 percent, trichomoniasis 21 percent, candidia 10 percent. One third of women were asymptomatic. Out of 88 women with poor pregnancy outcome, 65 percent had bacterial vaginosis infection. A high prevalence of bacterial vaginosis and lower genital tract infection was found among asymptomatic pregnant women. Bacterial vaginosis was associated with poor pregnancy outcome.

A study of reproductive morbidity was undertaken in Giza in rural Egypt in 1998-1999 (Zurayk *et al*, 1995). The sample covered 509 ever-married non-pregnant women. The study revealed that the prevalence of vaginal discharge was reported by 77 percent and 17 percent reported current abnormal discharge. Of those reporting discharge, 77 percent reported color, 42 percent reported texture and 5 percent reported odour or itching. The self reported morbidity is compared with laboratory examination using gold standard methods. The study reveals that most of medical results were negative. The self-reported symptoms of reproductive morbidity tended to give an overestimate compared with gynaecological examination results.

A community study of reproductive tract infection was undertaken in Bangladesh in 1995 (Hawkes *et al*, 2002). The sample consisted of 804 non-pregnant ever-married women and 969

married and unmarried men in the age groups 15-50 years. The study was based on structural interviews, clinical examination and laboratory test. Samples of urine and blood were colleted. The study observed that the prevalence of reproductive tract infection was low to moderate, 3 percent of women had chlamydia infection and one percent of men had chlaymdia infection. The study estimated prevalence of any currently treatable sexually transmitted infections as 4 percent.

A population based survey examined the reproductive tract infection in rural community in China (Kaufman *et al*, 1999). The sample size was 2020 married women in the reproductive age groups15-49 years, and was conducted between August 1993 and February 1994. The study was based on self-reported morbidity and clinical examination and laboratory tests. Information was obtained on demographic, social, behavior, contraceptive history and clinical risk factors for reproductive tract infection. The study found that the prevalence of reproductive tract infection was high, genital itching reported by 37 percent, abdominal discharge by 35 percent, abdominal pain reported by 18 percent and vaginal pain by 14 percent. Seven percent of women reported their husbands had any genital symptoms (discharge, pain, lesions, and swelling). The clinical results reveal that the highest prevalence was of candida 20 percent, followed by bacterial vaginosis (15 percent), trichomonas (11 percent) and other infection (less than 6 percent). The study mentioned that most of the women reported some symptoms. The study used Gold standard method for accurate diagnosis in reproductive tract infection because many women reveal no symptoms of reproductive tract infection but they are having one or more infection. The laboratory test gives accurate results than clinical and self-reported morbidity.

In Vietnam, Lien *et al* (2002) studied reproductive tract infection on the basis of a sample of 600 currently married women enrolled over a six months period in 1996. All eligible women were attending the MCH-FP center for gynaecological complaints, family planning services, abortion, menstrual regulation procedures, sterilization, and antenatal and delivery care. The study was based on structural interviews, clinical examination and laboratory test. Information on the personal, social, behavior and medical history and also specimens for reproductive tract infection's diagnosis were collected. The study detected that the prevalence of gynaecological problems as reported was 87 percent; Vaginal discharge was 80 percent, reproductive tract infection were 21 percent, sexually transmitted infection 5 percent (including, trichomonas, chalamydia, syphilis and gonorrhea), endogenous reproductive tract infection 17 percent,

candidiasis 12 percent, bacterial vaginosis 7 percent and other reproductive tract infection less than 6 percent. The laboratory test found that the prevalence of bacterial vaginosis was 87 percent, candidiasis 92 percent, and trichomonas 35 percent. One third of women were reported to be asymptomatic, 20 percent of women had any one of reproductive tract infection. The authors mention that the current practice of treatment is leading to over treatment. The laboratory result revealed higher prevalence than clinical examination.

A study estimated reproductive morbidity among users of contraceptive in Istanbul (Bulut *et al*, 1997). The sample covered 1612 women in the age group 15-44 years who had ever used or were currently using contraceptive method, and was based on self-reported morbidity, clinical examination and laboratory tests. The study observed that 69 percent of women reported a health related problems. The clinical examination found that the prevalence of any symptoms of reproductive morbidity (including reproductive tract infection, menstrual disorder, pelvic relaxation, and urinary tract infection) was high, reproductive tract infections 49 percent and urinary tract infection 24 percent. Current users of intrauterine device were more likely than users of other methods to report menstrual disorders, but reproductive tract infection was not related to any birth control methods.

2.4 OVERVIEW AND RESEARCH GAPS

A large number of studies have examined the prevalence of reproductive tract infection among women, the methods have varied, self-reported symptoms, clinical examination and laboratory tests have used individually or collectively to assess the level of prevalence of reproductive tract infection. Naturally the last two are considered superior to the method of self-reported symptoms. However, these require medical professionals and laboratory equipment not easily available and usually very expensive. Therefore, such investigations become possible only in small studies. As the review shows, there has been large variation in the prevalence level observed in the studies including those in India. Many investigations have also detected differentials by socio-economic factors such as education, religion, caste, standard of living and demographic factors such as age and parity. But the large sample errors on account of small sample size make comparisons difficult. Besides, differentials can not be examined from data from small samples. Only studies based on large samples can be used for such a purpose. But due to considerations of cost and feasibility, most large scale studies generally depend on self-reported symptoms rather than on clinical diagnosis and laboratory examinations in spite of limitations of the methodology. Particular mention must be made of the NFHS-2 and RCH-

RHS-1&2. An analysis of the data from such large nationwide surveys can facilitate an assessment of spatial variations in the prevalence of gynaecological morbidity as well as differentials by socio-economic and demographic characteristics. In the next chapter, conceptual framework for analyzing reproductive tract infections and treatment is developed, and the methodology for analysis in the study presented.

Chapter-3

Conceptual Framework and Methodology

CHAPTER 3
CONCEPTUAL FRAMEWORK AND METHODOLOGY

3.1 CONCEPTUAL FRAMEWORK

In this chapter, the conceptual framework and methodology of analysis are presented. Several studies have suggested that women's reproductive health status depends upon socio-economic and demographic developments. If the community is developed socially and economically the health is likely to be good. At the individual level, women's own characteristics as well as household characteristics may influence the prevalence of reproductive tract infection and treatment seeking behaviour for RTI/STI. These characteristics may include, as shown by the review of literature, residence (rural and urban), religion, caste, woman's education, and husband's education, demographic characteristics such as age, parity and pregnancy wastage etc. Some of the factors may directly influence reproductive tract infection and treatment seeking behaviour but some may also indirectly influence RTI and treatment seeking behaviour through selected intermediate variables such as awareness of RTI/STI, husband's awareness of RTI/STI, husband's experience of RTI/STI, husband and wife communication on reproductive health problems, current use of contraceptive methods and perceived quality of care at the government health centre etc. The conceptual frameworks are presented in figures 3.1 and 3.2. The plausible influences of various factors are described below.

3.1.1 SOCIO-ECONOMIC FACTORS

Various socio-economic factors may directly or indirectly affect prevalence of reproductive tract infection and treatment seeking behaviour. The socio-economic factors considered in the study include the place residence, religion, caste, woman's education, husband's education, and type of house etc. These are discussed below:

Place of Residence

The place of residence is likely to affect reproductive health because of various reasons, for example, environment, resources etc. The place of residence, especially whether rural or urban, plays an important role in decision making for reproductive health services, health related information, and inter-spouse communication. Access to health facilities is to a large extent determined by place of residence. Many researchers found that place of residence and symptoms of reproductive tract infection and also health seeking behaviour are interrelated.

Figure 3.1

A Conceptual Framework for analyzing Prevalence of Reproductive Tract Infection (RTI)

BACKGROUND FACTORS

Socio-economic Factors

Residence

Religion

Caste

Education Level of Women

Education Level of Husband

Standard of Living

Demographic Factors

Age of the Women

Age at First Marriage

Pregnancy Wastage

Parity

Awareness of RTI/STI

Husband's Awareness of RTI/STI

Husband's Experience of RTI/STI

Current Use of Contraceptive Methods

REPRODUCTIVE TRACT INFECTIONS

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Figure 3.2
A Conceptual Framework for analyzing Treatment Seeking behaviour for RTI/STI

BACKGROUND FACTORS
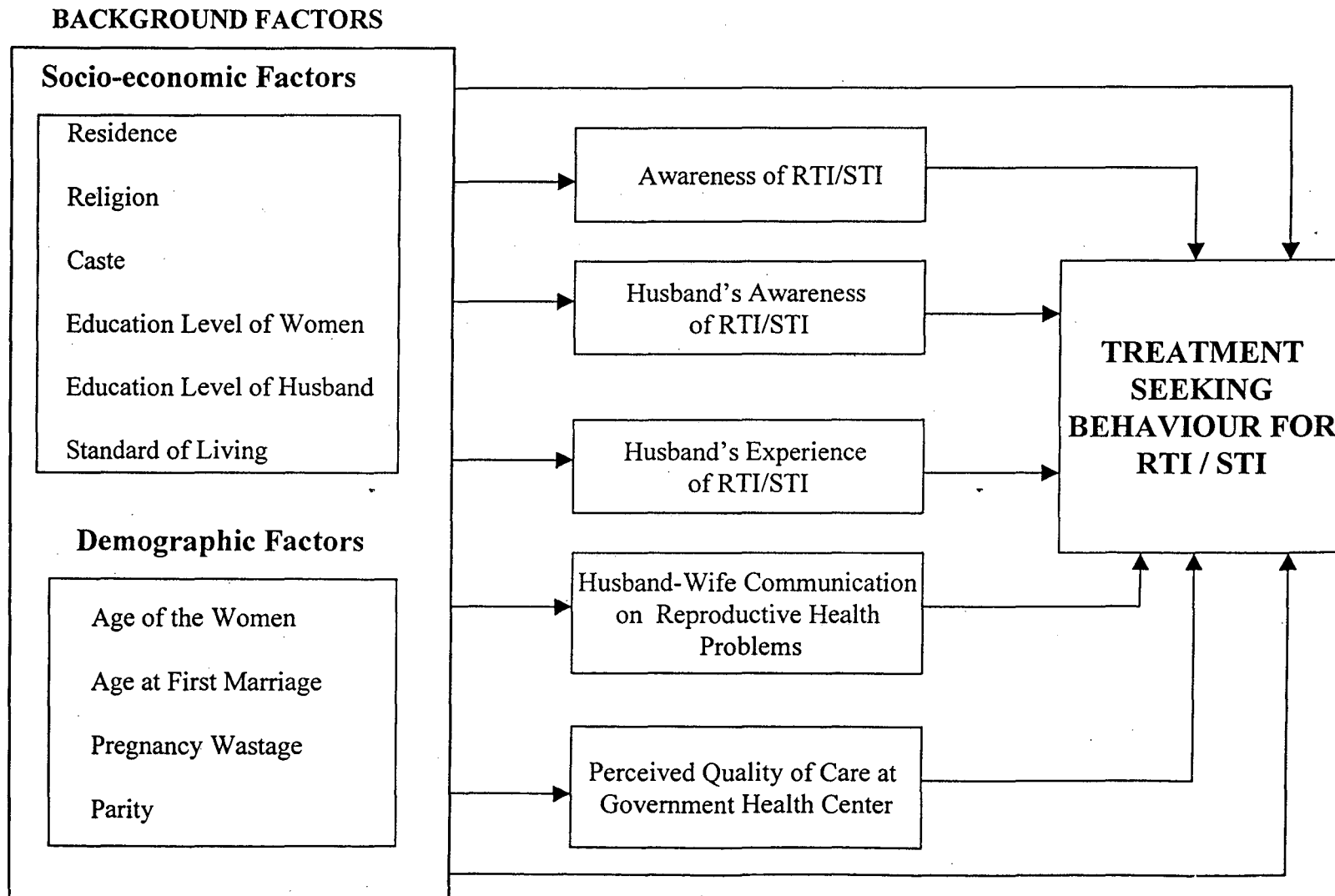
Religion

Religion is an important social variable. The major religious communities of India are Hindus, Muslims, Christians, Sikhs, Buddhists and Jains. Religion strongly influences social institutions. For example, each and every religion has own customs or ceremonies about puberty and marriage. Religion also influences other forms of demographic behaviour and health status. The status of women, reproductive behaviour, and religion are all interrelated. Religion indirectly affects levels of fertility through norms of marriage, childbearing, family planning practices and health status. Similarly religion indirectly affects the women's reproductive health through cultural practices of hygiene and tendency to seek health care.

Caste

Caste is an important social characteristic of the Indian population. Caste has operated as a major determinant of social status in the society. In the socio-economic hierarchy, the Scheduled Castes (SC) and Scheduled Tribes (ST) are found to be the most backward sections of the society. Many Scheduled Castes and Scheduled Tribes are settled in rural places and hilly areas. People belonging to these communities often live in poverty and are engaged in arduous tasks. Still they are fighting for education, equality, social power, and health services. The social and economic disadvantages result in low level of awareness of reproductive tract infection/sexually transmitted infection, high level of reproductive morbidity and low level of treatment seeking behaviour.

Educational Level of Women

Education is key to overall development. Education of women is a determinant of social status in the society. Education also plays a role in women's reproductive health status. Women who have better education, and who enjoy autonomy have a greater say in reproductive health decision-making, have fewer children and live longer. Educated women can easily communicate about reproductive health problems and family size with spouse or partner. Inter-spouse communication enhances reproductive health status and utilization of health services. Educated women are easily able to gather information of reproductive health component, and can easily perceive the symptoms of reproductive tract infection and discuss with husband or consult a doctor. According to the 2001 census, female literacy rate in India was 54.16 percent. That means nearly half the women are illiterate. Therefore, there is a need to assess the impact of literacy on reproductive health.

Educational Level of Husband

India is a primarily patriarchal society. Husband is the ultimate decision-maker in most families, including decisions on reproductive health care, number of children to have, contraceptive use and health seeking behaviour. According to the 2001 census, male literacy rate in India was 75.85 percent, much higher than female literacy. Husband's education also increases spousal communication related to reproductive health problems and treatment seeking behaviour. A number of studies found a clear relationship between husband's education and symptoms of reproductive tract infection and treatment seeking behaviour.

Standard of Living

The level of income or overall standard of living may influence reproductive behaviour, reproductive health problems and utilization of health care facilities. The level of income has a direct impact on education, work status, inter-spouse communication etc. Women with a high standard of living have greater access to proper nutrition, education, are more aware of RTI/STI and use health care facilities. A rise in living conditions may lead to the control of morbidity resulting in low-level symptoms of RTI and more utilization of health care facilities.

3.1.2 DEMOGRAPHIC FACTORS

Certain demographic characteristics may affect women's health (directly or indirectly) due to biological causes. The demographic characteristics used for analysis in this study include age of women, age at first marriage, parity and pregnancy wastage etc. These are discussed below:

Age of Women

The age of women is considered one of the important biological factors. Age of women plays an important role in reproductive behaviour. Age of women also may impact women's reproductive health. Young women cannot perceive the symptoms of reproductive health problems clearly. As a woman passes through the reproductive ages, the prevalence of specific reproductive morbidity varies. A number of studies found a clear relationship between age of women and reproductive health problems and treatment seeking behaviour.

Age at First Marriage

Age at marriage plays an important role in women's reproductive health. Age at marriage is directly linked with women's reproductive health problems. The minimum age at marriage of 18 years for females and 21 years for males has been prescribed in India by the Child Marriage

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Restraint Act -1978. A rise in the age at marriage of women helps improve the women's reproductive health. Many studies found that age at marriage is indirectly indicative of women's reproductive health status. Age at marriage is also associated with reproductive tract infection and treatment seeking behaviour. The early age at marriage or child marriage adversely impacts women's reproductive health because young girls cannot easily perceive the symptoms of reproductive tract infection.

Parity

Parity or birth order is an important physiological factor. Parity also may play an important role in women's reproductive health. High parity births face a higher risk of maternal mortality and morbidity, and low level of health seeking behaviour. However, high parity women may selectively have poor socio-economic condition, which in turn may influence women's reproductive health. A number of studies found that parity and symptoms of reproductive tract infection are interrelated. Women who have high parity births are more likely to report symptoms of reproductive tract infection.

Pregnancy Wastage

Pregnancy wastage is a physiological factor. Many pregnancies may not result in live births but in reproductive wastage such as stillbirth, induced abortion and spontaneous abortion. An experience of reproductive wastage may have a bearing on women's reproductive health. A woman with experience of pregnancy wastage is more likely to report reproductive tract infection and seek health care than one with no such experience. Numerous studies found that women with high experience of pregnancy wastage are more likely to report symptoms of RTI/STI. Women's experience of reproductive wastage however is likely to be under-reported.

3.1.3 INTERMEDIATE VARIABLES

Many socio-economic and demographic factors affect reproductive tract infection and treatment seeking behaviour indirectly through a set of intermediate variables. These include awareness of RTI/STI, husband's awareness of RTI/STI, husband's experience of RTI/STI, husband and wife communication on reproductive health problems, current use of contraceptive methods and perceived quality of care at the government health centre etc. These are discussed below:

Awareness of RTI/STI

Women from poor socio economic conditions are less likely to be aware of RTI/STI. A woman who is not aware about RTI/STI is less likely to seek reproductive health care than woman who is aware. Many researchers suggested that women with awareness of RTI/STI are less likely to have symptoms and more likely to seek treatment.

Husband's Awareness of RTI/STI

Husbands who are aware of RTI/STI are more likely to improve women's reproductive health and also facilitate medical care. Husband's awareness of RTI/STI possibly influences women's reproductive health. Various socio economic factors are strongly associated with awareness of RTI/STI. According to RCH-RHS-1&2, 37.2 and 36.4 percent of men in India are aware of RTI/STI. Husbands who are not aware of RTI/STI are less likely to seek medical care. A rise in awareness of RTI/STI is more likely to raise the tendency to seek reproductive health care.

Husband's Experience of RTI/STI

Husband's decision making plays an important role in women's reproductive health. Husbands who have experience of RTI/STI may influence wife's reproductive health. The husband's experience of RTI/STI if discussed with wife may influence women's reproductive health. If the husband cannot perceive the symptoms of RTI/STI it will be transmitted to wife or other sexual partners. Several studies suggested that husband's experience of RTI/STI is associated with the women's reproductive health (problem) and treatment seeking behaviour.

Husbands-Wife Communication on Reproductive Health Problems

If there is good communication between husband and wife regarding reproductive health then it facilities wife's health seeking behaviour and will help the wife understand other reproductive health issues. Couples having greater discussion on reproductive health problems seek more professional help than couples not discussing reproductive health problems.

Current use of Contraceptive Method

Generally, couple having used contraceptive method to delay or avoid pregnancies would be more aware of reproductive health issues including reproductive morbidity and sources of reproductive health care. Women who have used contraceptives like IUD and Copper-T are more likely to report symptoms of reproductive tract infection. Contraceptive use may also raise reproductive morbidity due to improper use or insertion of contraceptives. The NFHS-2

report shows that 48.2 percent of currently married women used contraceptive in India. Many research studies found close association between the symptoms of reproductive tract infection and current use of contraceptives.

Perceived Quality of Care at Government Health Center

The availability of health facilities and services is an important indicator of quality of life in the society. The quality of care is directly linked to reproductive tract infection and treatment seeking behaviour. The government health facilities are providing reproductive and child health programme at grass roots levels. The auxiliary nurse midwife plays an important role in promoting women's reproductive health by providing her services to the community. Socio-economic factors also influence the quality of care. An improvement in the quality of care will subsequently lead to the improvement in women's reproductive health. Women who have better socio economic conditions are more likely to seek treatment. Many studies found that quality of care directly affects women's reproductive health seeking behaviour.

3.2 HYPOTHESES

The following hypotheses have been framed to be empirically tested

1. Urban women, higher caste of women, women with higher educational level and with high standard of living are less likely to show symptoms of reproductive tract infection compared with rural women, backward caste women, women with low level of education and low standard of living respectively.

2. Women married at a very early age, with high experience of pregnancy wastage, and high parity may have poorer reproductive health compared to women with higher ages at marriage, no experience of pregnancy wastage, and low parity.

3. Women who do not use contraceptive methods and who are aware of RTI/STI are less likely to show reproductive tract infection in comparison with users of contraceptive method and those not aware of RTI/STI respectively.

4. Urban women, higher caste of women, women with higher educational level and with high standard of living are more likely to seek treatment for RTI/STI compared to rural women, backward caste women, women with low level of education and women with low standard of living respectively.

5. Women with late age at marriage, high experience of pregnancy wastage, and high parity are more likely to favour seeking treatment for RTI/STI compared to women

with early age at marriage, no experience of pregnancy wastage and low parity respectively.

6. Current users of contraceptive methods (either women or husbands) and those aware of RTI/STI are more likely to seek medical care for RTI/STI in comparison to non-users of contraceptive methods and those not aware of RTI/STI respectively.

3.3 DATA

The data used in the present study are obtained from the **National Family Health Survey (NFHS-2)** and the **Reproductive and Child Health-Rapid Household Survey (RCH-RHS-1&2)** conducted in 1998-99 and 1998-99 respectively. The NFHS-2 was conducted in two phases (phases-1 in 1998 and phase-2 in 1999) by International Institute for Population Sciences (IIPS) and ORC-Macro (IIPS and ORC-Macro, 2000). The NFHS-2 collected data from a representative sample of more than 90,000 ever-married women of age 15-49 years residing in 91,196 households. The sample represents 99 percent of population living in India and covered 26 states including Delhi. The NFHS-2 used three types of questionnaires: (1) *the household questionnaire*, (2) *the woman's questionnaire*, and (3) *the village questionnaire*. The household questionnaire provides basic demographic and socio-economic information on households. The woman's questionnaire provides for ever-married women of reproductive age, information on backgrounds characteristics, reproductive behaviour and intentions, quality of care, knowledge and use of contraception, sources of family planning, antenatal, delivery, and postpartum care, breastfeeding and health, reproductive health, status of women, knowledge of AIDS. The village questionnaire provides information on the availability of various facilities in the village (especially, health and education) and amenities such as electricity and telephone connection. The NFHS-2 has published descriptive reports for each state that contain extensive tabulation. The present study uses the relevant tables on reproductive health.

The RCH-RHS-1&2 surveys were conducted in two phases at the national level by the International Institute for Population Sciences (IIPS), Mumbai (IIPS, 2001a). The principal objective of the survey was to provide district level, state level and national indicators of reproductive health and child health indicators. The survey estimated level of antenatal care (ANC) and immunization, delivery care, the contraceptive prevalence rate and unmet need for family planning, the awareness of RTI/STI and HIV/AIDS, and the utilization of government health services.

The Reproductive and Child Health survey was conducted in two phases. The first round was conducted during May 1998 to November 1998 in 252 districts from 25 states and five Union Territories (excluding Lakshadweep Islands and Dadra & Nagar Haveli) of the country. The second round was conducted during 1999 in the remaining 255 districts from 25 states and Union Territories (excluding Delhi and Chandigarh). The study covered 474,463 currently married women in the reproductive age group 15-44 years and 198,566 men in the age group 20-54 years (irrespective of their marital status) from 529,816 households.

The Reproductive and Child Health survey used two types of questionnaires, (1) *the household questionnaire* and (2) *the women's questionnaire*. The household schedule included one section on background of the household, vital events and morbidity. The household questionnaire also included another section that was administered if the respondent was male in the age group 20-54, this included information on respondent's background and awareness of RTI/STI and HIV/AIDS. The women's questionnaire has the following four sections: i) Women's characteristics and summary of fertility history, ii) Contraceptives use, iii) Utilization of government health services and client's satisfaction and iv) Awareness about RTI/STI and HIV/AIDS.

The Reproductive and Child Health survey was conducted in two phases in Tamil Nadu, which was conducted by the Population Research Centre (PRC), Gandhigram, Tamil Nadu (IIPS, 2001b). The first round was conducted during September to December 1998 in 12 districts of the state (listed as per 1991 census). The second round was conducted during April to July 1999 in the remaining 11 districts of the state. The study covered 18,040 currently married women in the reproductive age group 15-44 years and 6,737 men in the age group 20- 54 years (irrespective of their marital status) from 23,850 households were interviewed in Tamil Nadu. The principal findings of the RCH-RHS surveys have been published and these provide a large number of indicators at the district level as well as district and state reports. This contrasts to the NFHS-2 which dose not provides district level estimates. Therefore, for analysis within a state, the RCH-RHS data are used. Further, the RCH-RHS has made the individual level data available to researchers. These form the principal source for the individual level analysis in this work. The inter-state and inter-district analysis is based on the published tables as well as from estimates obtained from the raw data.

In the NFHS-2, reproductive morbidity has been recorded by asking women about specific related symptoms. This included abnormal vaginal discharge or urinary tract infections in the three months preceding the survey, intercourse related pain, and bleeding after intercourse. The prevalence is estimated from women's self-reported experience from each of the following problems: vaginal discharge accompanied by itching, by irritation, by bad odour, by severe lower abdominal pain, by fever; pain or burning while urinating or frequent or difficult urination and (for currently married women) bleeding after intercourse or painful intercourse. No clinical examination was done. In the RCH-RHS also the information was obtained on the basis on self-reported symptoms, specifically, burning sensation or pain or difficulty while urination, lower abdominal pain or vaginal discharge, all during three months prior to survey. Further questions on the nature of discharge were also asked. Thus, both in NFHS-2 and RCH-RHS-1-&2, the data are obtained on the basis of self-reported symptoms and not on clinical examination. This must be kept in mind in interpretation of the results. In both the surveys, women were asked whether they sought treatment for specific reproductive health problems. Women who reported any of the symptoms may be presumably suffering from RTI or STI or were at the risk of such infections.

3.4 METHODOLOGY

The prevalence of RTI/STI as ascertained from reported symptoms in the NFHS-2 and RCH-RHS surveys is first examined at the state levels. This is based on published tabulation of the two surveys and assessment is made of consistency between the two surveys. This is followed by inter-district variation in the prevalence levels in the state of Tamil Nadu on the basis of RCH-RHS survey. The NFHS-2 did not give tabulation by districts. Maps have been used to look for spatial pattern in prevalence of RTI/STI and treatment seeking behaviour in India as well as within the state of Tamil Nadu. Analysis at the individual is carried out to examine differentials in reported prevalence levels by selected socio-economic and demographic factors.

For the analysis at the state and district levels, and also for various socio-economic and demographic indicators, the levels of prevalence have been presented. Since the symptoms were enquired into for a period of three months prior to survey, the prevalence rates are actually *period prevalence rates* rather than *point prevalence rates*, and presented in term of percentages. Thus,

Period Prevalence rates of Burning Sensation = [(*No .of Respondents who Reported to have Suffered from Burning Sensation while Urination during the Three Months Period Prior to Survey / (No. of Currently Married Women of Age 15-44 Interviewed in the Survey)]* 100*

- Prevalence rates for lower abdominal pain, any vaginal discharge, and any one symptom of RTI/STI were computed in a similar manner. The tendency to seek treatment is measured as the percent of women who sought treatment for reproductive health among those who reported any one symptom. Prevalence rates at the state and district levels are as given in the RCH-RHS reports and for socio-economic and demographic classes computed in the manner described above from the data tapes.

First, the gross differences are obtained and examined. The *logistic regression method* is used in order to estimate the net effect of the each variable on the likelihood of reporting symptoms of reproductive tract infection and on the probability of seeking treatment or consultation. Because all dependent variables are dichotomous (reported or not and yes or no) the techniques of logistic regression has been adopted instead of multiple linear regression (Retherford and Choe, 1993).

The basic form of the logistic function is

$$\text{logit (P)} = \ln (P/1-P) = Z. \ldots\ldots\ldots\ldots\ldots (1)$$

Where P= Probability of occurrence of an event (reporting of a symptom or seeking treatment)

and $Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \text{-----------------} + \beta_k X_k$ is a vector of parameters β_0, β_1, β_2 ....β_k and predictor variables X_1, X_2, X_3......................X_k.

If Y is the response, then Y=1: occurrence of the event, and P= Probability (Y=1).

Thus, equation (1) postulates that the probability of occurrence of the event is influenced by a set of predictor variables in the manner specified with β_0, β_1, β_2 ....β_k as the logistic regression coefficients.

The equation can be expressed as,

$$P=\exp (Z)/ (1+\exp (Z))\ldots\ldots\ldots\ldots\ldots (2)$$

The quantity P/ (1-P) is called the odds, hence the quantity ln (P/ (1-P)) is called the log odds or the logit of P.

The coefficients are estimated using the method of maximum likelihood. The predictor variables should be numeric on a ratio scale. If a predictor variable is in a categorized form, it needs to be converted into dummy variables. Computer packages for logistic regression have a provision of doing so and it is adequate to specify a categorized variable as such and note the reference category. In such cases, the ratio term exp (B_k) for a particular category K is the odds ratio, that is, the ratio of odds for the category K to the odds for the reference category.

