

The Gender and Reproductive Health Research Initiative  
Mapping a Decade of Reproductive Health Research in India

**Women's Reproductive  
Health in India**  
An Annotated Bibliography  
of Selected Studies (1990-2000)

*Surekha Garimella*

Rural Women's Social Education Centre (RUWSEC)

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The Gender and Reproductive Health Research Initiative has been supported by The Ford Foundation. Support for printing, publishing and dissemination has been provided by The Rockefeller Foundation.

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**Suggested Citation:**

Gopal, M., L. Lingam. Women's Morbidity in India: A Critical Review of Studies (1990-2000). The Gender and Reproductive Health Research Initiative. CREA. New Delhi. 2002.

The authors of this paper would like to acknowledge the comments received from Dr. Sally Ann Bisch, Dr. Mariana Romero and Dr. Sundari Ravindran for their valuable comments on this review. Special thanks to Ford Foundation for initiating this review and actively supporting it.

**Published and disseminated by:**

Creating Resources for Empowerment in Action (CREA)  
2/14, Shantiniketan, Second Floor, New Delhi 110021  
Phone: 91-11-4107983, 91-11-6874733 Telefax: 91-11-6883209,  
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# REPRODUCTIVE HEALTH IN INDIA: AN ANNOTATED BIBLIOGRAPHY OF SELECTED STUDIES (1990-1999)

## Background

This annotated bibliography lists studies carried out during 1990-2000 on selected aspects of women's morbidity in India as part of a series of annotated bibliographies on gender and women's reproductive health. These bibliographies are part of the *Gender and Reproductive Health Research Initiative* sponsored by the Ford Foundation.

In September 1998, the Ford Foundation in New Delhi hosted interested individuals involved in women's health issues as activists or researchers to discuss their concerns about the future of reproductive health research in India. The participants spent a day sharing their experiences and briefly reviewing the content, nature and geographical distribution of studies in reproductive health in India that Ford Foundation had funded over the past few years. After discussion, the participants decided on a process for identifying gaps in research on reproductive health and for promoting future research that would address issues that had not been addressed or adequately explored.

The agreed upon process was to have the following stages:

- Prepare annotated bibliographies of social science research or clinical studies referring to social dimensions on six major areas of reproductive health, drawing mainly on published research over the period 1990-2000.
- Based on the annotated bibliographies, prepare critical reviews of literature on each of the six areas of reproductive health. This review would examine, from a gender perspective, the entire body of research covered by the annotated bibliographies and identify the content gaps, methodological issues and ethical concerns.
- Disseminate the critical reviews as widely as possible to women's groups and NGOs, to those involved in women's studies, and to university departments dealing with health/population issues and reproductive health, in order to encourage the participation of a wide cross-section of actors in future research in the area.
- Invite brief research proposals to carry out studies that will address the research gaps identified by the reviews. Proposals will be short-listed by a team of experienced activists and researchers. The next step may consist of a workshop to help develop these proposals into fully fledged research plans.

The importance of involving a wide cross-section of people working for women's health and women's reproductive health from a gender perspective will govern the short-listing of proposals. Every effort will be made to encourage first-time researchers and activists to participate in the process, and to counter the notion that research is a 'specialist' concern and activity.

The following subject areas were chosen for the annotated bibliography series:

1. Selected aspects of reproductive health: maternal health, reproductive tract infections and contraceptive morbidity
2. Selected aspects of general morbidity in women, especially the interface between communicable and non-communicable diseases and reproductive morbidity
3. Sexuality and sexual health
4. Abortion
5. HIV/AIDS
6. Reproductive health services

## Scope and Format

The annotated bibliography of studies contained in this volume covers selected aspects of reproductive health: maternal health, gynaecological morbidity and contraceptive morbidity.

The period chosen for the annotated bibliography is 1990-2000. The following journals were reviewed:

- *Australia New Zealand Journal of Obstetrics and Gynaecology*
- *Bulletin of Post Graduate Institute of Medical Research, Chandigarh*
- *Bulletin of the World Health Organisation*
- *Burns*

- *Contraception*
- *Gynaecology and Obstetrics - Investigation*
- *Health and Population - Perspectives and Issues*
- *Health Transition Review*
- *Indian Journal of Community Health*
- *Indian Journal of Community Medicine*
- *Indian Journal of Maternal and Child Health*
- *Indian Journal of Medical Research*
- *Indian Journal of Medical Science*
- *Indian Journal of Preventive and Social Medicine*
- *Indian Journal of Public Health*
- *International Journal of Gynaecology and Obstetrics*
- *Journal of Obstetrics and Gynaecology of India*
- *Reproductive Health Matters*
- *Social Science and Medicine*
- *Studies in Family Planning*
- *The National Medical Journal of India*

In addition, a number of recent unpublished reports and monographs available from the Ford Foundation were also included.