3.5 MEASUREMENT OF VARIABLES

3.5.1 Dependent Variables

The RCH-RHS survey asked to women: [*Q.No: 601 (phase-1) and 615 (phase-2)*] During the past three months did you have burning sensation, pain or difficulty while urinating? (Yes or No); [*Q.No: 602 (phase-1) and 616 (phase-2)*] During the past three months did you experience pain in the lower abdomen or vagina during intercourse? (Yes or No); [*Q.No: 603 (phase-1) and 617 (phase-2)*] During the past three months did you have any problem of vaginal discharge? (Yes or No); and [*Q.No: 608 (phase-1) and 622 (phase-2)*] Have you consulted for treatment of RTI/STI? (Yes or No). Thus, there are three questions on symptoms and one on treatment. Further, reporting any one of the three symptoms is also tabulated.

There are six response variables or dependent variables considered in the study. All the variables are dichotomous. These are given below

1. **Burning Sensation** (whether the woman reported suffering from Burning Sensation, Pain or Difficulty while Urinating during the three months period preceding the survey)

    1= Yes

    0= No

2. **Lower Abdominal Pain** (whether the woman reported suffering from Pain in the Lower Abdomen or Vagina During Intercourse during the three months period preceding the survey)

   1= Yes

   0= No

3. **Any Problem of Vaginal Discharge** (whether the woman reported suffering from Vaginal Discharge during the three months period preceding the survey)

   1= Yes

   0= No

4. **Any Reproductive Health Problem** (whether the woman reported suffering from Burning Sensation, Pain or Difficulty while Urinating or Experience Pain in the Lower Abdomen or Vagina During Intercourse or Any Problem of Vaginal Discharge during the three months period preceding the survey)

   1= Yes

   0= No

5. **Treatment Seeking Behaviour** (whether the woman who experienced any symptom sought consultation or treatment for any reproductive health problem during the three months period preceding the survey)

   1= Yes

   0= No

6. **Treatment Obtained from Public Medical Sector** (whether the woman who sought consultation or treatment did so from public health care facility for any reproductive health problem during the three months period preceding the survey)

   1= Yes

   0= No

3.5.2 Independent Variables

There are nine selected independent variables or explanatory variables considered in the study. These are given below

   1. **Place of residence**: dichotomous variable with rural and urban as the categories

      1= Urban

      0= Rural

2. **Religion**: categorized as

  1= Hindus

  2= Muslims

  3= Others (mainly Christian)

3. **Caste of Woman**: categorized as

  1= SC/ST (Scheduled Caste and Scheduled Tribe)

  2= OBC (Other Backward Caste)

  3= Other castes

4. **Educational level of Woman**: categorized as

  0= No schooling

  1= 1-5 years of schooling

  2= 6-10 years of schooling

  3= 11 and above years of schooling

5. **Standard of Living (Type of House** used as proxy)

In the RCH, data on income were not collected. In many surveys, an index of standard of living is computed from data on ownership of assets and housing conditions. However, the RCH-RHS did not obtain information on assets. The only relevant information is on the type of house occupied by the household. This is categorized as: Pucca (house made with high quality material thoughout, including the roof, walls, and floor, indicative of a relatively high standard of living), Semi-Pucca (made using partly high and partly low quality material, indicative of medium standard of living) and Kachcha (made with mud, thatch, or other low quality materials, indicative of low standard of living). In the absence of data on income, the type of house (Pucca, Semi-pucca and Kachcha) has been used as a proxy variable for the economic status of the households. Though this is not an ideal substitute for income, this was the next best alternative given the limited data on living conditions.

Type of House (proxy for standard of living): categorized as

1=Kachcha (Low Standard of Living)

2= Semi-Pucca (Medium Standard of Living)

3= Pucca (High Standard of Living)

6. **Age of Woman**: categorized as

    1= 15-19 years

    2= 20-24 years

    3= 25-29 years

    4= 30-34 years

    5= 35-39 years

    6= 40-44 years

7. **Age at First Marriage**: categorized as

    1= less than 18 years

    2= 18-20 years

    3= 21 and above years

8. **Parity**: categorized as

    0= No live birth

    1= One live birth

    2= Two live births

    3= Three live births

    4= Four and above live births

9. **Pregnancy Wastage**: categorized

    0= No pregnancy wastage

    1= One pregnancy wastage

    2= Two pregnancy wastages

    3= Three or more pregnancies wastages

3.5.3 Intermediate Variables

There are three selected intermediate variables considered in the study. These are given below

1. **Current use of Contraceptive Methods**: dichotomous as

    1= Yes (either woman or husband was using a contraceptives at the time of survey)

    0= No

2. **Awareness of RTI**: dichotomous as

    1= Yes (the woman was aware of RTI)

    0= No

3. **Awareness of STI**: dichotomous as

    1= Yes (the woman was aware of STI)

    0= No

Husband's awareness of RTI/STI, husband's experience of RTI/STI, and husband- wife communication on reproductive health were postulated as intermediate variables. However, the number of husbands interviewed in the RCH-RHS is very small and among those with experience of RTI/STI was quite small, and hence these variables have not been included in the analysis. Similarly, data on perceived quality of care were available for only a small number of women and hence this variable has not been incorporated in the analysis.

3.6 SCOPE AND LIMITATIONS

For an overall assessment of prevalence of reproductive tract infection, this study covers the states of India, but for more detailed analysis the scope has been restricted to the state of Tamil Nadu. Both spatial variations and influences of individual factors have been examined within the state of the Tamil Nadu. Though our interest is in the reproductive health as such, reproductive health is a very broad concept and it would to be nearly impossible to examine various aspects of it. Therefore, it was decided to restrict the scope of the study to one aspect of reproductive health, namely, reproductive tract infection. Even this was as ascertained by self-reported symptoms rather than clinical or laboratory tests. Specifically, those who reported burning sensation while urination, lower abdominal pain, and any problem of vaginal discharge during the three months period preceding the survey were presumed to have reproductive tract infection or be at the risk of infection. This had to be done for operational purposes, as data on clinical or laboratory tests are rarely available for large samples. This also becomes a limitation of the study. Another limitation is that data on some of the intermediate variables were not available for a large sample. This prevented utilization of the entire conceptual framework described earlier in the chapter.

Further, in the absence of the data on some important intermediate variables, a path analysis approach could not be used. Hence, though the conceptual framework postulates direct and indirect effects of socio-economic and demographic variables on the reproductive tract infection and treatment seeking behaviour, only direct effects have been examined.

Chapter-4

Reproductive Tract Infections and Treatment Seeking Behaviour in India

CHAPTER 4

REPRODUCTIVE TRACT INFECTIONS AND TREATMENT SEEKING BEHAVIOUR IN INDIA

Generally, at the national level or state level, data on the prevalence of reproductive tract infection and other related gynaecological morbidity were not available in past. However, recently some nationwide surveys have provided estimates of the prevalence of reproductive tract infection/sexually transmitted infection at the national level and state level. The RCH-RHS survey collected information from women and men on some common symptoms of RTIs. These are based on the self-reported morbidity. The reproductive health problems reported are burning sensation while urination, lower abdominal pain, and any problem of vaginal discharge. Further, among those who reported vaginal discharge, the type of discharge was also recorded (muccid non foul smelling, thick curdy white, thin dirty white foul smelling, and thick grey white foul smelling). Moreover, any other symptoms accompanying discharge were also noted (ulcers, itching and ulcers, severe lower abdominal pain and fever). The National Family Health Survey-2 also collected information on symptoms of reproductive tract infection as reported by women. The prevalence levels obtained in the RCH-RHS survey are discussed first, since this survey was specially designed to study reproductive health. These are then compared to the rates given by the NFHS-2. An attempt has also been made using maps to see if there is any spatial pattern of prevalence in India. Further, the level in the state of Tamil Nadu has been compared to the national average.

4.1 REPRODUCTIVE HEALTH PROBLEMS AMONG WOMEN

4.1.1 Burning Sensation

Burning sensation while urination is a very common problem among women indicative of reproductive tract infection. Generally, people do not consider it as a serious problem. According to RCH-RHS, the overall prevalence of burning sensation while urinating in India is 13.1 percent. Table 4.1 shows the prevalence rates by States/Union Territories. It is the lowest in Jammu & Kashmir (2.3 percent) and the highest in Rajasthan (20.9 percent). Other States/Union Territories with relatively low levels of burning sensation are Chandigarh, Lakshadweep, Delhi, Andaman & Nicobar Islands, Karnataka, Goa and Orissa, and other States/Union Territories with relatively high prevalence rates are Tripura, Bihar, Uttar Pradesh, Assam, Mizoram and West Bengal. The prevalence rates are presented in the map (figure.4.1).

The levels are generally lower in the southern and north-western states. At the national level, the prevalence of burning sensation is relatively high (13.1 percent) compared with state of Tamil Nadu (7.8 percent).

Table 4.1
Prevalence of Reproductive Tract Infection/Sexually Transmitted Infection (RTI/STI), India and States

State	Percentage of Currently Married Women who Reported Symptoms of RTI/STI during the Three Months Period Prior to Survey				Percent who Sought Treatment for RTI/STI *
	Burning Sensation	Lower Abdominal Pain	Any Problems of Vaginal Discharge	Any One Symptom of RTI/STI	
Andhra Pradesh	8.0	7.8	15.2	18.8	46.5
Arunachal Pradesh	12.7	9.6	8.5	20.6	35.3
Assam	15.9	11.1	16.1	28.5	38.3
Bihar	19.4	13.1	26.4	37.7	37.0
Goa	6.2	5.8	10.5	16.4	52.0
Gujarat	14.9	14.4	23.2	32.0	36.1
Haryana	13.9	13.1	24.2	32.3	38.2
Himachal Pradesh	7.2	7.8	13.0	19.1	49.2
Jammu & Kashmir	2.3	1.0	0.4	3.0	89.5
Karnataka	6.1	4.8	11.9	16.3	53.8
Kerala	10.4	9.0	19.6	27.7	50.8
Madhya Pradesh	13.8	12.0	21.0	26.1	43.7
Maharashtra	12.1	13.7	15.5	25.4	47.9
Manipur	14.3	9.7	12.2	23.6	46.1
Meghalaya	9.3	1.5	12.2	26.6	31.2
Mizoram	15.4	9.7	23.9	36.4	56.1
Nagaland	10.4	6.9	9.8	16.5	35.7
Orissa	6.6	7.2	7.1	15.6	38.1
Punjab	9.7	12.5	20.1	30.0	42.4
Rajasthan	20.9	20.8	38.4	45.0	22.6
Sikkim	6.5	5.0	5.5	11.3	49.8
Tamil Nadu	**7.8**	**6.7**	**32.2**	**36.5**	**31.5**
Tripura	20.4	16.8	23.0	39.8	45.4
Uttar Pradesh	17.0	12.7	27.3	36.4	35.8
West Bengal	15.0	15.5	18.5	30.4	30.2
Union Territory					
Andaman & Nico Islan	4.1	3.4	7.1	13.7	50.5
Chandigarh	2.9	2.5	3.3	5.4	49.0
Dadra & Nagar Haveli	12.0	13.9	16.5	28.5	38.7
Daman & Diu	8.8	8.8	17.0	22.4	51.0
Delhi	3.9	3.2	11.2	14.5	78.0
Lakshadweep	3.8	2.7	11.3	14.2	54.8
Pondicherry	8.2	7.8	21.9	36.0	33.5
India	**13.1**	**11.1**	**20.2**	**29.7**	**37.6**

Source: Computed from RCH-RHS-1 & 2 data files.
* Among those who reported a symptom

Figure 4.1

Inter-State Variations in Reported Prevalence of Burning Sensation,
RCH-RHS Survey, 1998-99, India

Legend:
- 5.0 percent and below
- 5.1 - 10.0 percent
- 10.1 - 15.0 percent (National average 13.1)
- 15.1 - 20.0 percent
- 20.1 percent and above

Map not to Scale
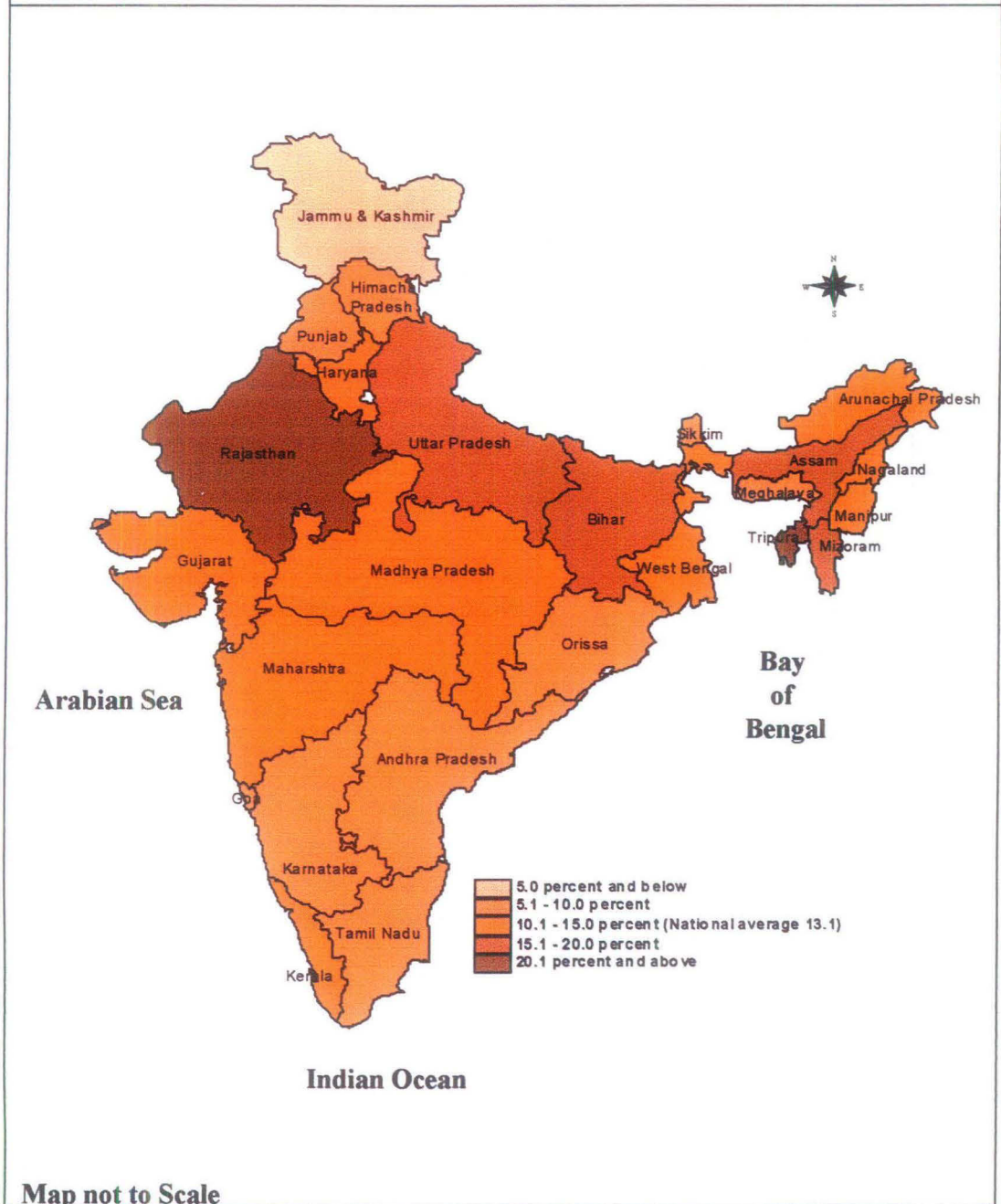
Source: Obtained from RCH-RHS data files.

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4.1.2 Lower Abdominal Pain

Pain in the lower abdomen or vagina during intercourse is a serious reproductive health problem among currently married women. Table 4.1 shows the prevalence of lower abdominal pain among currently married women in India. Overall, the percentage of currently married women with lower abdominal pain is 11.1 percent. There is considerable regional variation in this prevalence. It ranges from 1 percent in Jammu & Kashmir to 20.8 percent in Rajasthan. Other States/Union Territories with relatively low levels of lower abdominal pain are Meghalaya, Chandigarh, Lakshadweep, Delhi, Andaman & Nicobar Islands, Karnataka, Sikkim and Tamil Nadu, and other States/Union Territories relatively high level of lower abdominal pain are Tripura, West Bengal, Gujarat, Dadra & Nagar Haveli, Maharashtra and Haryana. Spatially, prevalence seems to be relatively low in the southern region and a few states in north-west and north-east and in Orissa (figure. 4.2). In Tamil Nadu, the prevalence of lower abdominal pain is relatively low (6.7 percent) compared with the national level (11.1 percent).

4.1.3 Any Problem of Vaginal Discharge

The problem of vaginal discharge is fairly common among women in the reproductive ages. It also indicates gynaecological morbidity. In India as a whole, the prevalence of vaginal discharge is 20.2 percent. Table 4.1 shows that the States/Union Territories differ in the prevalence rates. Among the States/Union Territories, the prevalence rates are reported much lower in Jammu & Kashmir (0.4 percent), and higher in Rajasthan (38.4 percent). The States/Union Territories with relatively low level of problem of vaginal discharge are Chandigarh, Sikkim, Orissa, Andaman & Nicobar Islands, Arunachal Pradesh, Nagaland and Goa. On the other hand, relatively high levels of prevalence are found in Tamil Nadu, Uttar Pradesh, Bihar, Haryana, Mizoram, Gujarat and Tripura. There is no clear regional pattern (figure.4.3). The prevalence of vaginal discharge is relatively high (32.2 percent) in Tamil Nadu compared to the all- India level (20.2).

4.1.4 Any One Symptom of RTI/STI

The women who reported one or more symptoms, burning sensation while urination, pain in the lower abdomen and any problem of vaginal discharge, may be deemed to have reproductive morbidity. This is likely to be on account of some reproductive tract infection/sexually transmitted infections. According to RCH-RHS reports, the prevalence of any symptom of RTI/STI is estimated to be 29.7 percent. Table 4.1 shows the prevalence rates

Figure 4.2
Inter-State Variations in Reported Prevalence Lower Abdominal
Pain, RCH-RHS Survey, 1998-99, India
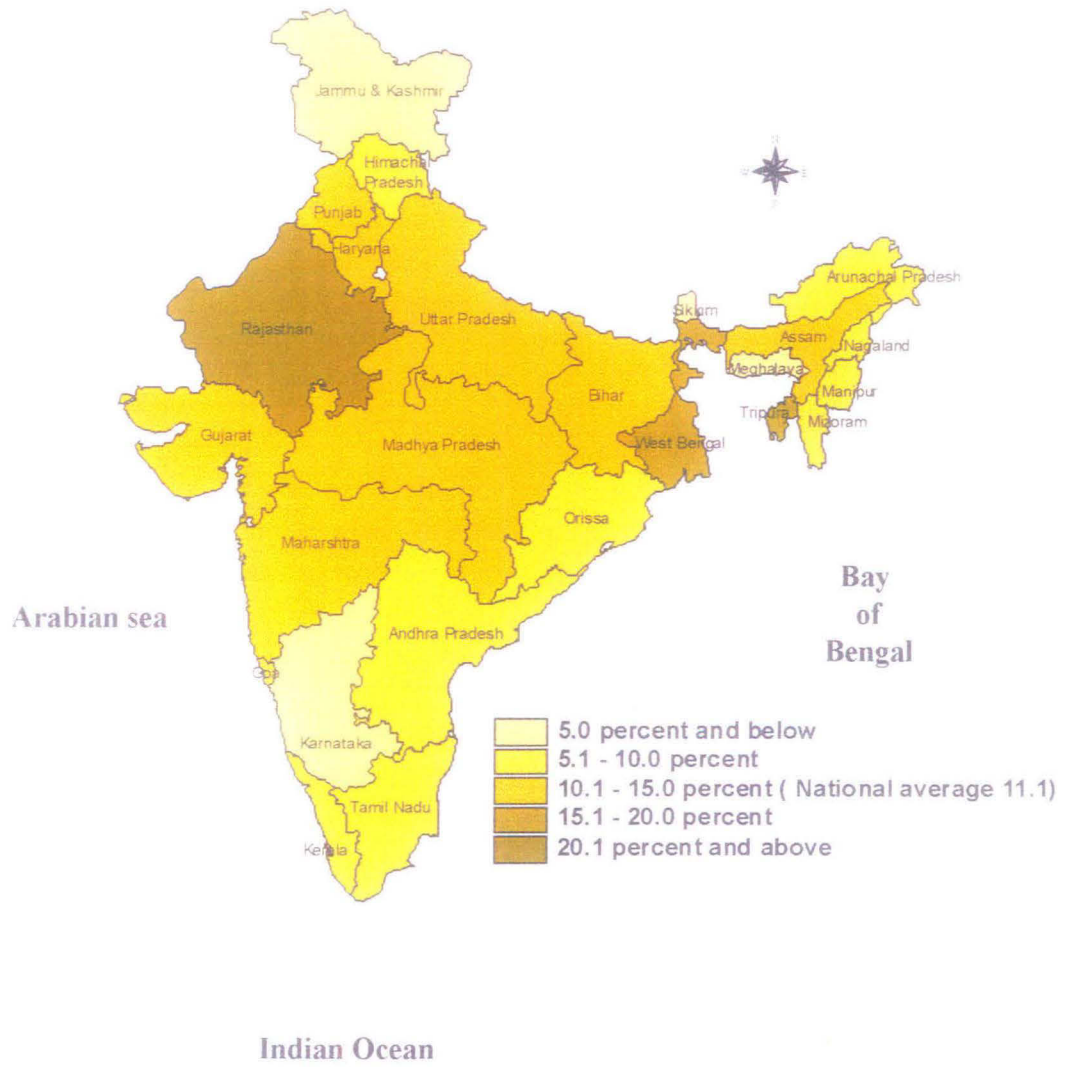
Map not to scale

Source: Obtained from RCH-RHS data files.

Figure 4.3

Inter-State Variations in Reported Prevalence of Any Problem of Vaginal Discharge ,
RCH-RHS Survey, 1998-99, India
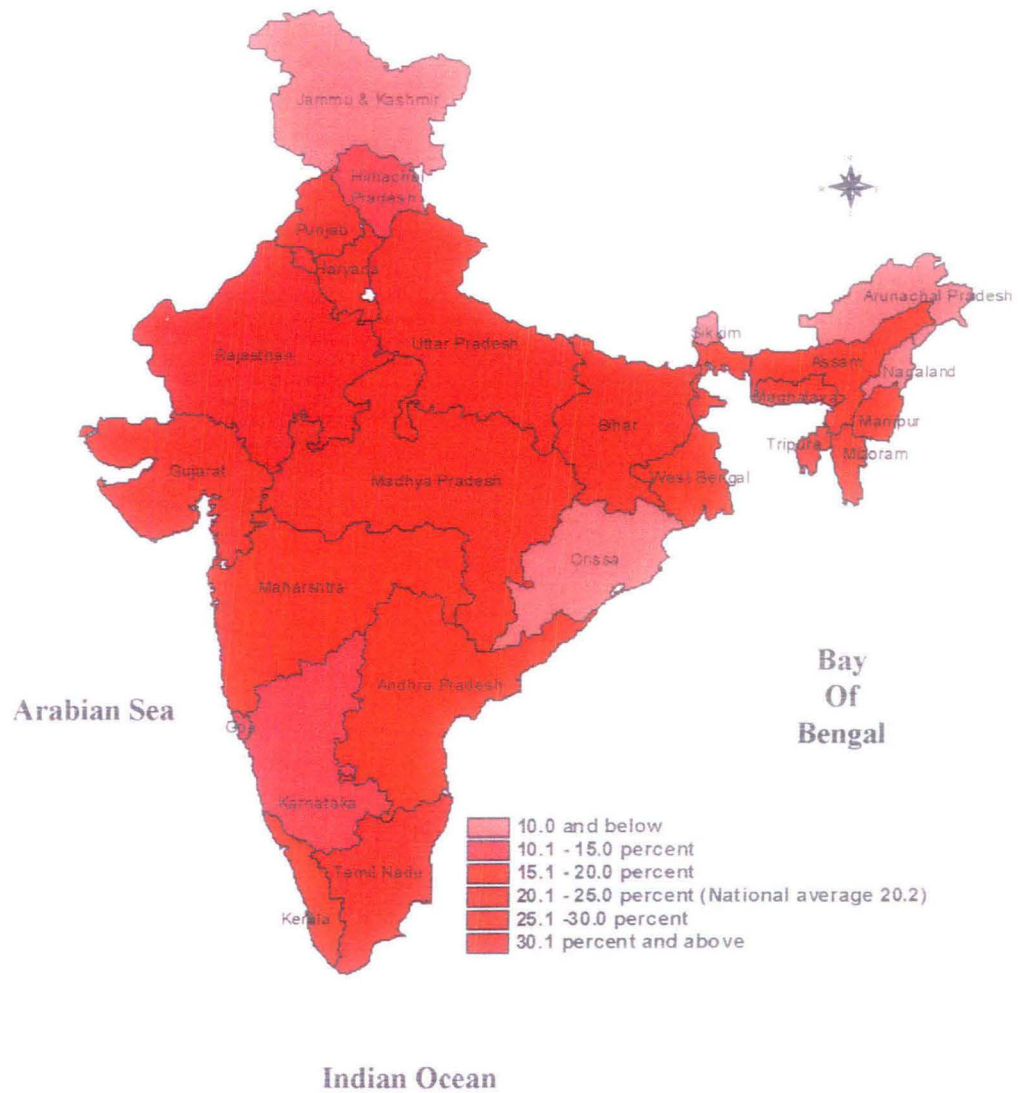
Map not to Scale

Source: Obtained from RCH-RHS data files.

Figure 4.4

Inter-State Variations in Reported Prevalence of any one symptom of RTI/STI, RCH-RHS Survey, 1998-99, India

Legend:
- 15.0 percent and below
- 15.1 - 20.0 percent
- 20.1 - 25.0 percent
- 25.1 - 30.0 percent (National average 29.7)
- 30.1 - 35.0 percent
- 35.1 - 40.0 percent
- 40.1 percent and above
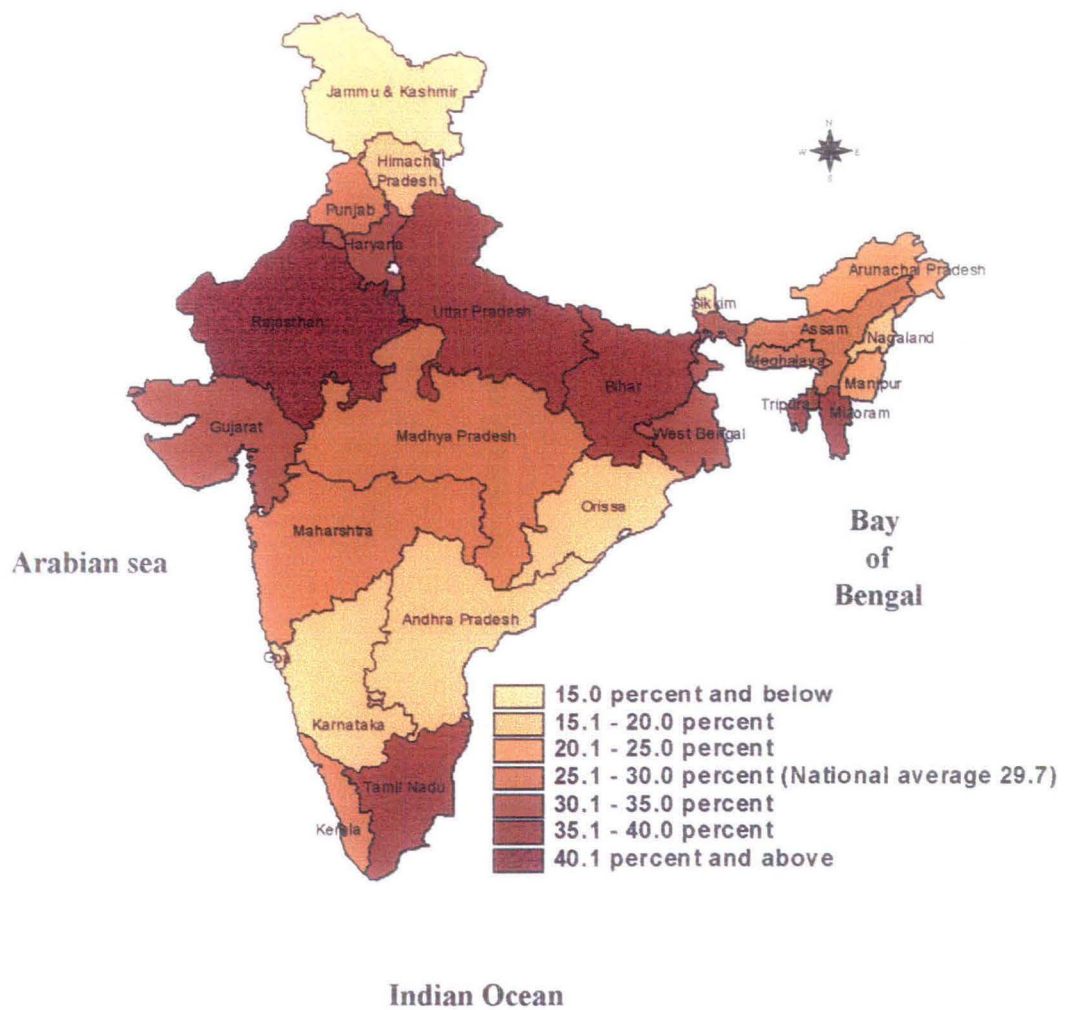
Map not to scale

Source: Obtained from RCH-RHS data files.

by States/Union Territories. The prevalence of any one or more symptoms of RTI/STI is relatively much low in Jammu & Kashmir (3.0 percent) and relatively much high in Rajasthan (45 percent). Other States/Union Territories with relatively low level of prevalence rates are Chandigarh, Sikkim, Andaman & Nicobar Islands, Nagaland, Lakshadweep, Delhi, Orissa and Goa. The States/Union Territories with high levels of prevalence rates are Tripura, Bihar, Tamil Nadu, Uttar Pradesh, Mizoram, Pondicherry, West Bengal and Assam. There is no clear pattern of spatial variations (figure 4.4). At the national level, the prevalence of any symptom of RTI/STI is lower i.e., 29.7 percent compared to Tamil Nadu (36.5 percent).

4.2 NATURE OF VAGINAL DISCHARGE

Vaginal discharge is a common problem among women in reproductive periods. The reproductive and child health survey also asked a question on the type of discharge. The RCH-RHS survey classified four types of vaginal discharge: muccid non foul smelling, thick curdy white, thin dirty white foul smelling and thick grey white foul smelling. Table 4.2 depicts the distribution of women who reported discharge by the nature of discharge.

4.2.1 Muccid Non Foul Smelling Discharge

Among those who reported vaginal discharge, 30.8 percent had muccid non-foul smelling discharge. The share of such a discharge is relatively lower in Haryana (10.7 percent) and relatively much higher in Tamil Nadu (73.7 percent). Other States/Union Territories with relatively low level are Rajasthan, Punjab, Himachal Pradesh, Arunachal Pradesh, Manipur and Uttar Pradesh; states with relatively high proportion are Pondicherry, Meghalaya, Daman & Diu and Delhi. There is no recognizable regional pattern.

4.2.2 Thick Curdy White Discharge

The prevalence of thick curdy white discharge is 35.9 percent among those who reported any discharge at national level. Overall, the share varies from 10.2 percent in Meghalaya to 50 percent in Jammu & Kashmir. Women in Tamil Nadu, Dadra & Nagar Haveli, West Bengal, Daman & Diu, Pondicherry, Nagaland and Tripura have relatively low levels. The proportions are relatively high as reported in Chandigarh, Bihar, Lakshadweep, Arunachal Pradesh, Mizoram, Orissa and Kerala. There is no clear regional pattern. At the national level, the proportion of thick curdy white discharge is high (35.9 percent) compared to Tamil Nadu (20.5 percent).

State	Any problem of vaginal discharge	Percentage of currently married women who reported various systems of RTI/STI during the three months period prior to survey								
		Among those reported problems of vaginal discharge								
		Nature of discharge				Discharge with other conditions				
		Muccid non-foul smelling	Thick curdy white	Thin dirty white foul smelling	Thick grey white foul smelling	Itching	Ulcers	Both (Itching and Ulcers)	Sever lower abdominal pain	Fever
Andhra Pradesh	15.2	50.5	39.6	7.1	2.9	20.3	7.7	5.0	41.4	31.1
Arunachal Pradesh	8.5	17.8	45.0	28.4	8.9	26.9	3.2	10.1	6207	36.3
Assam	16.1	34.7	39.1	19.0	7.2	30.9	5.5	10.4	42.3	31.1
Bihar	26.4	25.2	45.9	24.8	4.1	19.3	2.0	8.5	45.2	23.2
Goa	10.5	40.0	31.1	22.2	6.7	37.8	0.7	1.5	26.7	6.7
Gujarat	23.2	38.4	30.1	24.9	6.6	26.0	3.1	8.2	46.3	33.7
Haryana	24.2	107	33.5	39.2	13.3	31.0	0.8	3.7	36.7	13.2
Himachal Pradesh	13.0	17.1	33.8	41.4	7.7	22.7	2.3	7.3	44.0	27.0
Jammu & Kashmir	0.4	29.6	50.0	14.8	5.6	29.6	13.0	11.1	42.6	38.9
Karnataka	11.9	47.1	35.6	12.5	4.9	14.5	1.9	7.0	33.4	16.5
Kerala	19.6	44.9	40.6	9.6	4.9	31.3	1.9	3.1	45.0	17.9
Madhya Pradesh	21.0	29.3	35.3	26.4	9.0	23.3	5.6	6.3	48.7	36.3
Maharashtra	15.5	40.9	35.7	16.9	6.5	21.7	5.5	7.5	52.2	45.4
Manipur	12.2	24.2	35.5	24.9	15.4	39.1	4.8	13.7	45.9	22.5
Meghalaya	12.2	61.5	10.2	20.5	7.7	18.4	0.9	11.2	47.5	11.3
Mizoram	23.9	26.2	42.0	23.4	8.3	29.1	5.1	13.9	46.9	18.7
Nagaland	9.8	29.0	28.8	33.8	8.4	46.7	9.3	8.9	59.3	31.4
Orissa	7.1	37.7	41.0	18.6	2.8	30.1	3.3	9.9	46.6	29.4
Punjab	20.1	12.6	30.4	36.5	9.1	28.3	1.9	3.3	29.0	11.1
Rajasthan	38.4	11.6	38.7	40.7	5.9	24.5	0.6	3.1	41.3	13.4
Sikkim	5.5	31.9	34.3	23.0	13.8	30.5	6.6	6.6	54.9	29.1
Tamil Nadu	32.2	73.7	20.5	4.3	1.5	8.9	1.4	3.9	22.0	8.4
Tripura	23.0	42.5	30.0	21.8	5.7	26.7	2.3	19.2	49.3	36.2
Uttar Pradesh	27.3	24.6	36.9	27.5	11.1	19.2	1.7	7.4	40.9	26.5
West Bengal	18.5	36.8	23.1	26.7	13.4	23.4	2.6	16.3	51.1	36.5
Union Territory										
Andaman & Nicobar Islands	7.1	35.6	40.0	21.5	3.0	34.1	4.4	2.2	43.0	10.4
Chandigarh	3.3	48.0	48.0	0.0	4.0	40.0	0.0	12.0	40.0	12.0
Dadra & Nagar Haveli	16.5	48.9	21.6	28.1	1.4	25.2	2.2	6.5	46.8	31.7
Daman & Diu	17.0	58.6	27.2	10.4	3.9	25.6	0.6	4.9	36.2	17.5
Delhi	11.2	54.1	28.8	18.0	0.0	51.4	1.8	1.8	33.3	6.3
Lakshadweep	11.3	49.6	45.6	3.2	1.6	28.8	0.8	0.0	44.8	8.0
Pondicherry	21.9	66.0	27.8	5.0	1.2	12.0	1.6	1.8	23.0	9.3
Indian	20.2	30.8	35.9	25.1	7.4	22.4	2.7	6.9	42.1	24.6

Source: Computed from RCH-RHS-1 & 2 data files.

4.2.3 Thin Dirty White Foul Smelling Discharge

According to RCH-RHS, the proportion of thin dirty white foul smelling discharge is 25.1 percent among those with any reported discharge. It ranges from 3.2 percent in Lakshadweep to 41.4 percent in Himachal Pradesh. Note that in Chandigarh, no cases of thin dirty white foul smelling discharge are reported among women. Other States/Union Territories with relatively low levels are Tamil Nadu, Pondicherry, Andhra Pradesh, Kerala and Daman & Diu and relatively high levels are seen in Rajasthan, Haryana, Punjab, Nagaland, Arunachal Pradesh, Dadra & Nagar Haveli and Madhya Pradesh. This clearly indicates there is no spatial pattern. In Tamil Nadu, the proportion of thin dirty white foul smells is low (4.3 percent) compared to India (25.1 percent).

4.2.4 Thick Grey White Foul Smelling Discharge

According to reproductive and child health- rapid household survey, the proportion reporting thick grey white foul smelling discharge among all women reporting any discharge is 7.3 percent. The prevalence rate is low in Pondicherry (1.2 percent) and high in Manipur (15.4 percent). Note that not a single respondent in Delhi reported these symptoms. Other States/Union Territories with relatively low levels are Daman & Nagar Haveli, Tamil Nadu, Lakshadweep, Orissa and Andhra Pradesh. On the other hand, relatively high levels are seen in Manipur, West Bengal, Haryana, Uttar Pradesh, Sikkim, Punjab, Madhya Pradesh and Arunachal Pradesh. No recognizable regional variation is seen. At the national level, the prevalence of thick grey white foul smelling is high (7.4 percent) compared to Tamil Nadu (1.5 percent).

4.3 DISCHARGE WITH OTHER CONDITIONS

Many women have reported some other symptoms along with vaginal discharge. The RCH-RHS survey has recorded five types of problems with discharge: itching, ulcers, itching and ulcers, severe lower abdominal pain, and fever. We discuss those below.

4.3.1 Itching

Generally, itching with discharge is common among women. In India, among women who reported any discharge, 22.4 percent also reported itching. Table 4.2 presents the rates by States/Union Territories. The proportion of itching is low in Tamil Nadu (8.9 percent) and high in Delhi (51.4 percent). Other States/Union Territories with relatively low levels are Pondicherry, Karnataka, Meghalaya, Uttar Pradesh, Bihar, Andhra Pradesh, Maharashtra and

Himachal Pradesh and also relatively high in Nagaland, Chandigarh, Manipur, Goa, Andaman & Nicobar Islands and Kerala. There is no pattern of spatial variation.

4.3.2 Ulcers

Table 4.2 shows variation in the prevalence rates by States/ Union Territories. The rate among States/Union Territories varies from 0.6 percent in Daman & Diu to 13.0 percent in Jammu & Kashmir. The lowest levels are seen in Goa, Haryana, Lakshadweep, Meghalaya and Tamil Nadu, and the highest levels in Nagaland, Andhra Pradesh and Assam. This clearly reveals that there is no regional pattern. The national level prevalence of ulcers with discharge is higher (2.7 percent) compared with Tamil Nadu (1.4 percent).

4.3.3 Itching and Ulcers

According to RCH-RHS, 6.9 percent of women with symptoms of discharge with itching also reported ulcers. In Lakshadweep, there is no reported problem of itching and ulcers. The prevalence ranges from 1.5 percent in Goa to 19.2 percent in Tripura. Other States/Union Territories with relatively low levels are Delhi, Pondicherry, Andaman & Nicobar Islands, Rajasthan and Punjab, and relatively high levels are seen in West Bengal, Mizoram, Manipur, Chandigarh, Meghalaya and Jammu & Kashmir. No discernible pattern of regional variation is seen. In Tamil Nadu, the proportion reporting itching and ulcers is low (3.9 percent) compared to national level (6.9 percent).

4.3.4 Severe Lower Abdominal Pain

At the national level, the prevalence of severe lower abdominal pain is 42.1 percent among women with vaginal discharge. Table 4.2 shows the rates by States/Union Territories. The level is the lowest in Tamil Nadu (22 percent) and the highest in Arunachal Pradesh (62.7 percent). Other States/Union Territories with relatively low level are Pondicherry, Goa, Punjab, Delhi and Karnataka. Relatively higher levels are observed in Nagaland, Sikkim, Maharashtra, West Bengal and Tripura. There is no spatial pattern.

4.3.5 Fever

Overall, 24.6 percent of women reporting vaginal discharge also had fever. This level ranges from 6.3 percent in Delhi to 45.4 percent in Maharashtra. Low levels are seen in Tamil Nadu, Pondicherry and Andaman & Nicobar Islands, and relatively high levels in Jammu & Kashmir, West Bengal, Madhya Pradesh, Assam and Gujarat. This clearly indicates that there is no

regional pattern. At the national level, the prevalence of fever with discharge is high (24.6 percent) compared with Tamil Nadu (8.4 percent).

4.4 TREATMENT SEEKING BEHAVIOUR FOR RTI/STI

A women suffering from a reproductive health problem may or may not seek treatment. Often, she may not perceive it as an illness requiring medical care but may consider it as normal or minor matter. Some may not have access to health care. Reproductive morbidity being a sensitive matter, some women may be too shy to consult a doctor. Besides, even within the family there may be reluctance to seek treatment. Among currently married women who reported any one symptom of RTI/STI, 62.4 percent did not take any treatment or did not consult a doctor. Table 4.1 shows the proportion of women who sought treatment for RTI/STI among those who reported symptoms by States/Union Territories. The proportion is the lowest in Rajasthan (22.6 percent) and the highest in Jammu & Kashmir (89.5 percent). Other States/Union Territories with relatively low levels of treatment seeking are West Bengal, Meghalaya, Tamil Nadu, Pondicherry, Arunachal Pradesh, Nagaland and Uttar Pradesh. On the other hand relatively high levels are seen in Delhi, Mizoram, Lakshadweep, Karnataka, Goa, Daman & Diu and Kerala. This clearly indicates that there is no spatial pattern (figure 4.5). In Tamil Nadu, the proportion that sought treatment for RTI/STI is relatively low, 31.1 percent, compared to the national level, 37.6 percent.

4.5 PREVALENCE OF RTI/STI AMONG MEN AND TREATMENT SEEKING BEHAVIOUR

According to RCH-RHS report, the national level estimate of the prevalence of one or more symptoms of RTI/STI among men is reported as 12.2 percent. Table 4.3 presents the proportion of any symptoms of RTI/STI. The lowest prevalence of RTI/STI is reported among men in Pondicherry (0.8 percent) and the highest in West Bengal (18.1 percent). The States/Union Territories in Himachal Pradesh, Andaman Nicobar Islands, Chandigarh, Lakshadweep, Karnataka, Goa, and Sikkim have relatively low level of prevalence. The high levels are found in Uttar Pradesh, Bihar, Orissa, Daman & Diu, Gujarat and Assam. The eastern regions show relatively high prevalence levels. The prevalence of RTI/STI is slightly lower (10.7 percent) in Tamil Nadu compared to the all India level (12.3 percent).

Table 4.3

Percentage of Men age 20-54 years and Women age 15-44 years who Reported Symptoms of RTI/STI and Sought Treatment by States/Union Territories

State	Any One Symptom of RTI/STI during Three Months Period Prior to Survey		Sought Treatment for RTI/STI Among Those who Reported a Symptom	
	Men	Women	Men	Women
Andhra Pradesh	7.6	18.8	65.0	46.5
Arunachal Pradesh	13.3	20.6	33.0	35.3
Assam	15.1	28.5	40.9	38.3
Bihar	17.7	37.7	59.1	37.0
Goa	5.2	16.4	63.2	52.0
Gujarat	15.3	32.0	51.3	36.1
Haryana	9.8	32.3	54.0	38.2
Himachal Pradesh	2.0	19.1	56.3	49.2
Jammu & Kashmir	3.8	3.0	87.4	89.5
Karnataka	4.4	16.3	58.6	53.8
Kerala	4.9	27.7	58.6	50.8
Madhya Pradesh	10.2	26.1	54.6	43.7
Maharashtra	8.9	25.4	69.2	47.9
Manipur	12.7	23.6	46.1	46.1
Meghalaya	8.5	26.6	65.2	31.2
Mizoram	10.2	36.4	40.7	56.1
Nagaland	14.3	16.5	51.9	35.7
Orissa	17.3	15.6	52.4	38.1
Punjab	5.4	30.0	61.0	42.4
Rajasthan	12.5	45.0	51.0	22.6
Sikkim	8.7	11.3	60.0	49.8
Tamil Nadu	10.7	36.5	25.9	31.5
Tripura	15.1	39.8	51.6	45.4
Uttar Pradesh	18.0	36.4	55.0	35.8
West Bengal	18.1	30.4	53.4	30.2
Union Territory				
Andaman & Nico Islan	2.1	13.7	36.0	50.5
Chandigarh	3.4	5.4	75.0	49.0
Dadra & Nagar Haveli	10.0	28.5	82.6	38.7
Daman & Diu	17.0	22.4	55.9	51.0
Delhi	6.3	14.5	73.3	78.0
Lakshadweep	3.8	14.2	68.2	54.8
Pondicherry	0.3	36.0	80.9	33.5
India	12.3	29.7	55.1	37.6

Source: RCH-RHS, 1998-99, All India report, IIPS, Mumbai 2001

mong men who reported any symptoms of RTI/STI, 44.9 percent did not take any treatment
· did not consult any doctor. The proportion seeking treatment is the lowest in Tamil Nadu
5.9 percent) and the highest in Jammu & Kashmir (87.4 percent). Low levels are found in
runachal Pradesh, Andaman & Nicobar Islands, Mizoram, Assam and Manipur, and high
vels in Dadra & Nagar Haveli, Pondicherry, Chandigarh, Delhi, Maharashtra, Lakshadweep,
eghalaya and Andhra Pradesh. The tendency of seeking treatment for RTI/STI is
mparatively high in the central and eastern regions of India.

Figure 4..5

Inter-State Variations in Percentage Who Sought Treatment for RTI/STI, RCH-RHS Survey, 1998-99, India

Map not to Scale
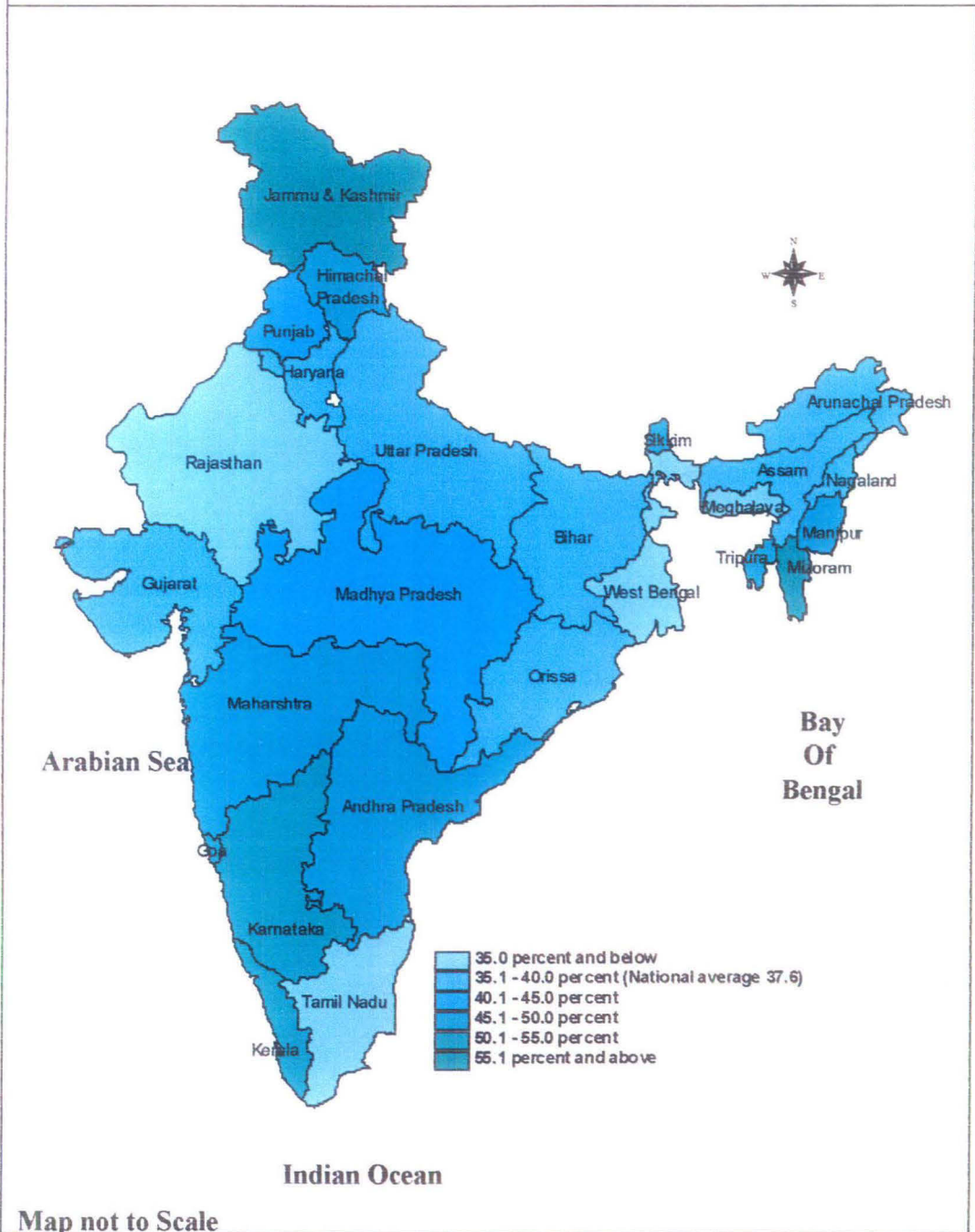
Source: Obtained from RCH-RHS data files.

Generally, women are more vulnerable to RTI/STI than men. In all the States/Union Territories, the prevalence of symptoms of RTI/STI among women in much higher compared to men except Jammu & Kashmir and Orissa. In Pondicherry and Punjab, the difference in prevalence is much higher compared to other States/Union Territories. On the other hand, Nagaland, Sikkim and Chandigarh have much lower difference in prevalence of symptoms of RTI/STI among men and women. In most States/Union Territories, in comparison to men, the proportion of women who sought treatment for RTI/STI is low. But in Arunachal Pradesh, Jammu & Kashmir, Mizoram, Tamil Nadu and Andaman & Nicobar Islands have lower percentage of men seeking treatment for RTI/STI compared to women.

4.6 PREVALENCE OF RTI/STI: COMPARATIVE PICTURE FROM RCH-RHS AND NFHS-2

At the all India level and state levels, both the RCH-RHS and the NFHS-2 of 1998-99 estimated the prevalence of RTI/STI for three months period preceding the survey. Both surveys covered currently married women (ages 15-44 or 15-49). The NFHS-2 also covered ever-married women and gave tabulations both for currently married women and ever married women separately. The RCH-RHS and NFHS-2 tabulations are relatively comparable. We discuss selected reproductive morbidity indicators   such as burning sensation while urination, lower abdominal pain, any problem of vaginal discharge, any symptoms of RTI/STI and treatment seeking in the seventeen major states in India as obtained from the two surveys to have a comparative view.

Table 4.4 shows the prevalence of burning sensation while urination among currently married women by major states. According to RCH-RHS, at the national level the prevalence rates are relatively low (13.1 percent) compared to NFHS-2 (17.8 percent). In Haryana, Punjab, Rajasthan and Uttar Pradesh, the prevalence rates in the two surveys are about the same. The difference in prevalence is high in Andhra Pradesh, Bihar, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra and Orissa. According to both the RCH-RHS and NFHS-2 in Tamil Nadu, the prevalence of burning sensation is low (7.8 percent and 12.3 percent respectively) compared to all India level.

At the all India level, the reproductive and child health survey indicates that the reported prevalence of lower abdominal pain (11.1 percent) is quite close to NFHS-2 survey estimate

(12.5 percent). Table 4.4 shows the prevalence rates in selected states. The prevalence rates are nearly the same in the two surveys in Himachal Pradesh, Karnataka, Tamil Nadu and West Bengal. Andhra Pradesh, Gujarat, Jammu & Kashmir, Kerala and Punjab show a higher difference in prevalence rates between the estimates from the two surveys. According to RCH-RHS and NFHS-2, at the national level the prevalence of lower abdominal pain is higher than in Tamil Nadu, which has a prevalence rate of 6.7 percent and 8.5 percent respectively according to the two surveys.

Table 4.4 shows the prevalence of any problem of vaginal discharge among currently married women in states. According to RCH-RHS, at the national level the prevalence of any problem of vaginal discharge is low (20.2 percent) compared to NFHS-2 (30 percent). In Gujarat, Karnataka, Rajasthan and Uttar Pradesh, the level is about the same in the both surveys. The difference in prevalence is high in Andhra Pradesh, Assam, Himachal Pradesh, Jammu &Kashmir, Maharashtra, Orissa, Tamil Nadu and West Bengal. According to the RCH, the prevalence rate is higher than the national level in Tamil Nadu but according to NFHS-2, the level, in Tamil Nadu is lower than national level.

At the national level, the RCH-RHS survey estimates of the prevalence of one or more symptoms of RTI/STI is low (29.7 percent) compared to the NFHS-2 survey estimate (39.2 percent). The gap between the prevalence rates from the two surveys is much higher in Andhra Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh and Maharashtra. Both surveys give nearly the same results in Karnataka, Punjab, Rajasthan and Uttar Pradesh.

Among currently married women who reported any one symptom of RTI/STI, 37.6 percent sought some treatment according to RCH and 34.6 percent according to NFHS-2. The degree of treatment seeking is nearly the same in the two surveys at the national level and in Karnataka, Maharashtra and Rajasthan. However, the difference in proportion is much higher in Jammu & Kashmir.

Table 4.4

Prevalence of Reproductive Tract Infection/ Sexually Transmitted Infection: Comparative Picture from the RCH-RHS* and NFHS-2** India and States

| State | Percentage of Women who Reported Symptoms During the Three Months Period Prior to Survey | | | | | | | | Sought Treatment for RTI/STI Among Those Who Reported a Symptom | |
| | Burning Sensation While Urinating | | Lower Abdominal Pain | | Any Problem of Vaginal Discharge | | Any One Symptom of RTI/STI | | | |
	RCH-RHS	NFHS-2	RCH-RHS	NFHS-2	RCH-RHS	NFHS-2	RCH-RHS	NFHS-2	RCH-RHS	NFHS-2
Andhra Pradesh	8.0	18.8	7.8	16.9	15.2	38.2	18.8	48.5	46.5	37.4
Assam	15.9	20.6	11.1	14.7	16.1	41.2	28.5	50.6	38.3	27.5
Bihar	19.4	25.7	13.1	11.4	26.4	33.7	37.7	44.2	37.0	30.6
Gujarat	14.9	10.3	14.4	6.9	23.2	23.0	32.0	28.6	36.1	33.0
Haryana	13.9	12.6	13.1	8.3	24.2	32.2	32.3	38.2	38.2	44.3
Himachal Pradesh	7.2	14.3	7.8	8.6	13.0	26.5	19.1	33.7	49.2	53.5
Jammu & Kashmir	2.3	31.0	1.0	21.7	0.4	50.5	3.0	60.5	89.5	36.2
Karnataka	6.1	7.2	4.8	2.7	11.9	13.5	16.3	18.8	53.8	51.9
Kerala	10.4	19.8	9.0	16.8	19.6	26.3	27.7	42.4	50.8	44.9
Madhya Pradesh	13.8	22.5	12.0	16.7	21.0	34.8	26.1	44.9	43.7	31.0
Maharashtra	12.1	20.1	13.7	10.4	15.5	30.7	25.4	40.0	47.9	46.9
Orissa	6.6	11.0	7.2	11.0	7.1	18.2	15.6	27.5	38.1	25.4
Punjab	9.7	8.5	12.5	5.6	20.1	23.9	30.0	28.3	42.4	59.2
Rajasthan	20.9	19.1	20.8	11.1	38.4	36.8	45.0	43.2	22.6	22.1
Tamil Nadu	**7.8**	**12.3**	**6.7**	**8.5**	**32.2**	**18.6**	**36.5**	**27.8**	**31.5**	**49.2**
Uttar Pradesh	17.0	17.9	12.7	16.4	27.3	28.0	36.4	38.1	35.8	25.1
West Bengal	15.0	18.4	15.5	14.6	18.5	35.8	30.4	45.3	30.2	27.0
India	**13.1**	**17.8**	**11.1**	**12.5**	**20.2**	**30.0**	**29.7**	**39.2**	**37.6**	**34.5**
Correlation coefficient (based on 17 major states)	0.30 (0.244)		-0.13 (0.619)		-0.02 (0.955)		-0.03 (0.896)		0.60 (0.011)	

Source: RCH-RHS, 1998-99, NFHS-2, 1998-1999, IIPS, Mumbai
* Currently married women in age 15 -44 years. ** Currently married women in age 15-49 years

Figure 4.6 Reported Prevalence of Burning Sensation, RCH-RHS-1&2 and NFHS-2
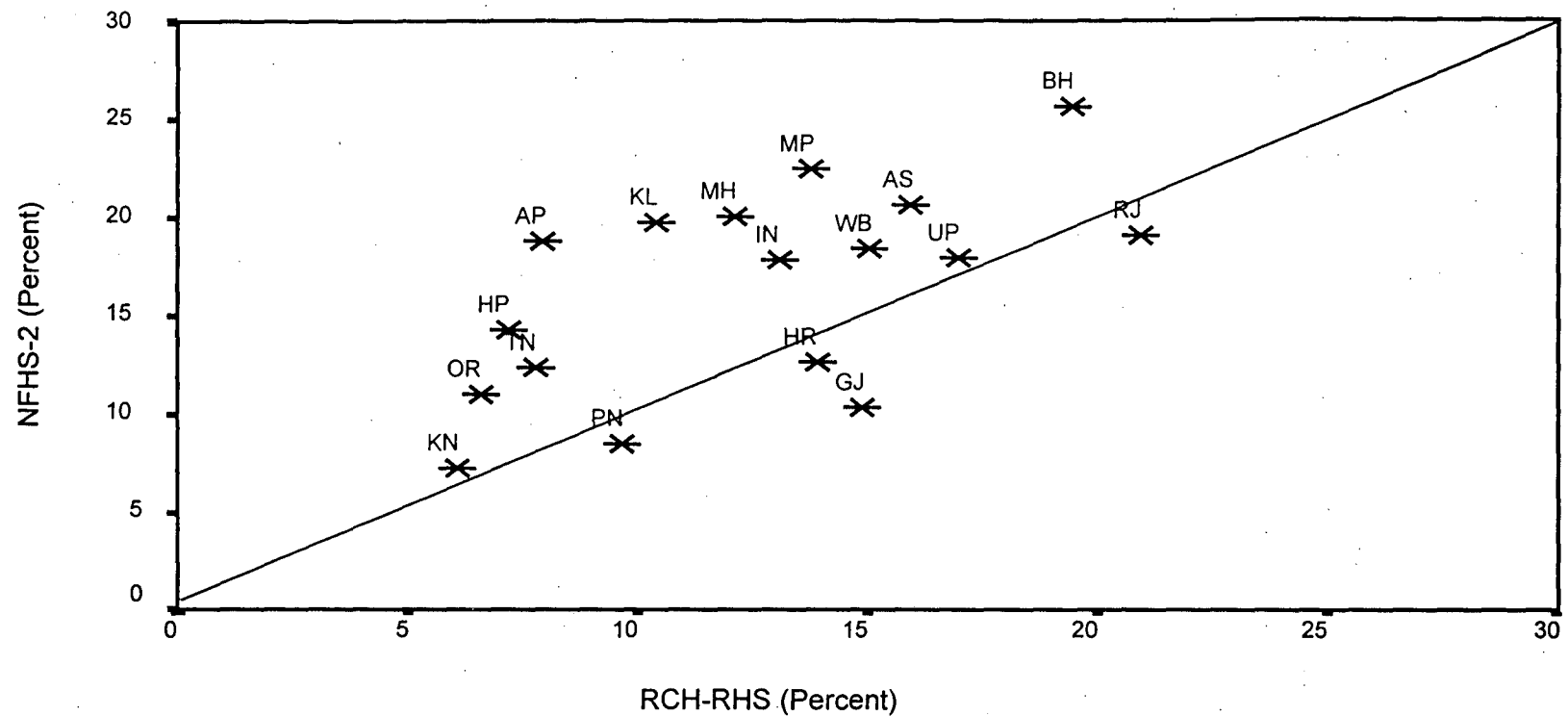
Note: AP-Andhra Pradesh, AS-Assam, BH-Bihar, GJ- Gujarat, HR-Haryana, HP-Himachal Pradesh, IN-India, JK- Jammu & Kashmir, KA-Karnataka, KL- Kerala, MP- Madhya Pradesh, MH-Maharashtra, OR-Orissa, PN-Punjab, RJ-Rajasthan, TN-Tamil Nadu, UP-Uttar Pradesh, and WB-West Bengal.