From the sources listed above, 112 articles/studies are included in this volume. Of these, 42 studies are from Northern India--Uttar Pradesh, New Delhi, Punjab, Haryana and Himachal Pradesh. Thirty-four studies are from the western part of the country --Maharashtra, Gujarat, Rajasthan and Goa. Twenty-eight studies are from one of the southern states: Karnataka, Tamil Nadu, Kerala and Andhra Pradesh. Very few studies are from eastern India: West Bengal and Bihar (4), and Central India (1). Two studies cover more than one region, and in one study the region is not stated.

The vast majority of the studies are health facility-based (68 percent). Community-based studies formed about 28 percent of the studies, and the remaining 4 percent were hospital cum community-based.

The Summary Table in the following pages provides a summary overview of the

- nature of the study
- geographic region covered
- objectives and methodology
- salient results

The annotated bibliographies follow these Summary Tables. These are organised into the following fields:

- Abstract number:**
- Author(s):**
- Title:**
- Source:**
- Place of study:**
- Period of study:**
- Aims and objectives:**
- Study conducted by:**
- Nature of study:**
- Methodology:**
- Findings:**
- Reviewer's notes (optional):**

## GLOSSARY

<b>abortion</b>	Refers to the termination of pregnancy from whatever cause before the fetus is capable of life outside the uterus.
<b>abortion (incomplete)</b>	Retention of all or some of the products of conception within the uterus or cervical canal. A relatively common and dangerous complication.
<b>abortion (spontaneous)</b>	Commonly termed a miscarriage, it is a pregnancy that terminates naturally.
<b>abortion (threatened)</b>	Bleeding during pregnancy that is accompanied by the opening of the cervix.
<b>abruptio placentae</b>	The placenta separates from the lining of the womb before the usual time. Bleeding and pain are experienced at the point of separation and the womb undergoes constant contraction. Severe cases involve shock. The condition is often associated with high blood pressure or 'pre-eclampsia.'
<b>adenoma</b>	A benign tumor of epithelial origin and may become malignant.
<b>adhesion</b>	An abnormal union of adjoining surfaces as can occur with inflammatory process. Pelvic adhesions, which cause chronic pain, can follow pelvic inflammatory disease.
<b>amenorrhoea</b>	The absence or stopping to menstruate.
<b>amenorrhoea (primary)</b>	Menstrual periods fail to appear at puberty (failure to menstruate). Causes include pituitary or gonad failure, defects in production of sex steroids or anatomical defects of the reproductive tract.
<b>amenorrhoea (secondary)</b>	Menstrual periods stop after establishment of puberty. Causes include, pregnancy, severe weight loss, acquired dysfunction of the hypothalamus, pituitary or ovary.
<b>antepartum haemorrhage</b>	Bleeding from the genital tract before the birth of the baby, but after early pregnancy (22-28 weeks).
<b>bacterial vaginosis</b>	A clinical syndrome that is caused by the replacement of normal vaginal <i>Lactobacillus ssp</i> by high concentrations of anaerobic bacterial <i>G. vaginalis</i> and <i>Mycoplasma hominis</i> . During pregnancy this has been associated with adverse outcomes such as preterm delivery.
<b>candidiasis</b>	Yeast infection caused by the genus <i>Candida</i> usually <i>Candida albicans</i> . Vaginal candidiasis is characterised by thick, cheesy, white vaginal discharge and itching.
<b>cephalopelvic disproportion (CPD)</b>	The inability of the presenting part of the fetal head to pass through the maternal pelvis. This can lead to increased morbidity and mortality risk for both the mother and the baby. Maternal risks include thinning of the lower uterus with possible uterine rupture, lacerations and postpartum haemorrhage. Foetal risks include intrapartum fetal death, fetal distress and cord prolapse.
<b>cervicitis</b>	Inflammation of the endocervix, which includes glands and deeper tissues. Chlamydia and gonococcal infections are the two most common causes of cervicitis. Other causes include exposure to chemicals or foreign bodies.