Figure 4.7 Reported Prevalence of Lower Abdominal Pain, RCH-RHS-1&2 and NFHS-2
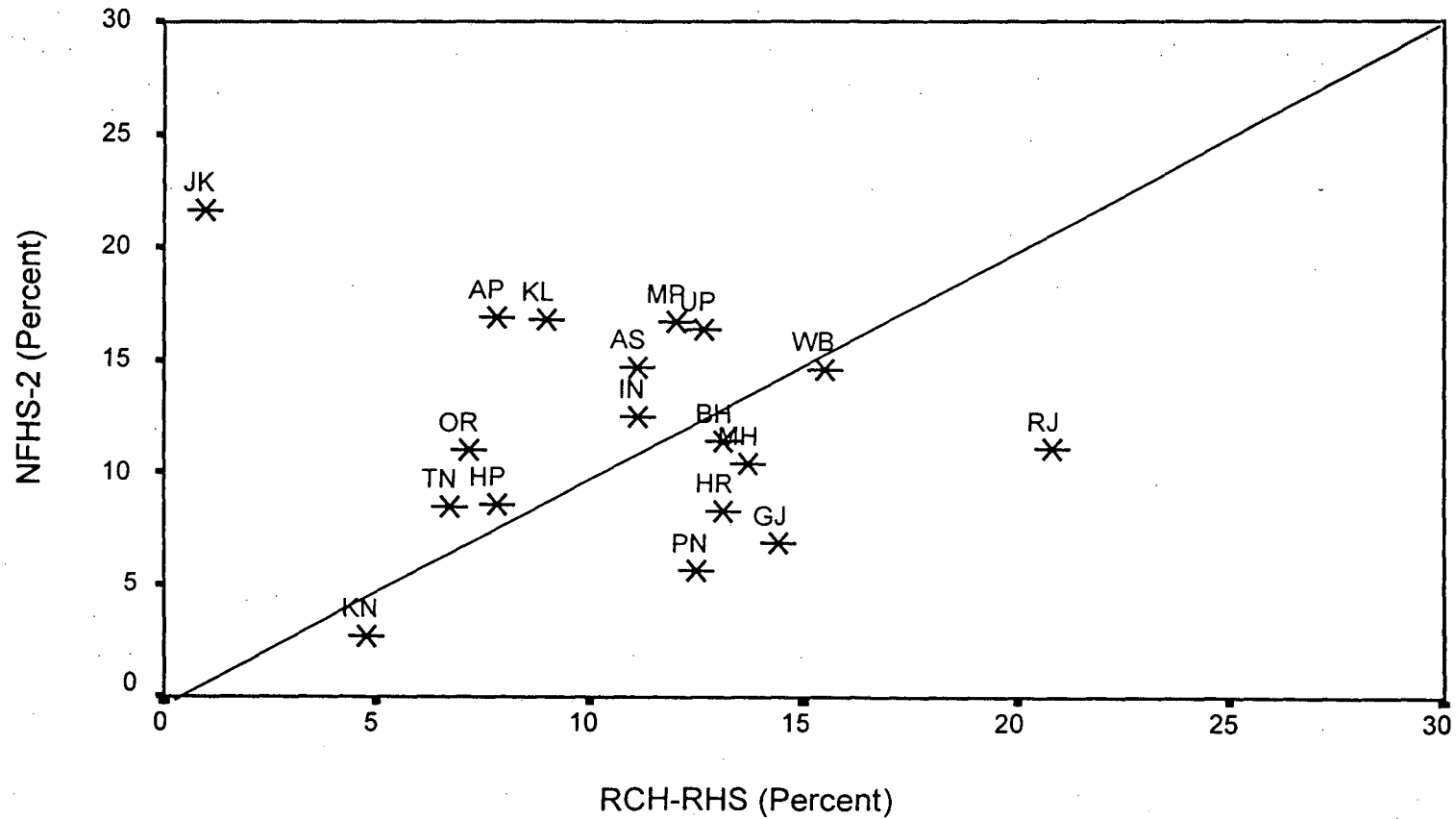
Note: AP-Andhra Pradesh, AS-Assam, BH-Bihar, GJ- Gujarat, HR-Haryana, HP-Himachal Pradesh, IN-India, JK- Jammu & Kashmir, KA-Karnataka, KL- Kerala, MP- Madhya Pradesh, MH-Maharashtra, OR-Orissa, PN-Punjab, RJ-Rajasthan, TN-Tamil Nadu, UP-Uttar Pradesh, and WB-West Bengal.

Figure 4.8 Reported Prevalence of Any Problem of Vaginal Discharge, RCH-RHS-1&2 and NFHS-2
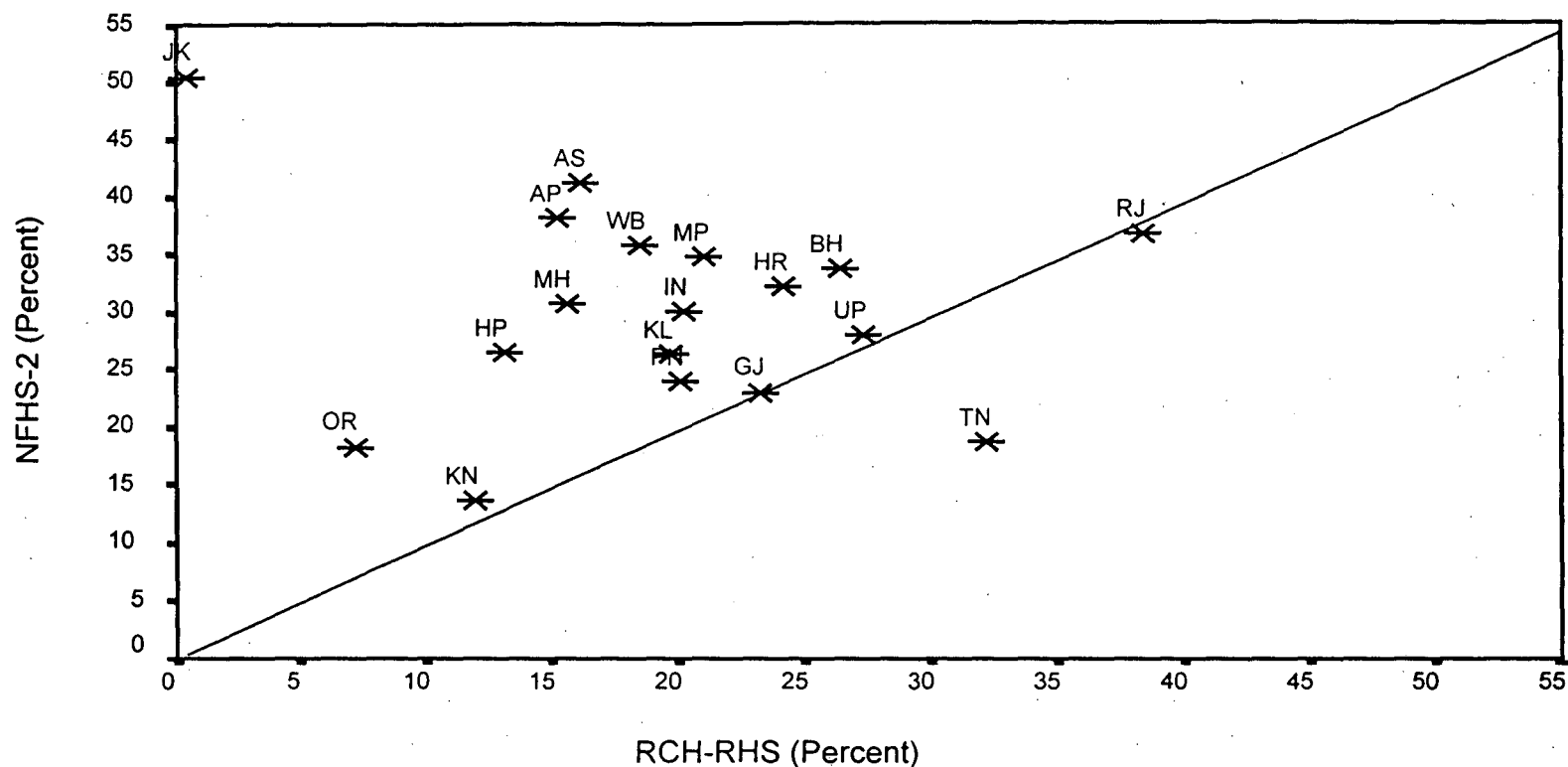
Note: AP-Andhra Pradesh, AS-Assam, BH-Bihar, GJ- Gujarat, HR-Haryana, HP-Himachal Pradesh, IN-India, JK- Jammu & Kashmir, KA-Karnataka, KL- Kerala, MP- Madhya Pradesh, MH-Maharashtra, OR-Orissa, PN-Punjab, RJ-Rajasthan, TN-Tamil Nadu, UP-Uttar Pradesh, and WB-West Bengal.

Figure 4.9 Reported Prevalence of Any One Symptom of RTI/STI, RCH-RHS-1&2 and NFHS-2
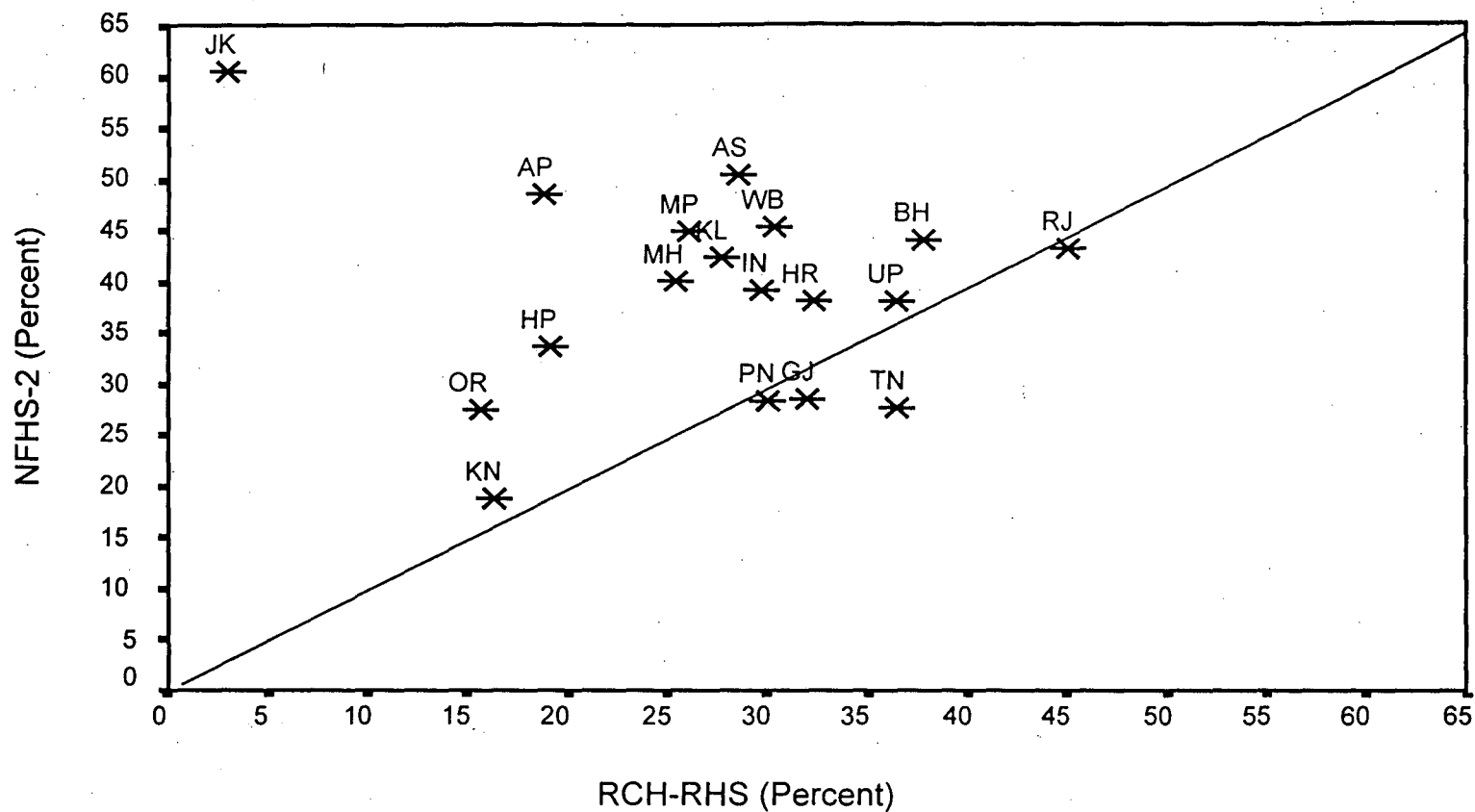
Note: AP-Andhra Pradesh, AS-Assam, BH-Bihar, GJ- Gujarat, HR-Haryana, HP-Himachal Pradesh, IN-India, JK- Jammu & Kashmir, KA-Karnataka, KL- Kerala, MP- Madhya Pradesh, MH-Maharashtra, OR-Orissa, PN-Punjab, RJ-Rajasthan, TN-Tamil Nadu, UP-Uttar Pradesh, and WB-West Bengal.

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Figure 4.10 Percent who Sought Treatment for RTI/STI, RCH-RHS-1&2 and NFHS-2
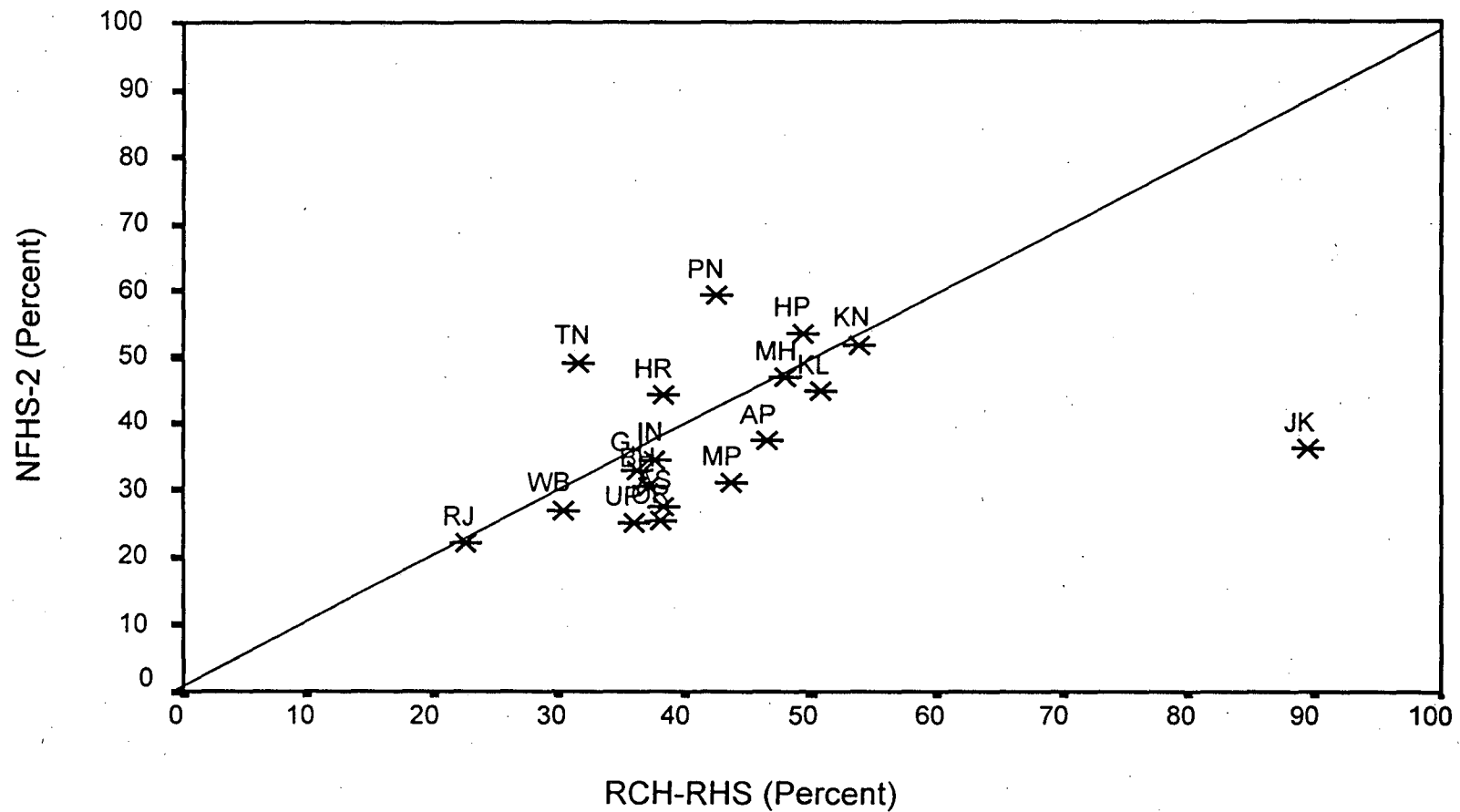
Note: AP-Andhra Pradesh, AS-Assam, BH-Bihar, GJ- Gujarat, HR-Haryana, HP-Himachal Pradesh, IN-India, JK- Jammu & Kashmir, KA-Karnataka, KL- Kerala, MP- Madhya Pradesh, MH-Maharashtra, OR-Orissa, PN-Punjab, RJ-Rajasthan, TN-Tamil Nadu, UP-Uttar Pradesh, and WB-West Bengal.

In order to understand the relationship between the two large-scale surveys, the RCH-RHS and NFHS-2 the Spearman rank correlation coefficients have been computed. The indicators, burning sensation while urination, lower abdominal pain, any problem of vaginal discharge, any one symptom of RTI/STI and sought treatment for RTI/STI, are used for analysis in the seventeen major states.

The prevalence of reproductive tract infection, whether women are reporting specific symptoms, in the two surveys are not highly correlated. In fact, none of the coefficients are significantly different from zero at even 10 percent level. The scatter diagrams shown in figure (4.6 to 4.9) also reveal the lack of relationship. It must be noted here that the line shown in this diagram is the line of equality (RCH estimate = NFHS-2 estimate) and not a regression line.

In the figures 4.6, 4.8 and 4.9 most of the points are above the line indicating that the prevalence of burning sensation, vaginal discharge and any one symptom of RTI/STI are generally higher according to the NFHS-2 than the RCH-RHS.

However, about the tendency to seek treatment there is good convergence of estimates from two surveys. As can be seen from figure 4.10, with the exception of Jammu & Kashmir most of the points are along or close to the line of equality. The correlation coefficient is also higher (0.60) and significant at 5 percent level.

4.7 SUMMARY

The survey reveals that, nearly one-third of women are suffering from any one symptom of RTI/STI. However, among those symptoms vaginal discharge is more common (20.2 percent) according to the RCH-RHS survey than burning sensation (13.1 percent) and lower abdominal pain (11.1 percent). Among those who reported any symptoms of RTI/STI, 37.6 percent of women took treatment for RTI/STI. Some spatial variation is seen; prevalence of burning sensation is lower in southern and north-western states and southern, north-west and north east region also reported low level of prevalence of lower abdominal pain. But in the prevalence of vaginal discharge and any one symptoms of RTI/STI, no clear regional pattern is seen. Treatment seeking also shows no spatial pattern.

The RCH-RHS survey also enquired into male reproductive health problems and treatment seeking behaviour. The prevalence of RTI/STI among men is 12.3 percent but among those

who reported any symptom, 55.1 percent had treatment for RTI/STI. The central and eastern regions have relatively high treatment seeking for RTI/STI. Overall, prevalence of RTI/STI is reported less by men (12.3 percent) than women (29.7 percent). However, the tendency to seek treatment is higher among men (55.1 percent) than women (37.6 percent). This disparity reflects the overall neglect of female health matters vis-à-vis those of men. Besides, women may be shy to seek care for reproductive morbidity and may accept such morbidity as normal.

The two large surveys (RCH-RHS and NFHS-2) provide data on the prevalence of RTI/STI, but at the state level no consistency is seen between the estimates from the two surveys. Clearly, there are problems in quality of data on reproductive healths. Surveys have begun to obtain such data only in the recent period and the methodology is to be well established. At this stage, it is not possible to assess the relative quality of the two surveys and examine validity of the information. However, it must be noted that the RCH-RHS survey was primarily designed to obtain information on reproductive health while the NFHS-2 covered various issues including fertility, and child health and reproductive health formed a minor part of it. An added advantage is that the RCH-RHS provided district level estimates but the NFHS-2 did not. Therefore, in further work only the data from the RCH-RHS survey are being utilized. This is not to criticize the NFHS-2, but only to make a choice on utilization of data based on current information.

Chapter-5

Reproductive Tract Infections and Treatment Seeking Behaviour in Tamil Nadu

CHAPTER-5

REPRODUCTIVE TRACT INFECTIONS AND TREATMENT SEEKING BEHAVIOUR IN TAMIL NADU

In the previous chapter, we briefly discussed the prevalence of reproductive tract infections based on self-reported symptoms and treatment seeking behaviour in India and states. It was seen that the prevalence varies substantially across states of India. In this chapter, we examine spatial variations within the state of Tamil Nadu. The large-scale survey namely RCH-RHS survey now provides estimates of the prevalence of RTI/STI at the district level. It has been a pioneering effort in data collection on reproductive health problems at the district level. This data is based on self-reported symptoms of morbidity as noted in the previous chapter.

5.1 REPRODUCTIVE HEALTH PROBLEMS AMONG WOMEN

5.1.1 Burning Sensation

In Tamil Nadu, the prevalence of burning sensation is 7.8 percent. Table 5.1 reveals that the prevalence of burning sensation among currently married women varies by districts. Overall, the prevalence ranges from 1.1 percent in Namakkal to 14.2 percent in South Arcot. Other districts with relatively low levels are Tuticorin, Madurai, Ramanathapuram, Salem and Chennai. Relatively high levels are seen in North Arcot, Coimbatore, Dindigul, Erode and Thiruvannamalai. Figure 5.1 presents the geographic distribution of prevalence level in Tamil Nadu. The reported prevalence rates are relatively high in northern and western zones the states.

5.1.2 Lower Abdominal Pain

At the state level, the prevalence of lower abdominal pain among the currently married women as reported is 6.7 percent. Table 5.1 shows the prevalence rates by districts. Percentage of women who experienced lower abdominal pain range from the lowest of 0.5 percent in Namakkal to the highest of 18.8 percent in South Arcot. Other districts like Theni, Madurai, Ramanathapuram, Dharmapuri and Chennai have low level of prevalence. Thiruvannamalai, North Arcot, Coimbatore, Erode and Sivagangai have high level of prevalence. Figure 5.2 shows the regional variation in the prevalence of lower abdominal pain. The northern region reported higher prevalence rates than the other regions.

Table 5.1
Prevalence of Reproductive Tract Infection/Sexually Transmitted Infection (RTI/STI), Tamil Nadu and Districts

District	Percentage of Currently Married Women Who Reported Symptoms of RTI/STI during the Three Months Period Prior to Survey				
	Burning Sensation	Lower Abdomina l Pain	Any Problem of Vaginal Discharge	Any One Symptoms of RTI/STI	Sought Treatment for RTI/STI*
Chengalpattu	8.0	6.5	20.2	25.2	37.8
Chennai	7.2	4.8	14.1	20.5	48.0
Coimbatore	12.2	10.0	37.5	43.6	40.3
Dharmapuri	7.3	4.4	47.1	48.5	28.1
Dindigul	8.5	6.6	49.0	52.2	21.9
Erode	11.1	9.8	41.0	46.0	41.7
Kanniyakumari	8.7	8.0	56.9	59.0	25.9
Madurai	4.4	2.9	24.8	26.8	27.7
Namakkal	1.1	0.5	15.4	15.5	30.2
Nilgiris	8.4	4.9	54.7	58.5	13.1
North Aroct	12.6	11.3	26.1	31.7	46.7
Pudukottai	8.7	6.7	36.1	40.2	30.6
Ramanathapuram	4.7	3.1	39.0	42.1	12.8
Salem	6.5	5.8	26.0	30.2	31.0
Sivagangai	7.6	9.4	27.5	33.5	40.0
South Aroct	14.2	18.8	33.1	44.0	27.6
Thanjavur	7.9	4.2	39.4	43.4	17.3
Theni	7.9	2.8	27.3	30.5	39.8
Thiruvannamalai	10.0	15.1	27.3	36.2	32.2
Tiruchirappalli	8.2	6.9	35.2	39.0	31.5
Tirunelveli	7.4	7.3	29.3	33.5	41.9
Tuticorin	2.0	5.3	24.5	27.7	26.8
Virudhunagar	7.3	4.0	24.1	26.3	37.3
Tamil Nadu	**7.8**	**6.7**	**32.2**	**36.5**	**31.5**
Coefficient of variation	38.54	59.86	35.93	30.83	30.67

Source: Computed from RCH-RHS-1 & 2 data files for Tamil Nadu.
* Among those who reported symptoms

5.1.3 Any Problem of Vaginal Discharge

Women who report experience of any problem of vaginal discharge are 32.2 percent at the state level. Table 5.1 reveals the prevalence rates by districts. The prevalence rates range from 14.1 percent in Chennai to 56.9 percent in Kanniyakumari. At the state level, the prevalence of reported cases is lower in Namakkal, Chengalpattu, Tuticorin, Tirunelveli and Madurai. The high prevalence rates are in Nilgiris, Dindigul, Dharmapuri, Erode and Thanjavur. Figure 5.3 reveals the regional pattern of any problem of vaginal discharge. The reported prevalence rates are high in western and east-central parts.

Figure 5.1

Inter-District Variations in Reported Prevalence of Burning Sensation, RCH-RHS Survey, 1998-99, Tamil Nadu

Map not to scale

Source: Obtained from RCH-RHS data files.
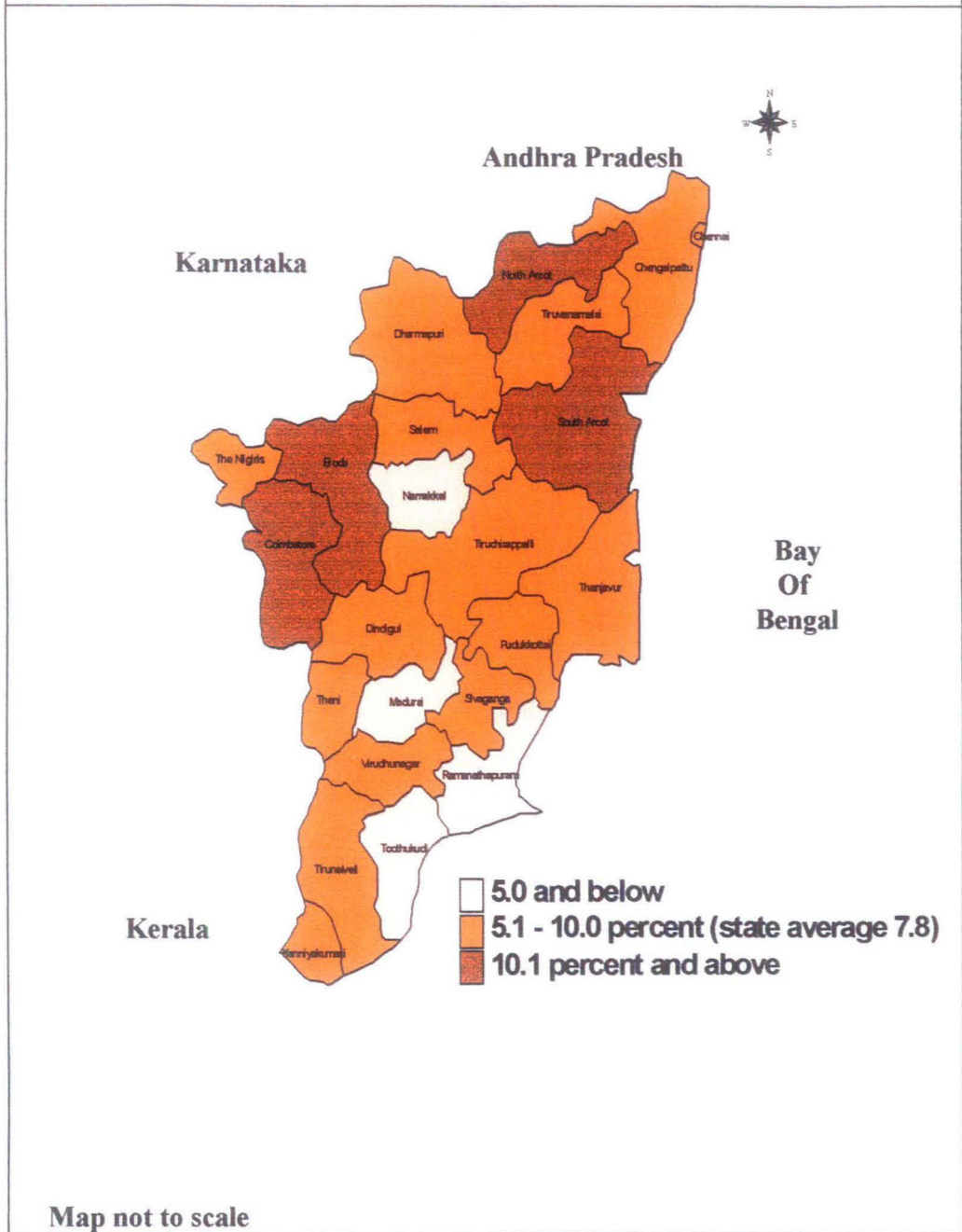
Figure 5.2

Inter-District Variations in Reported Prevalence of Lower Abdominal
Pain, RCH-RHS Survey, 1998-99, Tamil Nadu

Andhra Pradesh

Karnataka

Kerala

**Bay
of
Bengal**

5.0 percent and below
5.1 - 10.0 percent (state average 6.7)
10.1 percent and above

Map not to scale
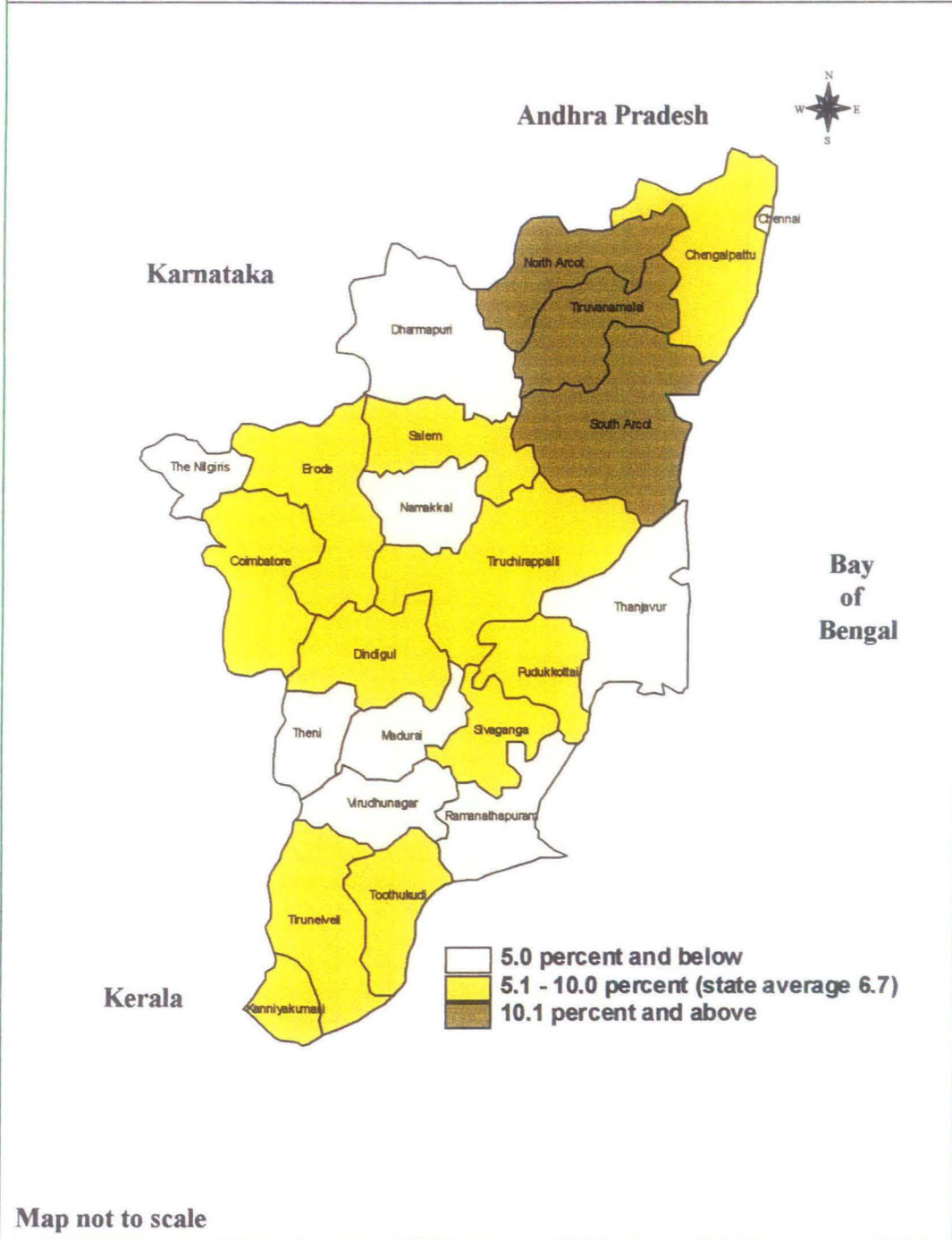
Source: Obtained from RCH-RHS data files.

Figure 5..3

Inter-District Variations in Reported Prevalence of Any Problem of Vaginal Discharge, RCH-RHS Survey, 1998-99, Tamil Nadu

25.0 percent and below
25.1 - 30.0 percent
30.1 - 35.0 percent (state average 32.2)
35.1 - 40.0 percent
40.1 percent and above
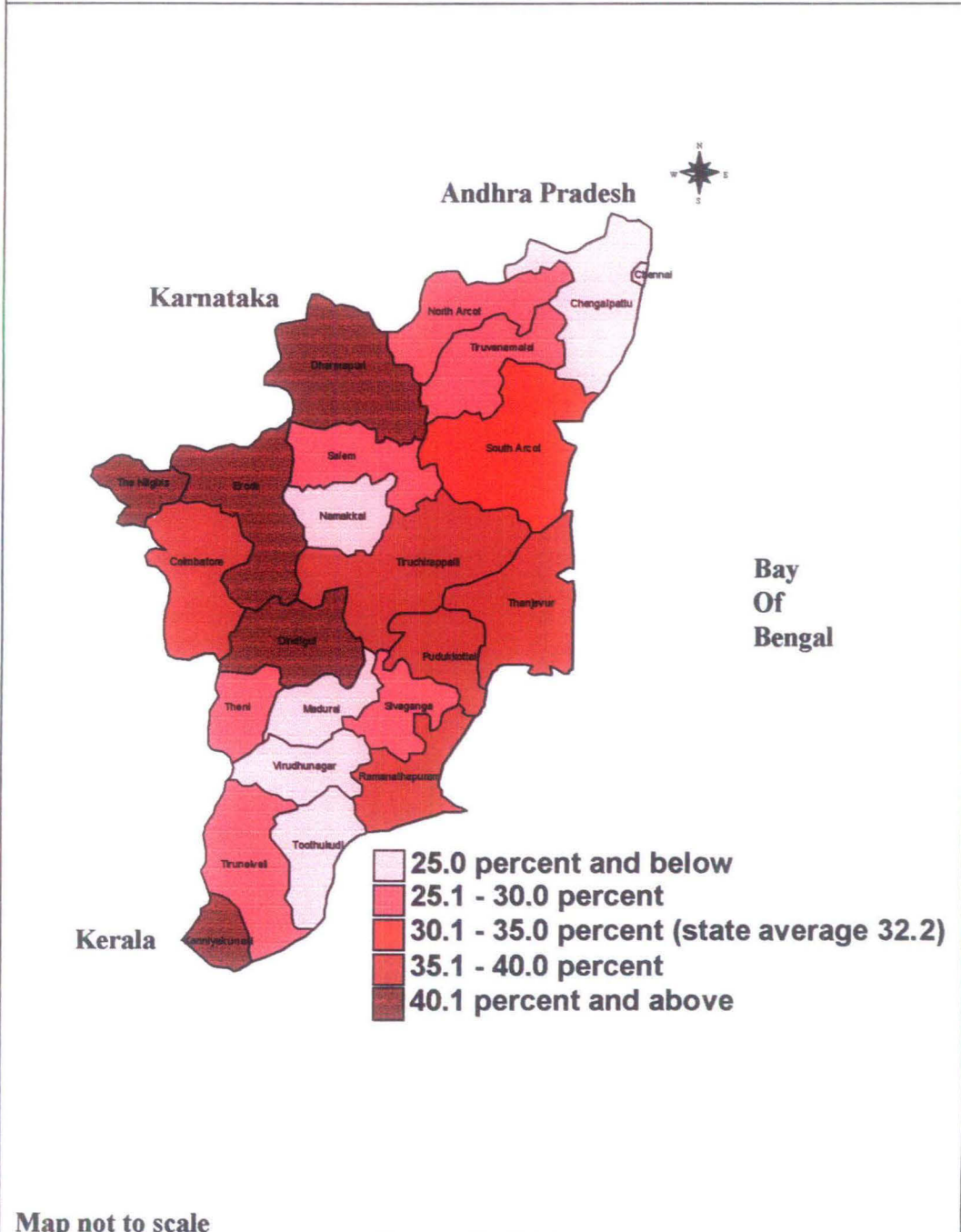
Map not to scale

Source: Obtained from RCH-RHS data files.

Figure 5.4

Inter-District Variations in Reported Prevalence of Any One Symptom of RTI/STI, RCH-RHS Survey, 1998-99, Tamil Nadu
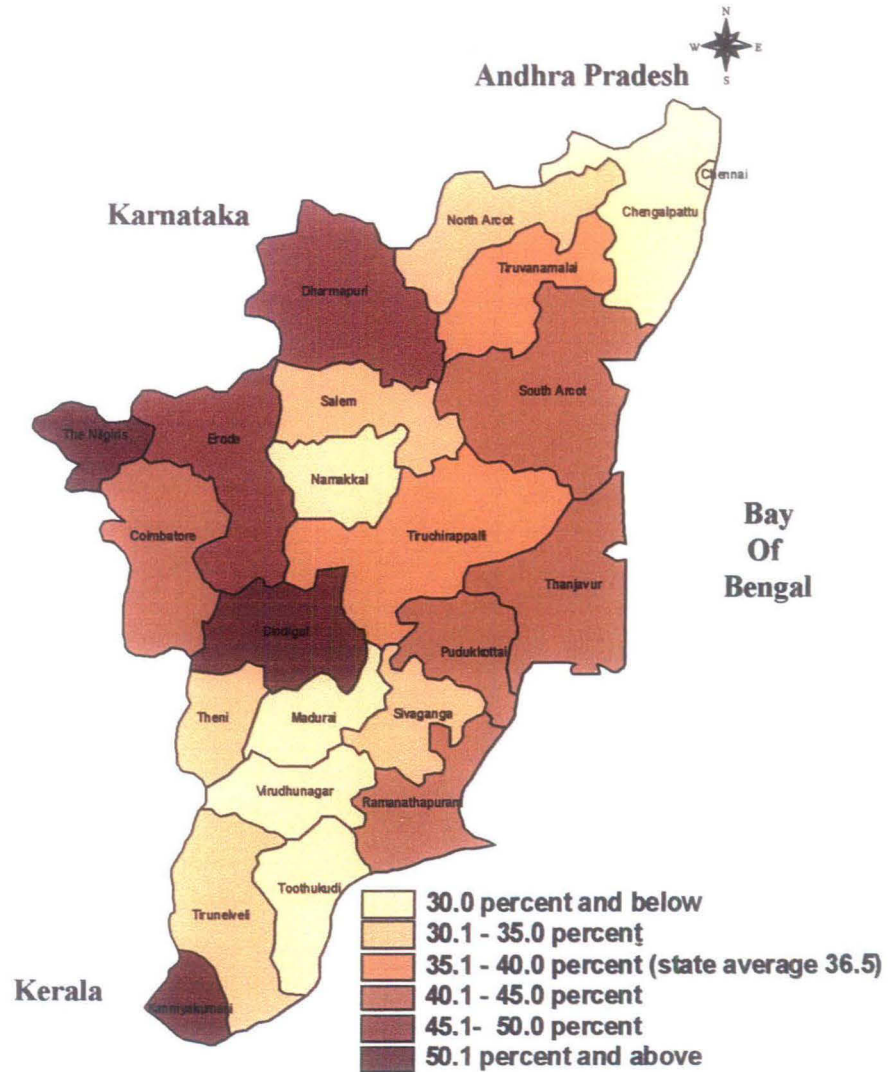
Map not to scale

Source: Obtained from RCH-RHS data files.

5.1.4 Any One Symptoms of RTI/STI

According to RCH-RHS survey, at the state level the prevalence of one or more symptoms of reproductive tract infection/sexually transmitted infection is 36.5 percent. Table 5.1 shows the prevalence of any symptoms among currently married women by districts. The symptoms reported range from 15.5 percent in Namakkal to 59.0 percent Kanniyakumari. The level of prevalence of reproductive tract infection in Chennai, Chengalpattu, Virudhunagar, Madurai and Tuticorin is relatively low. The level of prevalence rates in Kanniyakumari, Nilgiris, Dindigul, Dharmapuri, Erode and South Arcot is relatively high. Figure 5.4 presents the spatial distribution of reported prevalence of any one symptom of RTI/STI. No discernible regional pattern is seen.

5.2 NATURE OF VAGINAL DISCHARGE

The RCH-RHS had asked follow-up questions, to women who reported vaginal discharge, on the nature of it. Similarly, other conditions reported were also noted. These responses are tabulated in Table 5.2.

5.2.1 Muccid Non-Foul Smelling Discharge

Reproductive and Child Health survey indicates that 73.7 percent of women among those who experienced vaginal discharge reported experience Muccid non-foul smelling discharge at the state level. Table 5.2 shows the proportion of Muccid non-foul smelling discharge by districts. Women reporting this experience range from 49.6 percent in Coimbatore to 96.5 percent in Namakkal. Other districts like North Arcot, South Arcot, Thiruvannamalai, Chengalpattu and Theni report relatively low level. Virudhunagar, Chennai, Ramanathapuram, Nilgiris and Thanjavur have relatively high level.

5.2.2 Thick Curdy White Discharge

According to RCH-RHS survey, at the state level proportion of thick curdy white discharge is 20.5 percent. Table 5.2 reveals that this proportion varies substantially by districts. The proportion who reported such symptoms ranges from 3.5 percent in Namakkal to 38.1 percent in Coimbatore. Low levels are seen in Virudhunagar, Nilgiris, Dharmapuri, Ramanathapuram and Chennai. The level is relatively high in Chengalpattu, North Arcot, Theni, South Arcot and Tirunelveli.

5.2.3 Thin Dirty White Foul Smelling Discharge

Overall, women who reported symptom of thin dirty white foul smelling discharge are 4.3 percent. Table 5.2 shows the proportion by districts. It should be noted that, this symptom was not reported by any respondent in Chennai and Namakkal districts. The prevalence of thick dirty white foul smelling discharge is lower in Ramanathapuram (0.7 percent) and higher in Thiruvannamalai (14.6 percent). Other districts of Tiruchirappalli, Nilgiris, Dindigul and Virudhunagar have relatively low level and it is relatively high in Coimbatore, North Arcot, Pudukottai, Madurai and Dharmapuri.

5.2.4 Thick Grey White Foul Smelling Discharge

At the state level, the proportion of thick grey white foul smelling discharge is very low, 1.5 percent. Table 5.2 reveals that the proportion reporting this symptom among currently married women is generally low in all by districts. Women reporting this symptom range from 0.5 percent in Tirunelveli and Virudhunagar to 5.8 percent in South Arcot. It should be noted that in Namakkal, Theni, Tiruchirappalli and Tuticorin, no cases of thick grey white foul smelling are reported. Other districts of relatively low level are Ramanathapuram, Dharmapuri and Madurai. Relatively high levels are seen in Nilgiris, Coimbatore, Erode and North Arcot.

5.3 DISCHARGES WITH OTHER CONDITIONS

5.3.1 Itching

Among currently married women who reported any problem of vaginal discharge, 8.9 percent reported symptoms of itching with discharge. Table 5.2 shows the prevalence rates by districts. The prevalence rates (among those who reported any discharge) are low in Namakkal (3.5 percent) and high in Tuticorin (17.1 percent). Nilgiris, Dharmapuri, Chengalpattu, Virudhunagar and Coimbatore have relatively low level of experience of these symptoms. Erode, Thiruvannamalai, North Arcot, Sivagangai, Madurai, South Arcot and Tirunelveli have relatively high level of these symptoms.

Table 5.2
Nature of Vaginal Discharge and Other Symptoms, Tamil Nadu, Districts

District	Any problem of vaginal discharge	Percentage of currently married women who reported various systems of RTI/STI during the three months period prior to survey								Fever
		Among those reported problems of vaginal discharge								
		Nature of discharge				Discharge with other conditions				
		Muccid non-foul smelling	Thick curdy white	Thin dirty white foul smelling	Thick grey white foul smelling	Itching	Ulcers	Both (Itching and Ulcers)	Sever lower abdominal pain	
Chengalpattu	20.2	57.9	34.8	6.2	1.1	6.7	1.1	11.8	21.3	12.9
Chennai	14.1	87.1	12.9	0.0	0.0	10.5	4.0	0.8	21.0	0.8
Coimbatore	37.5	49.6	38.1	8.9	3.4	7.2	1.7	3.8	19.5	7.6
Dharmapuri	47.1	81.4	11.1	6.6	0.9	5.3	0.7	2.9	18.4	6.6
Dindigul	49.0	81.7	15.7	1.4	1.1	5.9	1.1	2.2	13.8	4.5
Erode	41.0	74.9	15.8	6.2	3.1	13.1	3.1	2.3	20.5	11.6
Kanniyakumari	56.9	76.9	18.2	4.1	0.8	5.7	1.9	2.2	23.9	3.3
Madurai	24.8	68.2	23.8	7.0	0.9	12.6	1.4	7.9	26.6	10.3
Namakkal	15.4	96.5	3.5	0.0	0.0	3.5	0.0	2.1	11.3	4.3
Nilgiris	54.7	85.5	9.5	1.3	3.8	4.8	0.3	2.0	7.8	4.5
North Arcot	26.1	54.5	34.7	8.5	2.3	12.7	1.4	2.3	31.5	15.5
Pudukottai	36.1	74.3	16.5	7.2	2.1	8.7	0.6	2.4	28.4	8.1
Ramanathapuram	39.0	86.1	12.5	0.7	0.7	7.3	0.3	1.0	9.0	5.6
Salem	26.0	69.8	26.7	1.8	1.3	8.9	0.0	2.7	28.9	14.7
Sivaganagai	27.5	65.8	29.8	3.5	0.9	12.7	0.4	4.8	38.2	11.0
South Aroct	33.1	56.2	32.3	5.8	5.8	11.9	0.9	6.6	23.9	12.8
Thanjavur	39.4	82.3	14.5	2.1	1.1	9.5	2.8	3.9	14.1	5.3
Theni	27.3	64.7	33.6	1.7	0.0	10.9	1.3	7.1	30.7	12.6
Thiruvannamalai	27.3	57.8	26.6	14.6	1.0	13.1	2.0	2.5	35.2	9.0
Tiruchirappalli	35.2	75.7	23.4	0.9	0.0	10.6	4.7	6.4	23.8	9.8
Tirunelveli	29.3	65.4	30.9	3.2	0.5	11.1	1.4	8.8	33.2	11.5
Tuticorin	24.5	71.8	22.1	6.1	0.0	17.1	2.8	0.6	17.7	7.2
Virudhunagar	24.1	93.2	4.9	1.5	0.5	6.8	0.5	8.3	24.8	11.2
Tamil Nadu	**32.2**	**73.7**	**20.5**	**4.3**	**1.5**	**8.9**	**1.4**	**3.9**	**22.0**	**8.4**

Source: Computed from RCH-RHS-1 & 2 data files.

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5.3.2 Ulcers

In Tamil Nadu, the proportion of women reporting ulcers with discharge is 1.4 percent. Table 5.2 shows that the levels are generally low in all districts. The proportion reported is extremely low in Nilgiris and Ramanathapuram (0.3 percent) and only relatively high in Tiruchirappalli (4.7 percent) and in Namakkal and Salem, no cases of ulcers are reported among women. The districts with relatively low level of ulcers with discharge are Sivagangai, Virudhunagar, Pudukottai and Dharmapuri. On the other hand, relatively high levels of proportion are found in Chennai, Erode, Thanjavur, Tuticorin and Kanniyakumari.

5.3.3 Itching and Ulcers

According to Reproductive and Child Health- Rapid Household Survey, the proportion reporting itching and ulcers among all currently married women is 3.9 percent. Table 5.2 reveals the inter-district variation in the prevalence rate. It ranges from 0.8 percent in Tirunelveli to 11.8 percent in Chengalpattu. Women in Chennai, Ramanathapuram, Namakkal, Dindigul and Kanniyakumari have relatively low levels. Tirunelveli, Virudhunagar, Madurai, Theni and South Arcot have relatively high levels of prevalence rates.

5.3.4 Severe Lower Abdomen Pain

At the state level, 22 percent of women reported severe lower abdominal pain. The proportions are low in Nilgiris (7.8 percent) and high in Sivagangai (38.2 percent). Relatively low levels of prevalence rate are observed in Ramanathapuram, Namakkal, Dindigul, Thanjavur and Tuticorin. Relatively high levels of prevalence rate are seen in Thiruvannamalai, North Arcot, Theni and Salem.

5.3.5 Fever with Discharge

Among currently married women who reported symptoms of any problem of vaginal discharge, 8.4 percent have also reported fever. Table 5.2 shows the inter-district variation of prevalence rates. The proportion who reported fever with discharge ranges from 0.8 percent in Chennai to 15.5 percent in North Arcot. Other districts with relatively low levels are Kanniyakumari, Namakkal, Dindigul, Nilgiris, Thanjavur, Ramanathapuram, Salem, Chengalpattu, South Arcot, Theni, and Erode.

5.4 TREATMENT SEEKING BEHAVIOUR FOR RTI/STI

Among currently married women who reported experience of any problem of reproductive health, 68.5 percent did not take any treatment for RTI/STI or consult a doctor. Table 5.1 reveals the proportion by districts. At the state level, the proportion ranges from 12.8 percent in North Arcot to 48.0 percent in Chennai. The proportion seeking treatment is relatively low in Ramanathapuram, Nilgiris, Thanjavur, Dindigul, Kanniyakumari and Tuticorin. On the other hand, it is relatively high in North Arcot, Tirunelveli, Erode and Coimbatore. Figure 5.6 shows the regional variation of treatment sought for RTI/STI. The southern, northern and western parts have higher tendency of seeking treatment for RTI/STI.

Among currently married women who have reported any one symptom of RTIs, more than two-thirds have not received any treatment or advice. Table 5.3 shows the percent distribution of women who sought treatment for RTI/STI in Tamil Nadu. A higher proportion sought treatment from the private medical sector than the public medical sector. Of women who have obtained treatment from more than one source, 65.6 percent of women have received treatment from the private medical sector including private doctor, medical shop/private nurse/pharmacist and traditional practitioner. Thirty nine percent of women sought treatment from the public medical sectors, which includes government doctor and government ANMs (Auxiliary Nurse Midwife). And other sources like relative/friends, self-treatment and others amounts to 7.6 percent. Among women who sought treatment, 60.9 percent sought treatment from private doctor, 2.7 percent from medical shop/private nurse/pharmacist and 2.0 percent from traditional practitioner. Among women who sought treatment, 27.4 percent went to government doctor and 11.1 percent to government ANMs. Other sources were relatives (1.9 percent), self-treatment (4.6 percent) and others (1.1 percent).

Figure 5.5

Inter-District Variations in Percent Who Sought Treatment for RTI/STI,
RCH-RHS Survey, 1998-99, Tamil Nadu

25.0 percent and below
25.1 -30.0 percent
30.1 - 35.0 percent (state average 31.5)
35.1 - 40.0 percent
40.1 percent and above

Map not to scale

Source: Obtained from RCH-RHS data files.

Table 5.3

Percentage of Currently Married who Sought Treatment for RTI/STI among those Reported Symptoms during the Three Months Period Prior to Survey, Tamil Nadu

Source of Treatment for RTI/STI	Percent Among Those Who Reported Any Symptoms	Percent Among Those Who Sought Treatment	No. of Women
Public Medical Sector			
1.Government Doctor	8.3	27.4	544
2. Government Nurse			
/ANM/LHV	3.3	11.1	222
Private Medical Sector			
1. Private Doctor	18.5	60.9	1218
2. Medical Shop/Private			
Nurse/Pharmacist	0.8	2.7	53
3.Traditional Practitioner	0.6	2.0	49
Other (Relative/ Friends/ Self Treatment /Others)	2.2	7.5	151
Sought Treatment from any one source	30.5	100.0	1999
Did Not Seek Any treatment	69.5	NA	4555
Number of Women	**6554**	**1999**	**6554**

Sources: Computed from RCH-RHS, 1998-1999 data files for Tamil Nadu.

Note: The percentage and numbers of the specific sources do not add up to total because some took treatment from more than one source.

5.5 PREVALENCE OF RTI/STI AMONG MEN AND TREATMENT SEEKING BEHAVIOUR

The rate of HIV/AIDS among men is rapidly increasing in India. In India, more than 15563 AIDS cases are reported among men (NACO, 2001). The government took measures to estimate the prevalence rate indirectly. The RCH-RHS survey of 1998-99 for the first time could provide national, state, and district level estimate of the prevalence of reproductive health problem among men between 20-54 age groups for the three months period preceding the survey. Among men, reproductive health symptoms included in the survey are any discharge from penis, any sore of genital area, positive syphilis blood test, pain while urination and swelling tests. Table 5.5 shows the prevalence of reproductive tract infection/sexually

transmitted infection among men 20-54 age group at the districts level. The RCH report in Tamil Nadu shows that 10.7 percent of men reported any one symptoms of RTI/STI.