<b>cyanosis</b>	A bluish discoloration of skin and mucous membranes due to excessive concentration of reduced haemoglobin in the blood.
<b>Dilation and Curettage (D and C)</b>	Surgical dilation of the cervix and scraping (curettage) of the uterus. This is used in the cases of incomplete abortion or for termination of pregnancy.
<b>direct obstetrical deaths</b>	Deaths caused by obstetrical complications of the pregnant state. This includes deaths from all types of abortion.
<b>disseminated intra vascular coagulation (DIC)</b>	A disorder characterized by reduction in the elements involved in blood coagulation; in late stages it is marked by profuse bleeding.
<b>dysmenorrhoea</b>	Painful menstruation, in the absence of pelvic disease is called primary dysmenorrhoea. While, secondary dysmenorrhoea is related to the presence of an intra uterine device or organic pelvic disease such as pelvic inflammatory disease.
<b>dyspareunia</b>	Pain associated with sexual intercourse. Could be due to either physical, psychological or both causes.
<b>dysplasia</b>	Abnormal cells and/or tissue structure that represent a potential for cancer (i.e., cervical dysplasia). Screened for through the Pap (Papanicolaou) smear.
<b>dystocia</b>	Abnormally slow progress in labour caused by ineffective uterine contractions.
<b>dysuria</b>	Pain or burning during urination.
<b>eclampsia</b>	Worsening of pregnancy-induced hypertension to the point of convulsion, coma or both. Another common name for this condition is toxemia.
<b>endometriosis</b>	A condition in which tissue from the inner lining of the uterus (endometrium) occurs outside of the uterus or in which the endometrium invades the muscular tissue of the uterus (myometrium).
<b>fibroid</b>	The most common benign tumours of the female genital tract, usually occurring in the uterus. The most common presenting feature is menorrhagia or heavy menstrual bleeding.
<b>fistula</b>	An abnormal communication between two structures which are normally unconnected. Usually the result of direct trauma during childbirth.
<b>genital prolapse</b>	Weakness of the pelvic supporting structures causing a descent of the pelvic organs into the vagina. Almost always results from the damage to the pelvic supporting structures during childbirth, examples, uterine and vaginal prolapse.
<b>gravida</b>	A pregnant woman. A numerical designation is used following "gravida" to signify the total number of pregnancies a woman has experienced including the current one. For example, a woman has had two prior pregnancies and is presently pregnant is gravida three.



<b>human papilloma virus</b>	A viral infection of more than 20 subtypes that can infect the genital tract. The virus can be asymptomatic or sub-clinical, or can cause visible genital warts (condyloma acuminata). It has been associated with cervical dysplasias that can lead to cervical cancer.
<b>hypovolemic shock</b>	Shock resulting from abnormally decreased volume of circulating fluid (plasma) in the body.
<b>indirect obstetrical deaths</b>	Deaths from previously existing diseases or diseases developed during pregnancy that were not caused by pregnancy <i>per se</i> but which were exacerbated by being pregnant. (e.g., deaths from hepatitis, cardiac problems).
<b>infertility</b>	Inability to conceive after one year of unprotected sexual intercourse. Secondary infertility is the inability to conceive after an initial phase of fertility.
<b>leucoplakia</b>	A clinical description of thickened epithelial tissue, which can occur on the vulva or the cervix. The tissue can be normal, premalignant or malignant.
<b>leucorrhoea</b>	White, non-bloody vaginal discharge.
<b>maternal mortality</b>	The death of a woman while pregnant or within 42 days of the termination of pregnancy, regardless of the site and duration of the pregnancy, from any cause related to or worsened by the pregnancy or its management but not from accidental or incidental causes.
<b>menorrhagia</b>	Excessive or prolonged menstruation.
<b>metrorrhagia</b>	Uterine bleeding occurring at times other than when menses are expected. It is often caused by an ulcerative lesion in the genital tract or may be a sign of abortion or ectopic pregnancy.
<b>obstructed labour</b>	No progress in cervical dilatation or descent of the fetal presenting part during active labour.
<b>pelvic inflammatory disease (PID)</b>	A serious infection of the fallopian tubes and adjacent structures caused by a combination of microorganisms that have ascended from the vagina and the cervix.
<b>perinatal mortality</b>	Includes stillbirths (death of the foetus between 28 weeks of pregnancy and delivery) and death of the infant in the first week of life (early neonatal death).
<b>placenta previa</b>	Bleeding from partial or complete implantation of the placenta in the lower uterine segment over or very near to the mouth of the womb.
<b>postpartum haemorrhage</b>	Blood loss greater than 500ml after the delivery of the baby. A major cause is uterine atony, in which the uterus fails to contract and retract after the birth of the baby. Other causes include lacerations of the lower genital tract or retained fragments of placenta.
<b>pre-eclampsia</b>	The presence of pregnancy-induced hypertension with proteinuria (loss of protein in the urine) and edema (swelling of the extremities) or both after the 20 <sup>th</sup> week of pregnancy.