Table 5.4 shows the percentage of men who reported experience of RTI/STI by districts. Men from Salem (0.4 percent) reported low level of presence of the symptom of RTI/STI and Tiruchirappalli (56.4 percent) reported a high prevalence rates. In Dindigul, Erode, Nilgiris, Ramanathapuram and Thiruvannamalai, it should be noted that not a single respondent reported any of these symptoms. Other districts like Theni, Madurai and Dharmapuri have relatively low level of prevalence rate, and Thanjavur, South Arcot, and Chennai have relatively high level of prevalence rates.

Among men in age groups (20-54) who reported experience of any one or more symptom of RTI/STI, 74.1 percent did not take any treatment nor did they consult a doctor. Table 5.4 presents the proportion of men who have sought treatment by districts. The proportion seeking treatment ranges from 4.5 percent in Tiruchirappalli to 100 percent in Coimbatore and Kanniyakumari. It should be noted that in North Arcot, Thanjavur and Theni, no one took any treatment for RTI/STI. Low levels of treatment seeking behaviour are found in Virudhunagar and Namakkal. The relatively high levels of treatment seeking behaviour are found in Dharmapuri, Salem, Madurai and Pudukottai.

In Tamil Nadu, the percent reporting symptoms of RTI/STI is higher among women than men. At the district level except Tiruchirappalli, which has a high percent (56.4) of men with RTI/STI compared to women (39), other districts have high percent of women having RTI/STI than men. The tendency to seek treatment is higher among women than men. Most of the districts like Chengalpattu, Chennai, Coimbatore, Dharmapuri, Kanniyakumari, Madurai, Pudukottai, Salem, South Arcot and Tuticorin have relatively high level of treatment seeking for RTI/STI among men than women and other districts have relatively low level.

The prevalence of male reproductive health problems, as given in the RCH-RHS report for Tamil Nadu, shows extremely large variations, some districts with a level of over 30 or 50 percent and some below 1 percent. This calls for detailed examination of the data files. Therefore, on the basis of the raw data made available by the RCH-RHS, the prevalence rates were re-computed for all the districts. These are given in Table 5.5 along with the rates from the published report.

Table 5.4

Prevalence of Reproductive Tract Infection/ Sexually Transmitted Infection and Treatment Sought, Men and Women, Tamil Nadu

Districts	Any One Symptoms of RTI/STI During the Three Months Period Prior to Survey*		Sought Treatment for RTI/STI Among Those Who Reported a Symptom	
	Men	Women	Men	Women
Chengalpattu	6.6	25.2	50.0	37.8
Chennai	9.7	20.5	72.8	48.0
Coimbatore	5.8	43.6	100	40.3
Dharmapuri	1.1	48.5	85.7	28.1
Dindigul	0.0	52.2	-	21.9
Erode	-	46.0	-	41.7
Kanniyakumari	5.8	59.0	100	25.9
Madurai	0.9	26.8	60.0	27.7
Namakkal	1.4	15.5	12.5	30.2
Nilgiris	-	58.5	-	13.1
North Aroct	4.7	31.7	-	46.7
Pudukottai	3.0	40.2	58.8	30.6
Ramanathapuram	-	42.1	-	12.8
Salem	0.4	30.2	66.6	31.0
Sivagangai	4.2	33.5	31.5	40.0
South Aroct	10.5	44.0	50.0	27.6
Thanjavur	33.3	43.4	-	17.3
Theni	0.6	30.5	-	39.8
Thiruvannamalai	-	36.2	-	32.2
Tiruchirappalli	56.4	39.0	4.5	31.5
Tirunelveli	4.7	33.5	36.3	41.9
Tuticorin	2.6	27.7	28.5	26.8
Virudhunagar	3.6	26.3	11.7	37.3
Tamil Nadu	**10.7**	**36.5**	**25.9**	**31.5**
Coefficient of variation	168.91	30.83	59.80	30.67

Source: RCH-RHS, 1998-1999, Tamil Nadu report, IIPS, Mumbai 2001.

There is large difference in prevalence of RTI/STI between the published report and that computed from the data. On the other hand, the treatment seeking behaviour is much lower in the published report (25.9 percent) than in the tabulations from the data (47.4 percent). This clearly shows discrepancies between the published report and the data. When we look at the district level some of the districts like Chennai, Dharmapuri, Madurai, Namakkal, Pudukottai, Salem, Sivagangai, Theni, Tirunelveli, Tuticorin, Virudhunagar have nearly the same prevalence rate. These were covered under the Phase-II. On the other hand, Chengalpattu, Coimbatore, Dindigul, Erode, Kanniyakumari, Nilgiris, North Arcot, Ramanathapuram, South Arcot, Thanjavur, Thiruvannamalai and Tiruchirappalli have large differences. These were covered under Phase-I. In the Phase-I, the number of men interviewed was less than 25 in most districts. With such small sample sizes, the rates would have large sampling errors. Besides,

the small sizes also indicate that there was possible selection bias in collecting information on male reproductive health. It is not clear what the reasons for such poor coverage were and how the investigators chose the men to be interviewed. The RCH-RHS survey report is silent on this. But under these conditions, the data on male reproductive health are likely to be biased and hence the data cannot be used for analysis. Therefore, for further study, aspects of male reproductive health have not been investigated.

Table 5.5

Prevalence of Reproductive Tract Infection/ Sexually Transmitted Infection (RTI/STI) across Districts in Tamil Nadu

District	Percentage of Men in age group 20-54 years who Reported Symptoms of RTI/STI and Sought Treatment for RTI/STI				
	Any One Symptoms of RTI/STI		Sought Treatment Who Reported Symptom		No. of Men interviewed
	Computed from data	RCH-RHS report	Computed from data	RCH-RHS report	
Chengalpattu	*	6.6	*	50.0	23
Chennai	9.0	9.7	81.2	72.8	531
Coimbatore	*	5.8	*	100	8
Dharmapuri	0.6	1.1	75.0	85.7	623
Dindigul	*	0.0	*	-	1
Erode	*	-	*	-	1
Kanniyakumari	*	5.8	*	100	4
Madurai	0.9	0.9	60.0	60.0	520
Namakkal	1.4	1.4	12.5	12.5	545
Nilgiris	*	-	*	-	2
North Aroct	*	4.7	*	-	8
Pudukkottai	2.6	3.0	57.1	58.8	530
Ramanathapuram	*	-	,*	-	2
Salem	0.4	0.4	66.6	66.6	610
Sivagangai	4.3	4.2	33.3	31.5	413
South Aroct	*	10.5	*	50.0	16
Thanjavur	*	33.3	*	-	1
Theni	0.6	0.6	0.0	-	776
Thiruvannamalai	*	-	*	-	2
Tiruchirappalli	*	56.4	*	4.5	13
Tirunelveli	4.8	4.7	41.3	36.3	602
Tuticorin	2.2	2.6	20.0	28.5	452
Virudhunagar	3.5	3.6	12.5	11.7	447
Tamil Nadu	**2.8**	**10.7**	**47.4**	**25.9**	**6130**

Source: RCH – RHS, 1998-1999, Tamil Nadu Report, IIPS, Mumbai, 2001.
* Percentage are not given since the number of men interviewed was less than 25

5. 6 SUMMARY

According to RCH-RHS surveys, the prevalence of any one symptom of RTI/STI is 36.5 percent among currently married women. The prevalence of vaginal discharge is more common (32.2 percent) than of burning sensation (7.8 percent) and lower abdominal pain (6.7 percent). Of women who reported any one symptoms of RTI/STI, 31.5 percent took treatment for RTI/STI. Some spatial variation is seen, the prevalence of burning sensation is high in northern and western zones and prevalence of lower abdominal pain is also higher in northern religion. But the prevalence of any problems of vaginal discharge is higher in western and east-central parts, and there is no clear regional pattern in the prevalence of any one symptoms of RTI/STI. Treatment seeking behaviour is higher is southern, northern and western religions of the state. Women who reported symptoms of RTI/STI, 69.5 percent did not take any treatment for RTI/STI. However, among women who had treatment for RTI/STI, 60.9 percent of women obtained it from private sector than public sector (27.4 percent) and other (7.5 percent).

The prevalence of reproductive tract infection is much less reported among men (10.3 percent) than women (36.5 percent). The tendency to seek treatment is also lower among men (25.9 percent) than women (31.5 percent). The RCH-RHS report for Tamil Nadu reveals that the prevalence of RTI/STI is 10.7 percent among men in the age groups (20-54) and tendency to seek treatment is 25.9 percent. However, computations from individual data files show that the prevalence of RTI/STI is 2.8 percent and treatment seeking 47.4 percent. So there is large difference in prevalence of RTI/STI and treatment seeking behaviour between the estimates given in published report and the estimates computed from raw data. It is noticed that some of the published figures are based on a very small number of interviews. Hence, the information on men's reproductive health is not considered reliable. The analysis of this information has not been pursued. Therefore, further analysis is related to only women's reproductive health issues.

Chapter-6

Influence of Socio-economic and Demographic Factors on Reproductive Tract Infection and Treatment Seeking Behaviour

CHAPTER 6

INFLUENCE OF SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS ON REPRODUCTIVE TRACT INFECTIONS AND TREATMENT SEEKING BEHAVIOUR

In this chapter, the influence of various socio-economic and demographic factors on reproductive tract infection and treatment seeking behaviour in Tamil Nadu is analyzed. First, the percentage reporting specific symptoms and also awareness of RTI and STI are discussed. This analysis considers only currently married women of age 15-44. Finally, the logistic regression analysis results are presented to understand the net influence of each predictor variables on response variables.

6.1 DIFFERENTIALS IN AWARENESS ABOUT AND PREVALENCE OF RTI/STI AND TREATMENT SEEKING BEHAVIOUR

This section presents the prevalence of specific self-reported symptoms (burning sensation while urinating, lower abdominal pain, any problem of vaginal discharge, and any one symptom of RTI/STI) and treatment seeking behaviour by categories of predictor variables. The predictor variables are classified as socio-economic and demographic. The socio-economic variables include place of residence, religion, caste, educational level of women and types of house etc. The demographic variables are: age of woman, woman's age at first marriage, parity and pregnancy wastage etc. This section presents the differentials without looking at statistical significance; in the next section employing logistic regression, the significance of effects has been examined systematically.

6.1.1 SOCIO-ECONOMIC VARIABLES

6.1.1a Place of residence

Women in rural areas are less aware of RTI (41.4 percent) and STI (30.0 percent) than women in the urban areas (44.5 percent and 39.2 percent respectively). However, rural areas may be more disadvantaged in teams of education, health facilities and exposure to mass media etc. Table 6.1 clearly shows that the prevalence of gynaecological morbidity is higher in rural areas than in the urban areas. The prevalence of burning sensation while urination is 8.2 percent,

lower abdominal pain (7.1 percent), any problem of vaginal discharge (34.9 percent), and any one symptom of RTI/STI (39.0 percent) compared to the urban counterparts (6.8 percent, 5.8 percent, 26.8 percent and 31.1 percent respectively). On the other hand the treatment for RTI/STI is higher (31.1 percent) in urban areas than rural area (27.1 percent). It may be due to more advantages enjoyed by urban women in terms of health facilities and education etc. Among women who sought treatment for RTI/STI, a greater percentage of rural women (38.4 percent) obtained from public medical sector than urban women (28.6 percent).

6.1.1b Religion

The state is predominantly Hindu. According to the 1991 census, Hindus constituted 88.7 percent of population; Christians and Muslims are the principal minorities with 5.7 and 5.5 percent population respectively (India, Register General & Census Commissioner, 1991). The awareness level of RTI is slightly higher among Muslims (42.9 percent) and Hindus (42.6 percent) than others (mainly Christians) (39.8 percent). Muslims have slightly high awareness of STI than Hindus. Overall, there is no notable major difference in awareness of RTI and STI among Hindus, Muslims and Christians in the state of Tamil Nadu. The prevalence of symptoms of burning sensation and lower abdominal pain does not vary much by religion. The prevalence of any problem of vaginal discharge (40.5 percent) and any one symptom of RTI/STI (44.2 percent) are reported more among Christians and Hindus (31.5 percent and 35.8 percent) respectively. Among currently married women who reported symptoms, nearly one-third (30.7 percent) of women had taken treatment for RTI/STI, the percentage is moderately lower among Muslims (25.9 percent).

6.1.1c Caste

Table 6.1 shows the percentage of awareness of RTI and STI by caste, and also the prevalence of the reproductive health problems and its treatment. It shows that the other caste women have relatively higher level of awareness of RTI and STI. SC/ST (Scheduled Caste/ Scheduled Tribe) women have relatively lower level of awareness of RTI and STI. Caste differentials in prevalence of reproductive tract infection are not large. There is no major difference in treatment seeking for RTI/STI among OBC, SC/ST and the other castes. Nearly, half (47.9 percent) of SC/ST women obtained treatment from public medical sectors, this percentage is lower among OBC women (31.7 percent) and other (22.4 percent) respectively.

Table 6.1: Awareness of RTI/STI, Prevalence of Symptoms of RTI/STI and Treatment Seeking by Selected Socio-Economic Characteristics, Tamil Nadu

Socio-Economic Characteristics	Percent of Currently Married Women 15-44 years								
	Aware of RTI	Aware of STI	Reported Burning Sensation	Reported Lower Abdominal Pain	Reported Any Problems of Vaginal Discharge	Reported Any One Symptom of RTI/STI	Sought Treatment for RTI/STI*	Obtained From Public Health Sector **	Number of Women
Residence									
Rural	41.4	30.0	8.2	7.1	34.9	39.0	27.1	38.4	11917
Urban	44.5	39.2	6.8	5.8	26.8	31.1	31.1	28.6	6123
Religion									
Hindu	42.6	32.9	7.8	6.7	31.5	35.8	28.2	35.7	15909
Muslim	42.9	35.7	7.2	5.6	33.6	37.6	25.9	32.2	1189
Others	39.8	34.2	8.1	7.3	40.5	44.2	30.7	32.3	939
Caste									
OBC	43.6	34.2	7.1	6.0	31.6	35.6	28.0	31.7	13324
SC/ST	38.0	28.5	10.0	9.0	33.2	38.4	29.2	47.9	4121
Others	46.8	42.4	6.4	5.9	36.0	39.4	26.4	22.4	592
Woman's Educational Level									
0 schooling	34.7	25.1	8.8	7.4	34.0	38.1	27.3	46.2	7681
1-5 years schooling	37.8	26.3	8.1	6.9	33.0	37.5	31.8	37.0	2606
6-10 years schooling	47.7	37.9	7.0	6.4	31.3	35.6	28.4	25.9	5775
11+	63.4	59.7	5.4	4.2	26.4	30.0	27.1	13.5	1978
Type of House									
Pucca	46.5	36.0	6.9	5.5	29.6	33.4	29.3	31.1	4394
Semi-pucca	44.7	34.0	8.0	6.7	34.4	38.6	27.8	32.4	8372
Kachcha	38.9	29.9	8.0	8.5	31.3	36.1	27.8	41.4	4424
All Women	42.4	33.1	7.8	6.7	32.2	36.3	28.2	35.2	18040

Source: RCH-RHS-1998-99, IIPS, Mumbai
* Among those who reported a symptoms   ** Among those who received any treatment

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6.1.1d Educational Level of Women

Awareness of RTI and STI is very strongly associated with education. Table 6.1 reveals that the women with high levels of education (11 and above years of schooling) have more awareness of RTI (63.4 percent) and STI (59.7 percent) than others. The awareness of RTI and STI gradually increases with education levels. The illiterate women show higher level of reported symptoms compared to the higher educated women, but the differences are quite small. There are only slight differences in the treatment seeking behaviour for RTI/STI between illiterate and higher educated women. On the other hand, a larger percentage of women with no schooling (46.2 percent) obtained treatment from public medical sector than women with 1-5 years of schooling (37.0), 6-10 years of schooling (25.9) and 11 years and above (13.5) respectively. The percentage gradually declines from low level of education to high level of education.

6.1.1e Type of House

Table 6.1 reveals the awareness of RTI and STI, prevalence of RTI/STI and treatment by type of house. Those living in pucca houses have relatively high awareness of RTI/STI. Prevalence of various symptoms of reproductive tract infection does not much by the type of house (used as proxy for standard of living). Similarly, there is not much difference in treatment for RTI/STI by the type of housing. Women living in Kachcha houses are more likely to obtain treatment (41.4 percent) from public medical sector than those living in semi pucca house (32.4 percent). It indicates that higher standard of living women prefer treatment from the private sector.

6.1.2 DEMOGRAPHIC VARIABLES

6.1.2a Age of Women

Table 6.2 shows the awareness of RTI and STI, prevalence of RTI/STI and treatment by age. Relatively low level of awareness of RTI and STI exists among women who are in the age group of 15-19 years as compared to older women. The prevalence of various symptoms of reproductive tract infection is not much different between younger and older women. However, vaginal discharge is less frequently reported by women above the age of 40. The tendency to seek treatment is slightly lower among women in the age group of 15-19 years, compared to older women. Women in the age group of 30-44 years are more likely to obtain treatment from public medical sector for RTI/STI than women in the age of 15-29 years.

Table 6.2: Awareness of RTI/STI, Prevalence of Symptoms of RTI/STI and Treatment Seeking by Selected Demographic Characteristics, Tamil Nadu

Demographic Characteristics	Percent of Currently Married Women 15-44 years								
	Aware of RTI	Aware of STI	Reported Burning Sensation	Reported Lower Abdominal Pain	Reported Any Problems of Vaginal Discharge	Reported Any One Symptom of RTI/STI	Sought Treatment for RTI/STI*	Obtained From Public Health Sector **	Number of Women
Age of Women (Years)									
15-19	37.7	25.6	6.1	7.6	33.3	37.4	24.3	31.9	855
20-24	41.8	30.8	8.6	8.1	34.7	39.4	29.4	31.9	3449
25-29	42.8	33.8	8.1	7.9	36.5	40.9	27.9	33.9	4149
30-34	43.6	35.0	7.6	7.2	34.7	38.8	28.9	35.8	3525
35-39	43.8	34.4	7.2	5.5	30.6	34.1	26.2	39.8	3134
40-44	41.3	33.5	7.5	3.6	21.2	25.4	30.1	37.8	2928
Age at First Marriage									
<18 years	40.6	30.5	9.0	7.7	32.2	36.8	30.1	38.1	6442
18-20 years	41.6	31.7	7.2	6.4	32.6	36.8	27.2	36.2	7629
> 21 years	47.2	40.2	6.7	5.6	31.3	34.8	27.3	27.2	3969
Pregnancy Wastage									
No	41.5	32.8	6.8	5.9	31.1	34.9	27.3	35.3	14455
One	46.4	34.7	11.1	9.0	36.3	41.5	31.6	34.6	2648
Two	47.8	34.4	12.0	12.3	36.6	43.4	34.4	40.4	640
Three +	43.4	32.3	15.8	11.4	39.4	44.8	30.5	25.9	297
Parity									
No child	41.9	33.6	8.9	8.8	31.1	36.6	25.3	21.5	2036
One	44.6	35.3	6.5	6.3	32.7	35.9	28.4	29.6	3277
Two	44.9	35.4	7.6	6.3	34.3	38.4	27.6	35.6	5632
Three	41.8	32.1	7.3	6.6	30.5	34.8	30.2	40.0	3893
Four +	37.0	28.0	9.1	6.5	30.5	34.9	20.9	41.8	3202
Contraceptive Use									
Yes	44.0	34.8	8.4	6.3	33.4	37.9	30.2	37.5	9243
No	40.8	31.4	7.1	7.0	30.8	34.6	26.1	32.1	8797
All Women	42.4	33.1	7.8	6.7	32.2	36.3	28.2	35.2	18040

Source: RCH-RHS –1998-99, IIPS, Mumbai
* Among those who reported a symptom,   ** Among those who received any treatment

6.1.2b Age at First Marriage

Some relationship is seen between awareness of RTI and STI and age at first marriage. The awareness of RTI and STI is high among those who married above 21 years compared to those who married below 18 years. But prevalence of various symptoms does not seem to differ notably by age at marriage. On the other hand, the likelihood of obtaining treatment from public medical sector for RTI/STI is higher among those marring earlier than 18 years than others. But this may not necessarily be attributable to age, but possibly to the association of age at marriage with education.

6.1.2c Pregnancy Wastage

Table 6.2 clearly reveals that prevalence of reproductive tract infection is generally higher among women who had two or more pregnancy wastages and lower for women without any pregnancy wastage. Here, it is clearly seen that there is substantial difference between women who did not have any pregnancy wastage and those who have had more than three pregnancy wastage. Further, the tendency to seek treatment is also lower for women who did not have any pregnancy wastage than those who have had such an experience. Women who had two pregnancy wastages are more likely to have treatment for RTI/STI from public medical sectors than no pregnancy wastage (35.3 percent), one pregnancy wastage (34.6) and three and above pregnancy wattage (25.9) respectively.

6.1.2d Parity

Table 6.2 shows the awareness of RTI and STI, prevalence of RTI/STI and treatment by parity. Awareness does not vary much by parity through it is slightly lower among women who had more than four children. The prevalence of various symptoms shows little variation by parity. Women who had four and above children are more (4.8 percent) likely to have treatment from public medical sector for RTI/STI compared to women who did not have any children (21.5 percent).

6.1.2e Current Users of Contraceptive Methods

The couples who are currently using contraceptive methods are more likely to be aware of RTI and STI than those not using contraceptive methods. Contraceptive users do not differ much from non-users in the prevalence of most of the symptoms; only contraceptive users report a

marginally higher prevalence of vaginal discharge and any one symptom. The tendency to seek treatment is also moderately higher among users (30.2percent) than non-users (26.1 percent). Current users of contraceptive are more likely (37.5 percent) to seek treatment from public medical sectors for RTI/STI than non-users.

6.2 LOGISTIC REGRESSION ANALYSIS

We have so for discussed in this chapter gross differentials in awareness of reproductive tract infections, prevalence of various symptoms and treatment seeking behaviour by socio-economic and demographic factors. In this analysis one variable was examined at time. However, many of these variables could be interrelated. For example, education may be associated with place of residence, religion, caste, standard of living (types of house used as proxy variable), age at marriage etc. Similarly demographic variables age, numbers of pregnancies are also interrelated. As a result, the gross differences observed above could be on account of the specified variable or due to another variable strongly associated with it. In order to see the net effect of individual variables, multivariate analysis is required. For, this purpose the technique of logistic regression was adopted. The reason for using this technique and the basic models are given in Chapter-3. This section has discusses the result of logistic regression. There are five logistic regression results, one for each response variables. The exponential of the parameter in the logistic analysis, exp (B), represents proportionate increase (if greater than1.0) or decrease (if less than 1.0) in the prevalence rates (actually in the odds) and treatment seeking behaviour for a unit change in the corresponding predictor variables. Since all the explanatory variables are in a categorized form, the term exp (B_k) givens the odds ratio, that is, the ratio of odds for category K to the odds for the reference category for the characteristic.

6.2.1 Burning Sensation

Table 6.3 shows the results of logistic regression for prevalence of burning sensation. In the caste category, SC/ST women are significantly more likely to report symptom of burning sensation than OBC women.

Women with 1-5 years of schooling are 1.18 times more likely and women with 11 and above years of schooling (odds ratio is 0.70) are significantly less likely to report symptom of burning

sensation than women with no schooling. However, women with 6-10 years of schooling do not differ significantly from those with no schooling.

Women who had three children (odds ratio is 0.82) are less likely to report symptom of burning sensation than women with no children. On the other hand, women who had experience of three and above pregnancy wastages are 1.49 times significantly more likely to report this symptom than women no experience of pregnancy wastage.

The probability of reporting burning sensation is found to be significantly high among current users of contraceptive methods (women with either spouse using contraceptive) than non-users. Currently married women aware of RTI (odds ratio is 1.25) are significantly more likely to report symptom of burning sensation than women not aware of RTI.

6.2.2 Lower Abdominal Pain

The logistic regression analysis results for reporting of lower abdominal pain are also shown in Table 6.3. In the religion category, women of other religions (mainly Christian) are significantly more likely (odds ratio is 1.24) to report lower abdominal pain than Hindu women. However, Muslim women do not show a significant difference from Hindu women. The probability of reporting the symptom of lower abdominal pain is observed to be significantly high among SC/ST women than among OBC women.

Women with 1-5 years of schooling are found to be significantly more likely to report symptom of lower abdominal pain than women with no schooling. On the other hand, women with 11 and above years of schooling are less likely (odds ratio is 0.65) to report symptom of lower abdominal pain. However, women with 6-10 years of schooling do not differ significantly in the prevalence of lower abdominal pain from illiterate women. Women living in Pucca houses are significantly less likely (odds ratio is 0.86) to report symptom of lower abdominal pain than women living in Kuchcha houses.

Table 6.3
Logistic Regression Results of Reporting of Burning Sensation and Lower Abdominal Pain on
Selected Socio-economic and Demographic Characteristics in Tamil Nadu: 1998-99

Socio- eco and Demographic Variables	Reference Category	Burning Sensation			Lower Abdominal Pain		
		Coefficient	Sig.	Odds Ratio	Coefficient	Sig.	Odds Ratio
Residence	Rural						
Urban		-0.04	0.237	0.96	-0.03	0.461	0.97
Religion	Hindu		0.207			0.090	
Muslim		-0.05	0.586	0.95	-0.19	0.056	0.83
Others		0.14	0.137	1.15	0.21	0.030	1.24*
Caste	OBC		0.000			0.000	
SC/ST		0.18	0.012	1.20*	0.17	0.023	1.18*
Others		-0.06	0.586	0.94	0.01	0.955	1.01
Woman's Education (schooling)	No Schooling		0.000			0.000	
1-5 years		0.17	0.010	1.18**	0.17	0.015	1.19*
6-10 years		-0.04	0.473	0.96	0.05	0.373	1.05
11+ years		-0.35	0.000	0.70**	-0.44	0.000	0.65**
Type of House	Kachcha		0.552			0.001	
Semi pucca		0.03	0.408	1.03	-0.02	0.695	0.98
Pucca		-0.05	0.312	0.95	-0.16	0.002	0.86**
Age of Woman (Years)	20-24		0.000			0.000	
15-19		-0.21	0.130	0.81	0.17	0.201	1.18
25-29		0.11	0.083	1.11	0.28	0.000	1.33**
30-34		-0.03	0.657	0.97	0.09	0.204	1.09
35-39		-0.10	0.165	0.91	-0.24	0.003	0.79**
40-44		-0.08	0.316	0.93	-0.69	0.000	0.5**
Age at First Marriage	< 18		0.032			0.018	
18-20 years		-0.08	0.068	0.93	-0.05	0.268	0.95
21+ years		-0.03	0.613	0.97	-0.09	0.135	0.92
Parity	Zero		0.000			0.000	
One		-0.11	0.104	0.89	-0.05	0.509	0.95
Two		-0.08	0.117	0.92	-0.18	0.002	0.83**
Three		-0.20	0.003	0.82**	-0.14	0.045	0.87*
Four +		0.05	0.463	1.05	-0.01	0.953	1.00
Pregnancy Wastage	Nil		0.000			0.000	
One		0.02	0.829	1.02	-0.09	0.250	0.91
Two		0.10	0.331	1.11	0.35	0.001	1.43*
3+		0.40	0.003	1.49**	0.26	0.075	1.30
Contraceptive	No use						
Yes		0.16	0.000	1.18**	0.20	0.000	1.22**
Aware of RTI	No aware						
Yes		0.22	0.000	1.25**	0.14	0.000	1.15**
Aware of STI	No aware						
Yes		0.06	0.090	1.06	0.12	0.001	1.12**
Constant		-2.09	0.000	0.12	-2.22	0.000	0.11

No. of cases = 17190	-2 log likelihood = 9093.83	-2 log likelihood = 8251.100
	Pseudo R² (Nagel kerke) = .03	Pseudo R² (Nagel kerke) = .05

*, **: The Corresponding Logistic Regression Co-efficient is significant at 5 % or 1 % level respectively.

Among age categories, the prevalence of lower abdominal pain is significantly more likely (odds ratio is 1.33) to be reported among women in the age group of 25-29 years and significantly less likely in the age groups of 35-39 years and 40-44 years than women in the age groups of 20-24 years. Women who had two or three children are observed to be significantly less likely (odds ratio are 0.83 and 0.87) to report symptom of lower abdominal pain than women who do not have any children. Women who experienced at least two pregnancy wastages are found to be significantly more likely to report problem of lower abdominal pain (odds ratio is 1.42) than women not having any pregnancy wastage.

Contraceptive use seems to raise prevalence of lower abdominal pain. Current users of contraceptives (women with either spouse using contraceptive) are observed to be more likely (odds ratio is 1.22) to report symptom of lower abdominal pain than non-users. Similarly, women who aware of RTI are significantly more likely (odds ratio is 1.15) to report symptom of lower abdominal pain than women who are not aware of RTI, and women aware of STI (odds ratio is 1.12) are observed to be significantly more likely to report this symptom than women who are not aware of STI.

6.2.3 Any Problem of Vaginal Discharge

Table 6.4 shows the results of the logistic regression for any problem of vaginal discharge on selected socio-economic and demographic characteristics. Urban women are significantly less likely (odds ratio is 0.83) to report symptom of any problem of vaginal discharge than rural women. Women other religions (mainly Christian) have 1.33 times significantly high risk of any problem of vaginal discharge than Hindu women. However, Muslim women are found not to be significantly different from Hindu women in this regard. In the caste categories, SC/ST women are significantly less likely (odds ratio is 0.87) to report, but other caste women (odds ratio is 1.29) are more likely to report problem of any vaginal discharge compare to OBC women.

Among education categories, women with 1-5 years of schooling (odds ratio is 1.14) are significantly more likely, but those with 11 and above years of schooling less likely (odds ratio is 0.71) to have any problem of vaginal discharge than women with no schooling. Women living in Semi-pucca houses are significantly more likely (odds ratio is 1.12) to report any problem of vaginal discharge than women living in Kuchcha houses.

The prevalence of any problem of vaginal discharge is observed to be significantly higher among women in the age group of 15-19 years, 25- 29 years and 30-34 years than women in the age group of 20-24 years. Women in the age group of 35-39 years and 40-44 years (odds ratio are 0.87 and 0.54) are significantly less likely to report symptom of any problem of vaginal discharge than women in the age group of 20-24 years.

The effect of parity is unclear. Women who have had two births are significantly more likely, but women with three births are less likely to report any problem of vaginal discharge compared to women of zero parity. Women who experience high pregnancy wastage (three and above) are significantly more likely (odds ratio is 1.22) to report any problem of vaginal discharge than women who do not have any pregnancy wastage. However, women who had experience of one and two pregnancy wastages are not significantly different.

The probability of reporting any problem of vaginal discharge is significantly higher among current users of contraceptive method (women or husband user of contraceptives) than non-users and among women who aware of RTI than those not aware.

6.2.4 Any One Symptom of RTI/STI

Finally, the results of the logistic regression for the reporting of any one symptom of RTI/STI are shown in Table 6.4. Urban women are less likely (odds ratio is 0.85) to report any one symptom of RTI/STI than rural women. In the religion categories, other religions (mainly Christian) are significantly more likely (odds ratio is 1.30) to report any one symptom of RTI/STI compared to Hindu women. The probability of reporting symptom of RTI/STI is lower among SC/ST women than OBC women. In addition, other caste women are 1.23 times more likely to report any one symptom of RTI/STI than OBC women.

Women with 1-5 years of schooling are significantly more likely (odds ratio is 1.15)to report symptom of RTI/STI than women with no schooling (illiterate), but women with 11 and above years of schooling (high educated) are significantly less likely (odds ratio is 0.72) to report any one symptom of RTI/STI than women with no schooling.

Table 6.4
Logistic Regression Results of Reporting of Any Problem of Vaginal Discharge and Any One Symptom of RTI/STI on Selected Socio-economic and Demographic Characteristics in Tamil Nadu: 1998-99

Socio- eco and Demographic Variables	Reference Category	Any Problem of Vaginal Discharge			Any One Symptoms of RTI/STI		
		Coefficient	Sig.	Odds Ratio	Coefficient	Sig.	Odds Ratio
Residence	Rural						
Urban		-0.19	0.000	0.83**	-0.16	0.000	0.85**
Religion	Hindu		0.000			0.000	
Muslim		-0.05	0.349	0.95	-0.05	0.320	0.95
Others		0.29	0.000	1.33**	0.27	0.000	1.30**
Caste	OBC		0.000			0.001	
SC/ST		-0.14	0.001	0.87**	-0.09	0.025	0.92*
Others		0.25	0.000	1.29**	0.21	0.001	1.23**
Woman's Education (schooling)	No Schooling		0.000			0.000	
1-5 years		0.13	0.000	1.14**	0.14	0.000	1.15**
6-10 years		-0.02	0.575	0.98	-0.01	0.814	0.99
11+ years		-0.34	0.000	0.72**	-0.33	0.000	0.72**
Type of House	Kachcha		0.000			0.000	
Semi pucca		0.11	0.000	1.12**	0.10	0.000	1.11**
Pucca		-0.05	0.054	0.95	-0.07	0.011	0.94*
Age of Woman (Years)	20-24		0.000			0.000	
15-19		0.23	0.002	1.25**	0.19	0.008	1.21**
25-29		0.21	0.000	1.24**	0.21	0.000	1.24**
30-34		0.08	0.050	1.08*	0.06	0.098	1.06
35-39		-0.14	0.001	0.87**	-0.16	0.000	0.85**
40-44		-0.62	0.000	0.54**	-0.57	0.000	0.56**
Age at First Marriage	< 18		0.276			0.793	
18-20 years		0.00	0.979	1.00	0.00	0.997	1.00
21+ years		0.04	0.168	1.04	0.02	0.561	1.02
Parity	Zero		0.010			0.020	
One		0.03	0.425	1.03	-0.01	0.749	0.99
Two		0.07	0.032	1.07*	0.04	0.139	1.05
Three		-0.09	0.016	0.91*	-0.10	0.005	0.90**
Four +		0.04	0.334	1.04	0.04	0.377	1.04
Pregnancy Wastage	Nil		0.000			0.000	
One		-0.01	0.813	0.99	-0.02	0.733	0.98
Two		0.06	0.408	1.06	0.14	0.053	1.15
3+		0.20	0.044	1.22*	0.18	0.056	1.20
Contraceptive	No use						
Yes		0.12	0.000	1.12**	0.14	0.000	1.15**
Aware of RTI	No aware						
Yes		0.25	0.000	1.28**	0.21	0.000	1.24**
Aware of STI	No aware						
Yes		0.00	0.946	1.00	0.02	0.348	1.02
Constant		-0.40	0.000	0.67	-0.17	0.004	0.85

No. of cases = 17190	-2 log likelihood = 20862.43	-2 log likelihood = 21823.01
	Pseudo R^2 (Nagel kerke) = .06	Pseudo R^2 (Nagel kerke) = .05

*, **: The Corresponding Logistic Regression Co-efficient is significant at 5 % or 1 % level respectively

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Women living in Semi-pucca houses are 1.11 times more likely to report symptom of RTI/STI than women living in Kuchcha houses. Women living in Pucca houses are significantly less likely (odds ratio is 0.94) to report any one symptom of RTI/STI than women living in Kuchcha houses.

Among age categories, the probability of reporting symptom of RTI/STI is significantly higher among women in the age group of 15-19 years and 25-29 years than women in the age group of 20-24 years. On the other hand, women in the age group of 35-39 years and 40-44 years are less likely (odds ratios are 0.85 and 0.56) to report symptom of RTI/STI than women in the age group of 20-24 years.

Women who had three children are found to be significantly less likely to report any one symptom of RTI/STI than women who do not have any children. However, women who had one child, two children and four or more children are not significantly different compared to those with no children in the prevalence of any one symptom of RTI/STI. Overall, the effect of parity is not clear and anyway quite small.

Current users of contraceptive methods (either women or husband using contraceptive method) are significantly more likely (odds ratio is 1.14) to report any one symptom of RTI/STI than non-users. Similarly, currently married women who are aware of RTI (odds ratio is 1.24) are significantly more likely to report symptoms of RTI/STI than women who are not aware of RTI.

6.2.5 TREATMENT SEEKING BEHAVIOUR FOR RTI/STI

The results of the logistic regression analysis for seeking treatment for RTI/STI are shown in Table 6.5. This naturally pertains to only those who reported a symptom. Urban women are observed to be significantly more likely (odds ratio is 1.10) to seek treatment for RTI/STI than rural women.

The probability of seeking treatment for RTI/STI is significantly lower (odds ratio is 0.72) among women in the age group of 15-19 years than women in the age group of 20-24 years. However, women in the age group of 25-44 years do not differ significantly from women with no schooling.

Current users of contraceptive method (women with either spouse using contraceptive methods) are 1.12 times more likely to seek treatment for RTI/STI than non-users. Currently married women who are aware of RTI (odds ratio is 1.11) are also significantly more likely to seek treatment for RTI/STI than women not aware of RTI.

6.2.5 Treatment Obtained From Public Health Sector for RTI/STI

The logistic regression analysis results for treatment obtained from public medical sector are also shown in Table 6.5. In the caste category, the SC/ST women are significantly more likely (odds ratio is 1.46) to seek treatment for RTI/STI from public medical sector compared to OBC women.

Women with 1-5 years of schooling (low level of education) are found to be significantly more likely (odds ratio is 1.40) to seek treatment for RTI/STI from public medical sector than women with no schooling. Women with 11years and above (high level of education) are significantly less likely to seek treatment for RTI/STI from public medical sector than women with no schooling.

Women living in semi pucca houses are significantly less likely (odds ratio is 0.85) to seek treatment for RTI/STI from public medical sector than women in kachcha houses. Women who had two or three children are observed to be significantly more likely (odds ratio are 1.20 and 1.36) to seek treatment for RTI/STI from public medical sector than reference category (no childbearing). Women who aware of RTI are less likely to seek treatment obtained from public medical sector than women who are not aware of RTI.

Table 6.5

Logistic Regression Results of Treatment Seeking for RTI/STI and Treatment Obtained from Public Health Sector on Selected Socio-economic and Demographic Characteristics in Tamil Nadu: 1998-99

Socio- eco and Demographic Variables	Reference Category	Sought Treatment for RTI/STI			Treatment Obtained from Public Health Sector		
		Coefficient	Sig.	Odds Ratio	Coefficient	Sig.	Odds Ratio
Residence	Rural						
Urban		0.10	0.003	0.91**	-0.06	0.277	0.94
Religion	Hindu		0.593			0.922	
Muslim		0.04	0.624	1.04	0.05	0.757	1.05
Others		-0.08	0.342	0.93	-0.01	0.940	0.99
Caste	OBC		0.974			0.001	
SC/ST		-0.01	0.835	0.99	0.38	0.003	1.46**
Others		0.02	0.819	1.02	-0.30	0.152	0.74
Woman's Education (schooling)	No Schooling		0.220			0.000	
1-5 years		-0.09	0.143	0.91	0.34	0.003	1.40**
6-10 years		0.01	0.865	1.01	-0.15	0.119	0.86
11+ years		0.00	0.967	1.00	-0.82	0.000	0.44**
Type of House	Kachcha		0.928			0.039	
Semi pucca		-0.01	0.822	0.99	-0.16	0.020	0.85*
Pucca		-0.01	0.850	0.99	0.02	0.850	1.02
Age of Woman (Years)	20-24		0.001			0.889	
15-19		-0.33	0.016	1.39*	0.22	0.413	1.25
25-29		-0.08	0.177	0.92	-0.01	0.898	0.99
30-34		-0.10	0.126	0.91	-0.14	0.225	0.87
35-39		0.11	0.124	1.12	-0.01	0.917	0.99
40-44		-0.03	0.736	0.97	-0.08	0.597	0.92
Age at First Marriage	< 18		0.001			0.148	
18-20 years		0.07	0.058	1.08	0.10	0.160	1.11
21+ years		0.08	0.103	1.09	0.03	0.784	1.03
Parity	Zero		0.608			0.007	
One		0.03	0.659	1.03	-0.12	0.331	0.88
Two		0.07	0.189	1.07	0.19	0.048	1.21*
Three		-0.01	0.865	0.99	0.31	0.005	1.37**
Four +		-0.07	0.307	0.93	0.23	0.076	1.25
Pregnancy Wastage	Nil		0.000			0.417	
One		-0.08	0.314	0.93	0.09	0.523	1.09
Two		-0.13	0.252	0.88	0.27	0.157	1.31
3+		-0.11	0.440	0.89	-0.44	0.112	0.64
Contraceptive	No use						
Yes		0.12	0.000	0.89**	-0.01	0.884	0.99
Aware of RTI	No aware						
Yes		0.11	0.000	0.90**	-0.14	0.009	0.87**
Aware of STI	No aware						
Yes		-0.05	0.132	0.95	-0.03	0.594	0.97
Constant		0.60	0.000	1.82	-1.02	0.000	0.36

-2 log likelihood = 7559.22
Pseudo R² (Nagel kerke) = .03
No. of cases = 6290

-2 log likelihood = 2273.41
Pseudo R² (Nagel kerke) = .11
No. of cases = 1897

*, **: The Corresponding Logistic Regression Co-efficient is significant at 5 % or 1 % level respectively.

6.3 SUMMARY

Urban women are less likely to report symptoms of any problem of vaginal discharge, any one symptom of RTI/STI, and seek treatment for RTI/STI than rural women. There is no significant difference in the prevalence of reproductive tract infection between Hindus and Muslims. However, in case of a symptoms Muslim women are more likely to seek treatment for RTI/STI than Hindu women. On the other hand, women belonging to other religions (mainly Christian) are more likely to report symptoms of lower abdominal pain, any problem of vaginal discharge, and any one symptom of RTI/STI than Hindu women (Table 6.6 presents summary of logistic regression analysis, only the sign of significant effects is shown in the table).

SC/ST women are more likely to report symptoms of burning sensation, and lower abdominal pain than OBC women. On the other hand, SC/ST women are less likely to report symptom of any problem of vaginal discharge, and any one symptom of RTI/STI than reference category. There are no notable differences by caste in seeking treatment.

Women with 1-5 years of schooling (low level of education) are more likely to report symptom of burning sensation, lower abdominal pain, any problem of vaginal discharge, and any one symptom of RTI/STI than women with no schooling. However, women with primary level education are less likely to seek treatment for RTI/STI compared to women with no schooling. On the other hand, high-educated women are less likely to report symptom of burning sensation, lower abdominal pain, any problem of vaginal discharge, and any one symptom of RTI/STI than women with no schooling.

Women living in Semi pucca houses are more likely to report symptoms of any problem of vaginal discharge, and any one symptom of RTI/STI compared to women living in Kuchcha houses. But, women living in Pucca houses are less likely to report problem of lower abdominal pain and any one symptom of RTI/STI than women living in Kuchcha houses. Thus, women of a relatively high standard of living appear to have lower prevalence of reproductive morbidity.

Table 6.6

Summary Results of Logistics Regression Analysis for Reproductive Tract Infection and for RTI/STI in Tamil nadu

Socio- eco and Demographic Variables	Reference Category	Dependent Variables					
		Burning Sensation	Lower Abdominal Pain	Any Problem of Vaginal Discharge	Any One Symptom of RTI/STI	Treatment for RTI/STI	Obtained From Public Medical Sector
Residence	Rural						
Urban		NS	NS	-	-	+	NS
Religion	Hindu						
Muslim		NS	NS	NS	NS	NS	NS
Others		NS	+	+	+	NS	NS
Caste	OBC						
SC/ST		+	+	-	-	NS	+
Others		NS	NS	+	+	NS	NS
Woman's Education (schooling)	No Schooling						
1-5 years		+	+	+	+	NS	+
6-10 years		NS	NS	NS	NS	NS	NS
11+ years		-	-	-	-	NS	-
Type of House	Kachcha						
Semi pucca		NS	NS	+	+	NS	-
Pucca		NS	-	NS	-	NS	NS
Age of Woman (Years)	20-24						
15-19		NS	NS	+	+	-	NS
25-29		NS	+	+	+	NS	NS
30-34		NS	NS	+	NS	NS	NS
35-39		NS	-	-	-	NS	NS
40-44		NS	-	-	-	NS	NS
Age at First Marriage	< 18						
18-20 years		NS	NS	NS	NS	NS	NS
21+ years		NS	NS	NS	NS	NS	NS
Parity	Zero						
One		NS	NS	NS	NS	NS	NS
Two		NS	-	+	NS	NS	+
Three		-	-	-	-	NS	+
Four +		NS	NS	NS	NS	NS	NS
Pregnancy Wastage	Nil						
One		NS	NS	NS	NS	NS	NS
Two		NS	+	NS	NS	NS	NS
3+		+	NS	+	NS	NS	NS
Contraceptive	No use						
Yes		+	+	+	+	+	NS
Aware of RTI	No aware						
Yes		+	+	+	+	+	-
Aware of STI	No aware						
Yes		NS	+	NS	NS	NS	NS

Notes: NS: Not Significant, +: Positive & Significant, -: Negative & Significant

Women in the age group of 15-19 years and 25-29 years are more likely to report symptoms of any problem of vaginal discharge, and any one symptom of RTI/STI; those of 25-29 years are more likely to report lower abdominal pain than reference category. On the other hand, older women (age 35 and above) are less likely to report symptom of lower abdominal pain, any problem of vaginal discharge, and any one symptom of RTI/STI than women in the age group of 20-24 years. There do not appear to be any notable differentials by age at marriage.

Women who had three children are less likely to report symptom of burning sensation, lower abdominal pain, any problem of vaginal discharge, and any one symptom of RTI/STI than women with no children. However, this is not observed for women with four or more births. The reasons for this are unclear. Women who experienced more than three pregnancy wastages are more likely to report symptom of burning sensation and any problem of vaginal discharge than women who do not have any pregnancy wastage.

Current users of contraceptive methods are more likely to report symptom of burning sensation, lower abdominal pain, any problem of vaginal discharge, and any one symptom of RTI/STI than non-users. On the other hand, current uses of contraceptives are less likely to seek treatment for RTI/STI than non-users. Similarly, women who are aware of RTI are more likely to report prevalence of burning sensation, lower abdominal pain, any problem of vaginal discharge, and any one symptom of RTI/STI, but less likely to seek treatment than women who are not aware of RTI.

The analysis reveals that women in urban areas, those belonging to SC/ST, women with high educational level, women living in pucca house, are less likely to report symptoms of RTI/STI. It should be noted here that the prevalence is obtained on the basis of self-reported symptoms. It is generally accepted that those more educated, more aware of health issues are more likely to perceive the symptoms and report. On the other hand, less educated women may not perceive specific symptoms and hence are likely to under-report. Surveys based on self-reported morbidity found higher prevalence among more educated than less educated even though the actual prevalence (not measured in the absence of laboratory tests) may be low for such a group. In the present analysis, the more educated as well as the urban and those from high standard of living, show lower prevalence than the less educated, rural, and those with low standard of living. On the reasonable assumption that better-off sections would report the symptoms more completely, it can be said from the analysis above that the true prevalence

level among the more educated, urban and those with high standard of living is indeed much lower than average. Thus, the prevalence of RTI seems to decline with improvement in education, standard of living and urbanization.

Women who are users of contraceptive method and those who are aware of RTI show greater reported prevalence but this could be at least partly on account of their having better perception of RTI and therefore more completed reporting. Thus, the reported high prevalence in this group may not necessarily indicate higher actual prevalence of RTI. In the case of treatment seeking behaviour, the chance of under-reporting is not high. The analysis shows high treatment seeking among urban women; this is probably because of easier access and better awareness of services. Similarly, contraceptive users may also have better awareness of reproductive health services and hence have greater tendency to seek treatment.

Public services are generally not preferred by affluence sections of the society. The results confirm this, especially with respect to education. The more educated women have lower tendency to utilize public medical services. Similarly, the weaker sections (SC/ST) are dependent on public sector services. Thus what is generally observed in overall health services, that is, the better off sections relying on private sector and the poorer relying more on the public sector, holds true for reproductive health care as well.

Chapter-7

Summary and Conclusions

CHAPTER-7

SUMMARY AND CONCLUSIONS

After the ICPD conference in Cairo 1994, the Programme of Action focused on the reproductive health issues in the developing countries, mainly on the reproductive tract infection/sexually transmitted infections. The government of India has also taken up some measures under the reproductive and child health (RCH) programme to create awareness about reproductive health and provide quality care on reproductive health problems, especially on RTI. Gynaecological morbidity includes reproductive tract infections, which means infection caused by overgrowth of organism in genital tract. This study focused on reproductive tract infection, its awareness, prevalence rates and treatment seeking behaviour in India with special reference to Tamil Nadu.

The present study is based primarily on the RCH-RHS survey in states in India and district level in Tamil Nadu. The RCH-RHS survey conducted during 1998-99 interviewed currently married women 15-44 years (18,040) and asked questions about RTI/STI during a reference period of three months prior to the survey. Apart from this survey, state level data were also obtained by the NFHS-2 survey. In both these large scale surveys, data on RTI/STI were obtained in the form of self-reported symptoms. In this study, the data from RCH-RHS and NFHS-2 were examined at the state level and the RCH-RHS data for district level in Tamil Nadu, because district level data are not available in NFHS-2 survey. There is some inconsistency between the prevalence estimates provided by these two surveys conducted in about the same periods (1998-99). The RCH-RHS survey covered male reproductive health problems (20-54 years) but NFHS-2 survey had not considered men's reproductive health problems which is a major drawback. Most of the analysis is based on the RCH-RHS data.

At the national level, the prevalence of RTI/STI is quite high (29.7 percent) but only 37.6 percent had treatment for RTI/STI. Some inter-state variations are seen in prevalence and treatment seeking behaviour. However, no regional pattern as such can be identified.

In Tamil Nadu, 36.7 percent of currently married women suffer from RTI/STI (that is, report at least one symptom) but data reveal that only little more of one-third among them have gone for any treatment. It has came to front that vaginal discharge (32.2 percent) is the most common among reported symptoms followed by burning sensation (7.8 percent), and lower abdominal pain (6.7 percent) in Tamil Nadu. Analysis of spatial variations, using mapping for the purpose

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indicated an absence of a clear regional pattern in the prevalence of RTIs in the state. A number of socio-economic and demographic factors influence the prevalence level as well as treatment seeking behaviour.

Bivariate analysis revealed certain differentials in the prevalence level by socio-economic and demographic factors. In order to assess net effects, the technique of logistic regression was employed. This provides odds ratios, for a category to a reference category, of the prevalence of RTI or treatment seeking.

The results show that less educated women are more likely to report symptom of RTI/STI and seek treatment from public medical sectors than more educated women. But it is also noted that among currently married women those using contraceptive methods are more likely to report symptoms of RTI/STI and seek treatment than non-users. Women who are aware of RTI are significantly more likely to report symptoms of RTI/STI and seek treatment but less likely to seek treatment from public health sectors than women who are not aware of RTI.

Apart from these it has also been observed that according to RCH-RHS survey, in India, 12.3 percent men reported any one symptom of RTI but 55.1 percent of them took any treatment for RTI/STI. It fact, the tendency to seek treatment is higher among men than women in the country as a whole. Thus, it appears that the RCH programme has not only focused on women's reproductive health problems but has also taken care of reproductive problems among men.

Before the implications are discussed, it is necessary to acknowledge the limitations of the study. First, the data on prevalence obtained in the surveys are on the basis of self-reported symptoms rather than clinical examination or laboratory tests. The limitations of such data on the basis of self-reports are well known in the demographic literature (Murray and Chen, 1992). Further, the conceptual framework discussed in chapter-III could not be employed in that form due to lack of data on some intermediate variables. As a result all the variables including some of the intermediate variables were jointly treated as explanatory variables. Thus, the direct and indirect could not be measured separately.

In the past, the family welfare programme in India concentrated on contraceptive services. But there has been a charge in the approach in the recent years. The RCH programme was put into

action a few years back. The Government of India included care for RTI/STI problem as an important goal in the national population policy 2000. However, the present study shows that reproductive health is a major issue yet to be tackled effectively. There is some awareness of RTI/STI among people but the tendency to seek treatment is low, especially among women.

The prevalence of RTI/STI is very high in India. A large proportion of the women of reproductive ages suffer from some reproductive morbidity, the most common symptoms being vaginal discharge. Through there are some variations by socio-economic variables, the level is fairly high in all classes. Clearly, there is a need to create awareness about this problem and provide appropriate education about reproductive health. Public health programmes should provide information on reproductive health care including preventive and curative care. Besides, adolescent reproductive and sexual health education will have a long-term impact. The Government of India has recently implemented some policy measures under the RCH programme to provide reproductive and sexual health education to adolescents.

The analysis in the study clearly shows that awareness of RTI promotes health seeking behaviour. Hence, the government should make more efforts to create awareness of RTI/STI through mass media. Apart from that it is also noticed that illiterate women are more likely to seek treatment from the public sector. Since in India a large section of the female population is illiterate, it would be advisable that the improvement of public health services is given priority. These should be made more accessible and their quality enhanced. It has also been seen that the weaker sections such as the Scheduled Castes and Scheduled Tribes rely extensively on public health services. It is the fundamental duty of any government to encourage people to seek treatment in the public health sector rather than the private sector. It has also been noted that the female contraceptive use has positive impact on RTI/STI. It may happen due to unhygienic condition prevailing in the clinics and hospitals. People should be made aware about these and all public sector facilities should provide good quality care to women.

Finally, it must be noted that at the time the RCH-RHS and NFHS-2 surveys were carried out, during 1998-99, the RCH programme was at an early stage and the National Population Policy 2000 was yet to be announced. If the RCH program functions effectively and the population policy measures are put into operation expeditiously, one would expect that the level of reproductive morbidity would fall and there would be perceptible improvement in reproductive health.