<b>pregnancy-induced hypertension (PIH)</b>	Elevated blood pressure uniquely during pregnancy.
<b>prolapse</b>	The abnormal downward (or outward) displacement of a body part.
<b>puerperium</b>	Postpartum period of six weeks following the delivery.
<b>reproductive tract infections (RTIs)</b>	Includes three types of infections: (1) Sexually transmitted diseases (STDs), such as chlamydial infection, gonorrhoea, trichomoniasis, syphilis, genital herpes chancroid and genital warts; (2) Endogenous infections, which are caused by the overgrowth of organisms that can be present in the genital tract of a healthy woman, such as bacterial vaginosis and vulvovaginal candidiasis; and (3) Iatrogenic infections that are associated with medical procedures. All these infections are preventable or are treatable causes of infertility, cervical cancer and ectopic pregnancy.
<b>retained placenta</b>	Failure of expulsion of the placenta from the uterus after delivery. This carries an increased risk of infection or bleeding.
<b>sepsis</b>	A severe, febrile illness caused by bacteria or bacterial toxins invading circulation. Puerperal sepsis is fever over 38°C occurring on any two days within the first 10 postpartum days, excluding the first 24 hours.
<b>ureto vaginal fistula (UVF)</b>	Fistula between the urethra and the vagina.
<b>uterine atony</b>	Failure of the uterus to contract and retract after delivery of the baby and placenta. This can result in postpartum haemorrhage.
<b>uterine rupture</b>	Ripping or tearing of the uterus during labour. Causes include neglect during obstructed labour or overdosage with oxytocin. Weakness due to previous surgical scars is the most common predisposing factor. High parity is another risk factor.
<b>vaginitis</b>	Inflammation of the vagina. Three of the most common organisms causing vaginitis in women of reproductive age group are <i>Trichomonas vaginalis</i> , <i>Candida albican</i> , and <i>Gardinerella vaginalis</i> .
<b>vaginosis</b>	A vaginitis of undetermined cause.
<b>vesico-uterine fistula (VUF)</b>	Fistula between the bladder and the uterus.
<b>vesico-vaginal fistula (VVF)</b>	A communication between the bladder and the vagina. This is the most common fistula of the female reproductive tract.

**Glosary References:**

- Harrison, L. M., *The Pocket Medical Dictionary* (Second Indian Edition). 1998. New Delhi: CBS Publishers.
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## SUMMARY TABLE

ABS. NO.	NATURE OF STUDY	REGION, STATE/CITY	OBJECTIVES AND METHODOLOGICAL ISSUES	SALIENT RESULTS
<b>MATERNAL MORTALITY (General)</b>				
1	Community-based	North, Haryana	Assess the extent of mortality in the reproductive age group and ascertain the causes of mortality in this age group. Sample - 58,961 women (15-45 years) and 219 deaths.	The mortality rate in this age group ranged between 3.4-4.1 per 1,000 women per annum. 172/219 deaths were classified as non-maternal deaths.
2	Hospital-based (retrospective)	West, Maharashtra, Bombay	Analyse most common causes of death. Causes were divided into direct and indirect. Sample - 39 maternal deaths	74% of deaths were due to direct causes and 26% were due to indirect causes.
3	Hospital-based (retrospective)	East, Burnpur	Analyse most common causes of death. Causes were divided into direct and indirect. Sample - 14 maternal deaths	Direct causes - Post-abortal sepsis, haemorrhage, rupture of the uterus and toxemia/eclampsia. Indirect causes - heart disease and pulmonary tuberculosis, anaemia.
4	Hospital and primary health centres based (prospective)	All India	Identify obstetrical complications causing maternal death. Sample - 55 medical colleges, 10 district hospitals, 3 community blocks. Sample - 4,369 maternal deaths.	26.6% died undelivered, 12.6% during labour and 60.8% after childbirth. Although data were collected from centres located in urban areas, 60.3% who died were from rural areas. Causes - eclampsia, sepsis, haemorrhage, abortion-related causes, hepatitis and heart disease.
5	Hospital-based (retrospective)	North, Uttar Pradesh, Varanasi	Analyse determinants of maternal mortality. Sample - 45 maternal deaths	77.8% of deaths were of direct causes and 15.6% were of indirect causes. Proportion of deaths at the extremes ( $\leq$ 18 yrs and $>$ 35 yrs) was considerably high.
6	Community-based	North, Haryana, Ambala	Use sisterhood method to estimate maternal mortality risk. Sample - 3028 (men and women)	Overall estimate of risk of maternal death -0.17 /lifetime risk of dying during pregnancy/childbirth/puerperium - 1 in 59.
7	Hospital cum Community-based (retrospective and prospective)	West, Rajasthan, Ajmer	Analyse causes of maternal deaths. Sample - retrospective: 74 deaths; prospective - 42 mothers.	Anaemia was the main cause with Hb levels being as low as 5gm/dL.
8	Hospital-based (retrospective)	East, West Bengal, Calcutta	Analyse causative factors of maternal mortality. Sample - 572 maternal deaths	Cumulative MMR - 6.56/100 live births; 84% deaths due to direct causes. Increasing trend of deaths due to toxemia, hepatitis and severe anaemia.

9	Community-based	West Maharashtra, Ambajogai	Use sisterhood method to estimate maternal mortality risk. Sample - 3,584 (men and women)	Overall estimate of risk of maternal death -0.009 /life time risk of dying during pregnancy /child birth/puerperium - 1 in 106.
10	Hospital-based (retrospective)	Yavatmal	Analyse causes of maternal deaths. Sample - 147 maternal deaths	57.82% of deaths were due to direct causes and 21.09 to indirect and 21.09 due to unrelated causes.
11	Hospital-based (retrospective)	Northeast, Assam, Guwahati	Retrospectively analyse all maternal deaths. Sample - 524 maternal deaths	Incidence of maternal mortality was 12.34/1,000 live births. Majority deaths due to direct causes.
12	Hospital-based (retrospective)	South, Karnataka, Bellary	Retrospectively analyse maternal deaths. Sample - 367 maternal deaths	68.66% of the deaths were due to direct causes. 29.97% were due to indirect causes.
13	Hospital-based (retrospective)	South, Kerala	Compile causes of maternal deaths. Sample - 310 maternal deaths	In direct causes, hypertensive disease in pregnancy was the main cause (23%) followed by haemorrhage (17%). 8.5% of the deaths were due to septicaemia. In indirect causes, hepatitis (16.5%) was the leading cause followed by cardiac disease complicating pregnancy (9.5%).
14	Hospital-based (retrospective)	South, Trivandrum Kerala	Ascertain trends in maternal mortality in a tertiary hospital.	The maternal mortality ratio declined from 708 in 1966 to 160 in 1997. In the sixties haemorrhage was the main cause followed by sepsis in the late seventies and eighties. While in the nineties, hypertensive disease in pregnancy was the main cause.
15	Hospital cum Community-based (prospective)	West, Maharashtra	Account for factors that determine survival of pregnant women. Uses ICD X definition of maternal death. Sample - 345 maternal deaths	Observations are related to underreporting, medical causes of death, non-maternal pregnancy-related deaths, care received, factors contributing to death, determinants of survival.
16	Hospital-based (retrospective)	North, New Delhi	Develop a parsimonious model to predict risk of maternal mortality. Sample - 252 maternal deaths	The model obtained in the presence of a combination of risk factors - severe anaemia, haemorrhage and pregnancy induced hypertension - got a high sensitivity of 90%.
17	Hospital-based (retrospective)	North, Punjab, Patiala	Study the etiological factors of maternal mortality. Sample - 339 maternal deaths	83.1% of the deaths were due to direct obstetrical causes, 15.3% indirect and 1.7% non-obstetrical causes.
<b>MATERNAL MORTALITY (Specific)</b>				
18	(Specific) Hospital-based (retrospective)	West, Maharashtra, Bombay	Analyse maternal deaths due to eclampsia. Sample - 737	Incidence - 0.73%; overall mortality rate - 10.72%; pulmonary oedema, cerebrovascular and renal were the main causes of death.