Appendix

Appendix-1

DETAILED RESULTS OF THE LOGISTIC REGRESSION ANALYSIS FOR BURNING SENSATION

Socio- eco and Demographic Variables	Reference Category	B	S.E.	Wald	df	Sig.	Exp(B)
Residence							
Urban	Rural	-0.040	0.034	1.400	1	0.237	0.961
Religion				3.146	2	0.207	
Muslim	Hindu	-0.048	0.089	0.296	1	0.586	0.953
Others		0.136	0.091	2.211	1	0.137	1.145
Caste	OBC			19.043	2	0	
SC/ST		0.179	0.071	6.367	1	0.012	1.197
Others		-0.064	0.117	0.296	1	0.586	0.938
Woman's Education (schooling)	0 schooling			25.934	3	0	
1-5 years		0.169	0.065	6.714	1	0.01	1.184
6-10 years		-0.038	0.052	0.514	1	0.473	0.963
11+ years		-0.352	0.087	16.197	1	0	0.703
Type of House	Kachcha			1.189	2	0.552	
Semi pucca		0.032	0.039	0.684	1	0.408	1.032
Pucca		-0.048	0.047	1.022	1	0.312	0.953
Age of women (Years)	20-24 years			25.276	5	0	
15-19		-0.212	0.140	2.293	1	0.13	0.809
25-29		0.108	0.062	3.015	1	0.083	1.114
30-34		-0.030	0.068	0.197	1	0.657	0.97
35-39		-0.100	0.072	1.923	1	0.165	0.905
40-44		-0.076	0.076	1.004	1	0.316	0.927
Age at First Marriage	< 18 years			6.890	2	0.032	
18-20 years		-0.075	0.041	3.335	1	0.068	0.928
21+ years		-0.027	0.054	0.255	1	0.613	0.973
Parity	zero			25.909	4	0	
One		-0.114	0.070	2.636	1	0.104	0.892
Two		-0.083	0.053	2.456	1	0.117	0.92
Three		-0.195	0.065	9.044	1	0.003	0.823
Four +		0.052	0.071	0.538	1	0.463	1.053
Pregnancy Wastage	Nil			86.621	3	0	
One		0.016	0.072	0.047	1	0.829	1.016
Two		0.103	0.106	0.945	1	0.331	1.109
3+		0.396	0.132	9.070	1	0.003	1.487
Contraceptive Yes	No use	0.164	0.035	21.505	1	0	1.178
Aware of RTI Yes	No aware	0.222	0.032	48.711	1	0	1.248
Aware of STI Yes	No aware	0.056	0.033	2.868	1	0.09	1.058
Constant		-2.088	0.096	475.366	1	0	0.124

Appendix-2

DETAILED RESULTS OF THE LOGISTIC REGRESSION ANALYSIS FOR LOWER ABDOMINAL PAIN

Socio- eco and Demographic Variables	Reference Category	B	S.E.	Wald	df	Sig.	Exp(B)
Residence							
Urban	Rural	-0.026	0.036	0.542	1	0.461	0.974
Religion				4.826	2	0.09	
Muslim	Hindu	-0.191	0.1	3.66	1	0.056	0.826
Others		0.212	0.098	4.695	1	0.03	1.236
Caste	OBC			24.263	2	0	
SC/ST		0.168	0.074	5.192	1	0.023	1.183
Others		0.007	0.122	0.003	1	0.955	1.007
Woman's Education (schooling)	0 schooling			23.448	3	0	
1-5 years		0.171	0.07	5.97	1	0.015	1.187
6-10 years		0.049	0.055	0.792	1	0.373	1.05
11+ years		-0.436	0.096	20.483	1	0	0.647
Type of House	Kachcha			14.407	2	0.001	
Semi pucca		-0.016	0.041	0.154	1	0.695	0.984
Pucca		-0.156	0.051	9.17	1	0.002	0.856
Age of women (Years)	20-24 years			87.132	5	0	
15-19		0.167	0.131	1.639	1	0.201	1.182
25-29		0.282	0.062	20.561	1	0	1.326
30-34		0.088	0.069	1.617	1	0.204	1.092
35-39		-0.236	0.079	8.919	1	0.003	0.79
40-44		-0.694	0.096	52.292	1	0	0.5
Age at First Marriage	< 18 years			8.064	2	0.018	
18-20 years		-0.048	0.043	1.225	1	0.268	0.953
21+ years		-0.088	0.059	2.229	1	0.135	0.916
Parity	Zero			23.937	4	0	
One		-0.048	0.072	0.436	1	0.509	0.954
Two		-0.181	0.057	10.07	1	0.002	0.834
Three		-0.136	0.068	4.003	1	0.045	0.873
Four +		-0.005	0.078	0.004	1	0.953	0.995
Pregnancy Wastage	Nil			77.825	3	0	
One		-0.09	0.078	1.322	1	0.25	0.914
Two		0.354	0.106	11.053	1	0.001	1.425
3+		0.262	0.147	3.18	1	0.075	1.3
Contraceptive Yes	No use	0.199	0.038	26.789	1	0	1.22
Aware of RTI Yes	No aware	0.141	0.034	17.461	1	0	1.151
Aware of STI Yes	No aware	0.115	0.035	10.834	1	0.001	1.122
Constant		-2.219	0.102	474.594	1	0	0.109

Appendix-3

DETAILED RESULTS OF THE LOGISTIC REGRESSION ANALYSIS FOR ANY PROBLEM OF VAGINAL DISCHARGE

Socio- eco and Demographic Variables	Reference Category	B	S.E.	Wald	df	Sig.	Exp(B)
Residence							
Urban	Rural	-0.189	0.019	94.26	1	0	0.828
Religion				58.101	2	0	
Muslim	Hindu	-0.047	0.05	0.877	1	0.349	0.954
Others		0.286	0.052	30.363	1	0	1.331
Caste	OBC			16.544	2	0	
SC/ST		-0.136	0.04	11.654	1	0.001	0.873
Others		0.251	0.062	16.526	1	0	1.286
Woman's Education (schooling)	0 schooling			73.531	3	0	
1-5 years		0.133	0.037	12.618	1	0	1.142
6-10 years		-0.016	0.029	0.315	1	0.575	0.984
11+ years		-0.335	0.047	51.279	1	0	0.715
Type of House	Kachcha			25.028	2	0	
Semi pucca		0.111	0.022	24.977	1	0	1.118
Pucca		-0.052	0.027	3.717	1	0.054	0.949
Age of women (Years)	20-24 years			218.31	5	0	
15-19		0.227	0.075	9.156	1	0.002	1.254
25-29		0.213	0.035	37.25	1	0	1.237
30-34		0.075	0.038	3.847	1	0.05	1.077
35-39		-0.136	0.041	10.978	1	0.001	0.873
40-44		-0.617	0.047	173.885	1	0	0.54
Age at First Marriage	< 18 years		.	2.571	2	0.276	
18-20 years		-0.001	0.023	0.001	1	0.979	0.999
21+ years		0.042	0.031	1.898	1	0.168	1.043
Parity	Zero			13.165	4	0.01	
One		0.031	0.039	0.638	1	0.425	1.031
Two		0.065	0.031	4.585	1	0.032	1.068
Three		-0.09	0.037	5.801	1	0.016	0.914
Four +		0.042	0.043	0.935	1	0.334	1.043
Pregnancy Wastage	Nil			43.684	3	0	
One		-0.012	0.05	0.056	1	0.813	0.988
Two		0.061	0.074	0.685	1	0.408	1.063
3+		0.198	0.099	4.052	1	0.044	1.219
Contraceptive							
Yes	No use	0.116	0.02	33.221	1	0	1.123
Aware of RTI							
Yes	No aware	0.248	0.019	179.269	1	0	1.282
Aware of STI							
Yes	No aware	0.001	0.02	0.005	1	0.946	1.001
Constant		-0.404	0.058	47.672	1	0	0.668

Appendix-4

DETAILED RESULTS OF THE LOGISTIC REGRESSION ANALYSIS FOR ANY ONE SYMPTOM OF RTI/STI

| Socio- eco and Demographic Variables	Reference Category	B	S.E.	Wald	df	Sig.	Exp(B)
Residence							
Urban	Rural	-0.164	0.019	76.554	1	0	0.849
Religion				49.9	2	0	
Muslim	Hindu	-0.048	0.049	0.988	1	0.32	0.953
Others		0.265	0.051	26.897	1	0	1.303
Caste	OBC			13.935	2.000	0.001	
SC/ST		-0.088	0.039	5.053	1.000	0.025	0.916
Others		0.209	0.061	11.948	1.000	0.001	1.233
Woman's Education (schooling)	0 schooling			68.414	3.000	0.000	
1-5 years		0.143	0.036	15.438	1.000	0.000	1.153
6-10 years		-0.007	0.028	0.055	1.000	0.814	0.993
11+ years		-0.328	0.045	52.776	1.000	0.000	0.721
Type of House	Kachcha			23.092	2.000	0.000	
Semi pucca		0.103	0.022	22.805	1.000	0.000	1.109
Pucca		-0.066	0.026	6.416	1.000	0.011	0.936
Age of women (Years)	20-24 years			225.665	5.000	0.000	
15-19		0.192	0.073	6.947	1.000	0.008	1.211
25-29		0.213	0.034	39.290	1.000	0.000	1.237
30-34		0.061	0.037	2.741	1.000	0.098	1.063
35-39		-0.163	0.04	16.909	1.000	0.000	0.849
40-44		-0.573	0.044	166.588	1.000	0.000	0.564
Age at First Marriage	< 18 years			0.465	2.000	0.793	
18-20 years		0	0.022	0.000	1.000	0.997	1.000
21+ years		0.017	0.03	0.338	1.000	0.561	1.017
Parity	zero			11.621	4.000	0.020	
One		-0.012	0.038	0.102	1.000	0.749	0.988
Two		0.044	0.03	2.184	1.000	0.139	1.045
Three		-0.101	0.036	7.717	1.000	0.005	0.904
Four +		0.037	0.042	0.779	1.000	0.377	1.037
Pregnancy Wastage	Nil			72.044	3.000	0.000	
One		-0.017	0.049	0.116	1.000	0.733	0.983
Two		0.138	0.072	3.732	1.000	0.053	1.148
3+		0.184	0.096	3.639	1.000	0.056	1.202
Contraceptive							
Yes	No use	0.135	0.02	47.924	1.000	0.000	1.145
Aware of RTI							
Yes	No aware	0.214	0.018	141.155	1.000	0.000	1.239
Aware of STI							
Yes	No aware	0.018	0.019	0.882	1.000	0.348	1.018
Constant		-0.165	0.057	8.289	1.000	0.004	0.848

Appendix-5

DETAILED RESULTS OF THE LOGISTIC REGRESSION ANALYSIS FOR TREATMENT SEEKING FOR RTI/STI

Socio- eco and Demographic Variables	Reference Category	B	S.E.	Wald	df	Sig.	Exp(B)
Residence							
Urban	Rural	-0.095	0.032	8.837	1	0.003	0.909
Religion				1.045	2	0.593	
Muslim	Hindu	0.04	0.081	0.241	1	0.624	1.041
Others		-0.078	0.082	0.902	1	0.342	0.925
Caste	OBC			0.053	2	0.974	
SC/ST		-0.014	0.066	0.043	1	0.835	0.986
Others		0.023	0.102	0.052	1	0.819	1.024
Woman's Education (schooling)	0 schooling			4.41	3	0.22	
1-5 years		-0.09	0.061	2.143	1	0.143	0.914
6-10 years		0.008	0.049	0.029	1	0.865	1.008
11+ years		-0.003	0.079	0.002	1	0.967	0.997
Type of House	Kachcha			0.15	2	0.928	
Semi pucca		-0.008	0.037	0.051	1	0.822	0.992
Pucca		-0.009	0.045	0.036	1	0.85	0.991
Age of women (Years)	20-24 years			21.128	5	0.001	
15-19		0.331	0.137	5.828	1	0.016	1.392
25-29		-0.079	0.058	1.825	1	0.177	0.924
30-34		-0.097	0.063	2.339	1	0.126	0.908
35-39		0.11	0.071	2.368	1	0.124	1.116
40-44		-0.028	0.082	0.113	1	0.736	0.973
Age at First Marriage	< 18 years			13.683	2	0.001	
18-20 years		0.074	0.039	3.58	1	0.058	1.076
21+ years		0.084	0.052	2.666	1	0.103	1.088
Parity	zero			2.706	4	0.608	
One		0.029	0.066	0.195	1	0.659	1.029
Two		0.067	0.051	1.728	1	0.189	1.069
Three		-0.011	0.062	0.029	1	0.865	0.989
Four +		-0.072	0.071	1.043	1	0.307	0.93
Pregnancy Wastage	Nil			38.738	3	0	
One		-0.076	0.075	1.015	1	0.314	0.927
Two		-0.125	0.109	1.31	1	0.252	0.882
3+		-0.113	0.147	0.598	1	0.44	0.893
Contraceptive Yes	No use	-0.119	0.034	12.189	1	0	0.888
Aware of RTI Yes	No aware	-0.108	0.03	12.779	1	0	0.897
Aware of STI Yes	No aware	-0.047	0.032	2.265	1	0.132	0.954
Constant		0.601	0.093	41.653	1	0	1.824

Appendix-6

DETAILED RESULTS OF THE LOGISTIC REGRESSION ANALYSIS FOR TREATMENT OBTAINED FROM PUBLIC HEALTH SECTOR

Socio- eco and Demographic Variables	Reference Category	B	S.E.	Wald	df	Sig.	Exp(B)
Residence							
Urban	Rural	-0.064	0.059	1.182	1	0.277	0.938
Religion				0.162	2	0.922	
Muslim	Hindu	0.046	0.15	0.096	1	0.757	1.047
Others		-0.012	0.154	0.006	1	0.94	0.988
Caste	OBC			14.961	2	0.001	
SC/ST		0.379	0.128	8.717	1	0.003	1.46
Others		-0.302	0.211	2.053	1	0.152	0.739
Woman's Education (schooling)	0 schooling			54.466	3	0	
1-5 years		0.337	0.114	8.791	1	0.003	1.401
6-10 years		-0.154	0.099	2.427	1	0.119	0.857
11+ years		-0.822	0.183	20.275	1	0	0.44
Type of House	Kachcha			6.464	2	0.039	
Semi pucca		-0.158	0.068	5.397	1	0.02	0.853
Pucca		0.016	0.085	0.036	1	0.85	1.016
Age of women (Years)	20-24 years			1.702	5	0.889	
15-19		0.222	0.271	0.669	1	0.413	1.248
25-29		-0.014	0.109	0.016	1	0.898	0.986
30-34		-0.14	0.115	1.474	1	0.225	0.869
35-39		-0.014	0.13	0.011	1	0.917	0.987
40-44		-0.079	0.15	0.28	1	0.597	0.924
Age at First Marriage	< 18 years			3.816	2	0.148	
18-20 years		0.102	0.073	1.97	1	0.16	1.108
21+ years		0.027	0.097	0.075	1	0.784	1.027
Parity	Zero			14.176	4	0.007	
One		-0.124	0.127	0.944	1	0.331	0.884
Two		0.187	0.095	3.918	1	0.048	1.206
Three		0.312	0.112	7.832	1	0.005	1.367
Four +		0.225	0.127	3.144	1	0.076	1.252
Pregnancy Wastage	Nil			2.842	3	0.417	
One		0.086	0.135	0.408	1	0.523	1.09
Two		0.269	0.19	2.003	1	0.157	1.309
3+		-0.44	0.277	2.526	1	0.112	0.644
Contraceptive							
Yes	No use	-0.009	0.063	0.021	1	0.884	0.991
Aware of RTI							
Yes	No aware	-0.141	0.054	6.794	1	0.009	0.869
Aware of STI							
Yes	No aware	-0.03	0.056	0.284	1	0.594	0.97
Constant		-1.022	0.179	32.453	1	0	0.36

BIBLIOGRAPHY

BIBLIOGRAPHY

Althaus, A. Frances. 1991. Reproductive Tract, Infections and Women's Health. *International Family Planning Perspectives* 17(4): 145-150

Antrobus, Peggy, Adrienne Germain and Sia Nowrojee. 1994. Challenging the Culture of Silence Building Alliances to End Reproductive Tract Infections. *International Women's Health Coalition, Women Development Unit, University of the West Indies*

Bali, Prema, and R.A.Bhujwala.1969. A Pilot Study of Clinic Epidemiological Investigations of Vaginal Discharges in Rural Women. *Indian Journal of Medical Research* 57(12): 2289-2299.

Bang, R.A, A.T .Bang, M,Baitule, Y. Choudhary, S. Sarmukaddam, and O.Tale.1989. High Prevalence of Gynaecological Diseases in Rural Indian Women. *The Lancet*, January 14: 85-88.

Bansal, K.M, Kirti Singh, and Sunil Bhatnagar.2001. Prevalence of Lower Reproductive Tract Infection among Married Females in the Reproductive age group (15-45). *Health and Population-Perspectives and Issues* 24(3): 157-163.

Bhatia, C Jagdish, John Cleland, Leela Bhagavan and N.S.N.Rao.1997. Levels and Determinants of Gynaecological Morbidity in a District of South India. *Studies in Family Planning* 28(2): 95-103.

Bhatia, C, Jagdish, and John Cleland.1995. Self-reported Symptoms of Gynaecological Morbidity and Their Treatment in South India. *Studies in Family Planning* 26(4): 203-216.

Bulut, Aysen, Veronique Filippi, Tom Marshall, Hacer Nalbant, Nuray Yolsal and Wendy Graham. 1997. Contraceptive Choices and Reproductive Morbidity in Istanbul. *Studies in Family Planning* 28(1): 35-43.

Char, Arundati, and Shilpa Vaidya. 2000. Gynaecology Morbidity among Women Seeking Sterilization Services in Rural Maharashtra. *Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India. 28 February-1 March 2000.*

CSC (Community Seva Centre). 2001. **Care for Reproductive Tract Infection among Rural Women**, CSC, Pondicherry, (Unpublished)

Faundes, A. 1994. Reproductive Tract Infections. *International Journal of Gynecology & Obstetrics* 46: 181-187

Garg, S, N.Sharma, P Bhalla, R Sahay, R Saha, V Raina, B C Das, S Sharma, and N S Murthy. 2002. Reproductive Morbidity in an India Urban Slum: Need for Health Action, *Sexually Transmitted Infection* 78(1): 68-69.

Garg, Suneela, Meenakshi, M.M.C.Singh, and Malti Mehra. 2001. Perceived Reproductive Morbidity and Health Care Seeking Behaviour among Women in an Urban Slum. *Health and Population-Perspectives and Issues* 24(4): 178-188

Govender, L, A A Hoosen , J Moodley, P. Moodley, and A.W.Sturm, 1996. Bacterial Vaginosis and Associated Infections in Pregnancy. *International Journal of Gynecology & Obstetrics* 55: 23-28

Gupta, Vineeta, Biswaroop Chatterjee, Renu Dhasmana and V.P.Singhal. 2002. Etiological Pattern and Outcome of Syndromic Treatment of Reproductive Tract Infection in Rural Women in Garhwal Region of the Himalayas. *Paper Presented in the National Seminar on Reproductive and Child Health: Key to Population Stabilization. Feb 25th –27th, 2002, National Institute of Health and Family Welfare (NIHFW), New Delhi*

Harmanli, H.Ozgur, Grace Y. Cheng, Paul Nyirjesy, Ashwin Chatwani, and John.P.Gaughan. 2000. Urinary Tract Infections in Women with Bacterial Vaginosis. *Obstetrics and Gynecology* 95(5): 710-722.

Hawkes, Saram, Linda Morison, Jyotsnamoy Chakraborty, Kaniz Gausia, Farid Ahmed. 2002. Reproductive Tract Infections: Prevalence and Risk Factors in Rural Bangladesh. *Bulletin of the World Health Organization* 80(3): 180-188.

Hodoglul, Nuriye Nalan Shane, Ozek Beire, Berto Munevuer.1999. Prevalence of Reproductive Tract Infection in Family Planning Clients in Trabzon, Turkey. *Sexually Transmitted Infection* 75: 437-438.

India, Ministry of Finance Economic, 2002. *Economic Survey-2001-2002.* New Delhi: Ministry of Finance.

India, Ministry of Health and Family Welfare.2001. Combating HIV/AIDS in India 2000-01. National AIDS Control Organization (NACO). New Delhi: MOHFW.

India, Registrar General, 1998. *Census of India 1991, State Profile 1991 India.* New Delhi: Controller of Publications.

India, Registrar General, 1998. *SRS Compendium of India's Fertility and Mortality Indicators 1971-1997 based on the Sample Registration Systems (SRS).* New Delhi: Controller of publications.

India, Registrar General, 2001. *Census of India 2001, Series-1, India. Provisional Population Tables, Paper-1 of 2001.* New Delhi: Controller of Publications.

India, Registrar General, 2002a. *Census of India 2001, Series-1, India. Rural-Urban Distribution.* Tables from the Census Website.

India, Registrar General, 2002b. *Sample Registration Systems: Bulletin,* 36(2), New Delhi, Office of the Registrar General, India.

International Institute for Population Science (IIPS) 2001a. *Reproductive and Child Health Project: Rapid Household Survey (Phase 1&2) 1998-99,* India, Mumbai, IIPS.

International Institute for Population Science (IIPS) 2001b. *Reproductive and Child Health Project: Rapid Household Survey (Phase 1&2) 1998-99,* Tamil Nadu, Mumbai, IIPS.

International Institute for Population Science (IIPS) and ORC Macro 2000. *National Family Health Survey (NFHS-2), 1998-99,* India, Bombay, IIPS.

Jain, Neelam, RV Koranne, RC Sharma, and VL Malhotra. 1996. Clinico Microbiological Study of Vaginal Discharge in STD Patients. *Indian Journal of Sexually Transmitted Diseases* 17: 4-7.

Jaswal, Surinder. 2000. Gynaecological Morbidity among Urban Thane Slum Women. *Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India. 28 February-1 March 2000.*

Johnson, Stanley. 1995. **The Politics of Population: Cairo 1994,** Earthscan publications Ltd, London

Joshi, Archana, Dhapola Mrinalika, and Pelto J.Pertti. 2000. Gynaecological Problems: Perceptions and Treatment Seeking Behavirous in Rural Gurjarati Women. *Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India. 28 February-1 March 2000.*

Joshi, JV, KT Hazari, RS Shah, SM Chitlange, PK Meherji, JS Gokral, BN Mali, VV Palayekar, D Balaiah, LS Savardekar, DD Naik and G. Bhave. 1996. Reproductive

Tract Infection in Women Attending Family Welfare Clinics. *Indian Journal Sexually Transmitted Diseases* 17:66-70.

Kaufman, Joan, Yan Liqin, Wang Tongyin, and Anne Faulkner. 1999. A Study of Filed-Based Methods for Diagnosing Reproductive Tract Infections in Rural Yunnan Province, China. *Studies in Family Planning* 30(2): 112-119.

Khan, M.E, Saumya Rama Rao, R.B.Gupta, Bella Patel, Leila Caleb, Jayanti Tuladhar and John Townsend 1998. Integrating Reproductive Tract Infection Services in Primary Health Care System: Observations From An Operations Research in Uttar Pradesh, India. In: Jane Patten. *Improving Reproductive Health: International Shared Experience*. Population Council, Jakarta 169-186

Latha, K, S.J.Kanani, N.Maitra, R.V.Bhatt, S.K.Senapati, S.Bhattacharya, S.Sridhar, G.B.Giri, P.P.Shah, S.P.Shah, L.A.Desai, I.Parikh,V.Taskar, N.Dharap and V.Mulgaonkar. 1997. Prevalence of Clinically Detectable Gynaecological Morbidity in India: Result of Four Community Based Studies. *The Journal of Family Welfare* 43(4): 8-16.

Lien ,Thi Phan, Christopher Elias, Nguyen Thi Loi, Bui Thi Chi, Nguyen Hua Phuc and Michelle Gardner. 2002. The Prevalence of Reproductive Tract Infections in Hue, Vietnam. *Studies in Family Planning* 33(3): 217-226.

Maitra, Nandita and Hazra Maya.1996. Responding to Reproductive Tract Infection in the Context of Family Planning Programmes. *Journal of Obstetrics and Gynaecology of India* 756-761.

Mamdani, Masuma.1999. Management of Reproductive Tract Infection in Women: Lessons From the Field. In Saroj Pachauri (eds). *Implementing A Reproductive Health Agenda in India: The Beginning*. Population Council, South & East Asia-Regional Office, New Delhi, 425-493.

Mayank, Supriya, Rajiv Bahl, Ashok Rattan, and Nita Bhandari.2001. Prevalence and Correlates of Morbidity in Pregnant Women in an Urban Slum of New Delhi. *Asia-Pacific Population Journal* 16(2): 29-44.

Mayank, S, R. Bahl, and N. Bhandari.2001. Reproductive Tract Infections in Pregnant Women in Delhi, India. *International Journal of Gynecology & Obstetrics* 75: 81-82.

Ministry of Health and Family Welfare (MOHFW). 1999. *Family Welfare Programme in India: Yearbook 1996-97*, New Delhi, Deportment of Family Welfare, and MOHFW.

Mittal, Aruna, Sujala Kapur, and Sunanda Gupta.1994. Prevalence of Chlamydia trachomatis in Female Genital Tract. *Indian Journal of Sexually Transmitted Diseases* 15: 15-18.

Murry, J.L. Cheristopher and Lincoln C.Chen. 1992. Understanding Morbidity Change. *Population and Development Review* 18(3): 481-503

Nandan, Deoki, Y.P.Gupta, V. Krishana, A. Sharma, and S.K.Misra. 2001. Reproductive Tract Infection in Women of Reproductive age group in Sitapur/Shahjahanpur District of Uttar Pradesh. *Indian Journal of Public Health* 45(1): 8-13.

Oomman, Nandini. 2000a. A Decade of Research on Reproductive Tract Infection and Other Gynaecological Morbidity in India: What We Know and What We Do Not Know. In Radhika Ramasubban, and Shireen J. Jejeebhoy (eds). *Women's reproductive health in India*, Rawat Publication, Jaipur India. 236-379

Oomman, Nandini. 2000b. Poverty and Pathology: Rajasthani Women's Perceptions of Gynaecological Morbidity and Their Implications for Research and Intervention. *Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India. 28 February-1 March 2000.*

Pachauri, Saroj. 1991. A Reproductive Health Approach to the Population Problem. . *Demography India* 20(2): 155-162

Palai,P., Singh Amarject and V.Pillai.1994. Treating Vaginal Discharge in Slum Women. *Bulletin of the post Graduate Institute* 28: 107-110.

Parashari, Aditya, Singh Veena, Sondhani Pushpa et al. 1995. Clinical and Etiological Profile of RTIs among Women Attending Gynaecology Out Patient Department of a Major City Hospital in Delhi. *Journal of Obstetrics and Gynaecology of India* 790-797.

Prasad H élan Jasmie,Valentina Geroge., Laltitha M.K, Jayapaul, M N R, Sulochana Abraham, Nandini Shetty, and Abraham Josheh. 2000. Prevalence of Reproductive Tract Infection among Adolescents in a Rural Community in Tamil Nadu. *Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India. 28 February-1 March 2000.*

Purwar, Manorama, B.Bhagat, V.Agarwal, H.Kulkarni, and S.Ughade. 2001. Bacterial Vaginosis in Early Pregnancy and Adverse Pregnancy Outcome. *International Journal of Gynecology & Obstetrics* 4(4): 41-46.

Ramachandran, Prema. 2002. Reproductive and Child Health Initiative and Population Stabilization. *Paper Presented in the National Seminar on Reproductive and Child Health: Key to Population Stabilization. Feb 25th -27th, 2002, National Institute of Health and Family Welfare (NIHFW), New Delhi*

Ramachandran, Vimala and Leela Visaria. 1997. Emerging Issues in Reproductive Health. *Economic and Political Weekly* ,September 6: 2244 – 2247.

Ramasubban, Radhika, and Rishyasringa Bhanwar.2000. Treatment Seeking by Women in Mumbai Slums. *Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India. 28 February-1 March 2000.*

Rangaiyan, G. and S.Sureender. 2000. Women's Perceptions of Gynaecological Morbidity in South India: Causes and Remedies in a Cultural Context. *The Journal of Family Welfare* 46(1): 31-38

Rangaiyan, Gurumurthy, Ravi Verma, Rajib Acharya, and Madhumitha Das. 2003. **Violence Against Women and Self-reported Reproductive Morbidity: Relationship Examined.** Paper Presented in the Annual Meeting of Population Association of America, 1-3 May 2003, Minneapolis, Minnesota, USA

Ravindran, TK.Sundari, R. Saritri, and A.Bhavani. 2000. Women's Experiences of Utero-Vaginal Prolapse: A Qualitative Study from Tamil Nadu, India. In: Marge Berer and T.K.Sundari Ravindran (eds). **Safe Motherhood Initiatives: Critical Issues,** Blackwell Sciences for Reproductive Health Matters 199-172

Retherford, D. Robert and Minja Kim Choe. 1993. *Statistical Models for Causal for Analysis,* Wiley-Interscience publication and John Willey and Sons,Ins, New York

Roy, Malabika and Madhulika Bhattacharya. 2002. Community Perception and Practices Regarding RTI in Urban Slums of Delhi. . *Paper Presented in the National Seminar on Reproductive and Child Health: Key to Population Stabilization. Feb 25th –27th, 2002, National Institute of Health and Family Welfare (NIHFW), New Delhi*

Sadhu.S, B.N.Bhattacharya, P.K.Majumdar, and K.L.Mukherjee.2001. Reproductive Morbidity among Women in Weaker Sections in Calcutta Metropolitan Area. *Demography India* 30(2): 167-191.

Shenoy, K.L., Shenoy Sheela and Gopalakrishnan Kaveri.1997. *Reproductive Health and Gynaecological Morbidity in Kerala.* Discussion paper Series –12, Studies on human development in India, UNDP Project, Center for Development Studies, Thiruvananthapuram.

Teles, Eugenio, Ellen Hardy, U.M.Oliveira, Christopher J.Elias and Anibal Faundes. 1997. Reassessing Risk Assessment: Limits To Predicting Reproductive Tract Infection In New Contraceptive Users. *International Family Planning Perspectives* 23(4): 179-182.

TNVHA (Tamil Nadu Voluntary Health Association). 1997. *Operational Research Study on Perception Attitude and Behaviour of Women Regarding Reproductive Tract Infection*, TNVHA, Chennai, (Unpublished)

UNFPA (United Nations Population Fund). 1995. *The State of World Population.*

United Nations.1994. *Programme of Action Adopted at the International Conference on Population and Development, Cairo, 5-13 September 1994.* New York; U.N

Van de wijgert, Janneke and Christoper Elias. 2003. Defining Reproductive Tract Infections and Other Gynaecological Morbidities, In Shireen Jejeebhoy Michael Koenig and Christoper Elias. *Investigating Reproductive Tract Infection and Other Gynaecological Disorders: A Multidisciplinary Research Approach*, Cambridge University Press 11-29

Visaria, Leela 1997. *Gynaecological Morbidity in Rural Gujarat: Some Preliminary Findings.* Ford Foundation, New Delhi, (Unpublished monograph)

Vishwanath, Snehalata, Vibha Talwar, Rajendra Prasad, Kurus Coyaji, Christopher J. Elias, and Isabelle. 2000. Syndromic Management of Vaginal Discharge among Women in a Reproductive Health Clinic in India. *Sexually Transmitted Infection* 76: 303-306.

Walraven, Gijs, Gloria Ekpo, Rosalind Coleman, Caroline Scherf, Linda Morison, and Sioban D.Harlow. 2002. Menstrual Disorders in Rural Gambia, *Studies in Family planning* 33(3): 261-268.

Wasserheit, N.Judith. 1989. The Significance and Scope of Reproductive Tract Infections among Third World Women. *International Federation of Gynecology and Obstetrics Suppl* (3): 145 -168.

Wasserheit, N.Judith, Jettrey R Harris, J.Chakraborty, Bradford A.Kay, and Karen J.Mason. 1989. Reproductive Tract Infections in a Family Planning Population in Rural Bangladesh. *Studies in Family Planning* 20(2):69-80.

World Health Organization (WHO). 1990. Measuring Reproductive Morbidity, *Report of a Technical Working Group, Geneva*, WHO

Younis, Nabil, Hind Khattab, Huda Zurayk, Mawaheb EL-Mouelhy, Mohamed Fadle Amin and Abdel Moneim Farag. 1993. A Community Study of Gynecological and Related Morbidities in Rural Egypt. *Studies in Family Planning* 24(3): 175-186.

Zurayk, Huda, Hind Khattab, Nabil Younis, Mawaheb El-Mouelhy and Mohamed Fadle. 1993. Concepts and Measures of Reproductive Morbidity. *Health Transition Review* 3(1): 17-39

Zurayk, Huda, Hind Khattab, Nabil Younis, Olfia Kamal, and Mahinaz El Helw. 1995. Comparing Women's Reports with Medical Diagnoses of Reproductive Morbidity Conditions in Rural Egypt. *Studies in Family Planning* 26(1): 14-21.