19	Hospital-based	West, Maharashtra, Bombay	Analyse risk factors for postpartum haemorrhage and maternal mortality. Sample - 130 cases of PPH	Uterine atony was the most common cause of PPH.
20	Hospital and Community-based	North, Punjab, Patiala	Determine prevalence of anaemia and its impact on morbidity and mortality. Sample - 52 urban pockets and 54 rural villages	Prevalence of anaemia was the highest in the urban slums. Severe anaemia accounted for most of the mortality and morbidity at the hospital level.
21	Hospital-based (retrospective)	South, Pondicherry	Examine causes of deaths due to septic induced abortion. Sample - 34 maternal deaths	In 73.53% <i>Kutchi</i> was used as an abortifacient. > 73% of the women had sepsis of whom some had tetanus. They reported 7-10 days after the illegal abortion.
22	Hospital-based	West, Gujarat, Baroda	Study etiological factors responsible for ruptured uterus. Sample - 168 cases	64% cases spontaneous rupture, 14.28% had a traumatic and 22% rupture of the scarred uterus.
<b>MATERNAL MORBIDITY (General)</b>				
23	Hospital-based (retrospective)	South, Karnataka, Manipal	Retrospectively analyse obstetric outcomes of teenage pregnancies. Sample - 347 pregnancies	Antenatal complications found in 64% of the cases. Spontaneous vaginal delivery was the most common followed by caesarean section.
24	Hospital-based	South, Kerala	Investigate the incidence of high-risk pregnancies and their clinical outcomes. Sample - 1,672 cases	According to Cooplans criteria 41.3% were low-risk pregnancies, 53.3% were high-risk and 5.3 % were severe risk ratings.
25	Hospital-based	South, Pondicherry	Analyse obstetric outcome of pregnancies complicated by genital prolapse. Sample - 98 cases	Retention of urine was the most common complication. Abortion and premature labour the most common obstetric complications. 7.8% developed intrauterine sepsis.
26	Community-based	North, Madhya Pradesh Bhopal	Study outcome of reproductive events after the gas leak. Sample- 2,663 women from exposed area and 1,445 women from control area.	Interval from gas leak to first live birth was significantly longer for women in the exposed area. Overall abortion rates were also higher.
27	Hospital-based	North, Madhya Pradesh Bhilai	Review pregnancy in burns cases. Sample - 25 cases	20% of the women died. 64% had normal full-term babies while 36% aborted. Wound infection and septicaemia were the most common causes.
28	Hospital-based (retrospective)	West, Maharashtra, Bombay	Study probable causes of stillbirths and find out preventive factors. Sample - 262 stillbirths (125 intrapartum and 137 antenatal)	29.19% antenatal stillbirths due to pregnancy-induced hypertension, 16.05% due to Abruptio placenta. 69.84% deaths were preventable.
29	Hospital-based (retrospective)	South, Pondicherry	Examine causes of stillbirths. Sample - 522 cases	PIH and eclampsia accounted for 18.9% followed by APH (9.8%) and rupture of the uterus (10.3%).

30	Hospital-based (retrospective)	North, Chandigarh	Evaluate maternal and foetal outcomes in patients with congenital heart disease. Sample - 275 pregnancies in 256 patients	Incidence of PIH, preterm labour and APH was higher in those with C cyanotic heart disease than those in Acyanotic heart disease.
31	Hospital-based (prospective)	North, Chandigarh	Evaluate effect of threatened abortion on pregnancy outcomes. Sample - 110 women	94.5% of pregnancies with threatened abortion continued beyond 28 weeks. The incidence of low-lying placenta was significantly higher in those with threatened abortion.
32	Hospital-based (prospective)	South, Pondicherry	Study outcomes of post-caesarean pregnancies. Sample - 700	60% of the cases there was a repeat C.section. Cephalo pelvic disproportion was the main cause. Placenta previa type I was present in 19 cases.
33	Hospital-based (prospective)	South, Pondicherry	Determine the prevalence and type of consanguinity and its effect on neonatal and infant mortality and morbidity. Sample - 1,000 pregnant women	Frequency of illnesses was significantly higher in offsprings of consanguineous marriages compared to non- consanguineous marriages.
<b>MATERNAL MORBIDITY (Specific Causes)</b>				
34	Hospital-based (retrospective)	West, Maharashtra, Pune	Study morbidity due to massive obstetric haemorrhage. Sample - 100 cases	Hypovolemic shock was the major complication followed by uterine perforation. Predictive indicators include - ectopic pregnancy, V.mole, Abruptio placentae.
35	Hospital-based (prospective)	West, Gujarat, Baroda	Identify recurrent risk and long-term effects in pregnant women who had developed pre-eclampsia of early onset. Sample - 609 women and 107 pregnancies	40% pregnancies were normal, 59.8% developed pre-eclampsia. 37.5% who went in for a subsequent pregnancy developed chronic hypertension.
36	Hospital-based (retrospective)	West, Maharashtra, Pune	Analyse maternal morbidity after emergency caesarean section. Sample - 1,029 C.Sections	83.76% were emergency and 14.24% elective. Pyrexia, wound infection, endometritis and UTI were the most common post-operative complications.
37	Community-based	South, Tamilnadu, Vellore, North Arcot	Determine the prevalence of anaemia and see its association with other factors. Sample - 315	Anaemia (Hb<11gms/dL) - 76%; severe anaemia (Hb< 8gms/dL) was observed in 11%. Prevalence of hookworm infestation was 62%.
38	Community-based	West, Maharashtra, Ahmednagar	Seek to understand the reproductive health needs of adolescent girls. Sample - 202 adolescent girls	29% of the girls were pregnant at the time of the survey, which is well above the 10% prevalence of pregnancy among women in all childbearing years. 23% (n=153) of the girls reported complications during delivery (excessive bleeding, fever). 14% of the ever-pregnant girls reported at least one pregnancy ending in abortion.

39	Community-based (prospective)	South, Karnataka	Explore the type and extent of obstetric morbidities, explore health seeking behaviour and factors affecting uptake of services. Sample - 388 women	62.4% (176/282) of the women reported some form of morbidity. Unplanned institutional care during the intrapartum period was high and women who experienced inadequate progression of labour were most likely to proceed unexpectedly to a hospital delivery.
40	Community-based	South, Karnataka	Analyse problems of obstetric morbidity. Sample - 3,600 women	0.64 episodes of abnormalities were reported on an average. Level of consultation was fairly high, but postpartum condition remained neglected.
41	Community-based	South, Tamilnadu, Pondicherry	Estimate prevalence of specific maternal morbidities during pregnancy, parturition & puerperium. Sample - 3,339 women	56% of the pregnancies one or more morbidities were reported. Potentially life-threatening complications were reported in 4.7% while serious morbidities were reported in 40.7% of the cases.
42	Hospital-based	North, New Delhi	Review 12 cases of uretero-vaginal fistula (UVF).	In 9/12 UVF was due to total abdominal hysterectomy, 2/12 due to C section and 1/12 due to radical abdominal hysterectomy. Paradoxical urinary incontinence was a constant symptom. Per-vaginal leak started between 3rd to 21st day after surgery.
43	Hospital-based	West, Maharashtra, Bombay	Review vesico-vaginal fistulae (VVF) cases to understand their etiology. Sample - 10	In 4 cases the condition developed after gynaecological surgery: 3/4 had high VVF and 1 high multiple VVF juxtauretric. In 6 cases the condition developed after obstetric trauma (prolonged obstetric labour): 5/6 - low VVF.
<b>PREGNANCY</b>				
44	Hospital-based	South, Tamilnadu, Vellore	See if elevation of urinary N-Acetyl-β-D- Glucosaminidase (NAG) is apparent before the onset of clinical signs and symptoms of pre-eclampsia. Sample - 109 primigravidae	25% of the women developed PIH and 5.4% qualified for diagnosis of pre-eclampsia. Urinary NAG was found to be higher in the PIH group compared to normals.
45	Hospital-based	North, Chandigarh	See if synergistic action of magnesium sulphate and nifedipine can be used to reduce maternal and perinatal mortality in patients with eclampsia. Sample - 91 consecutive patients	Recurrence rate was 24.4% with lytic cocktail and nifedipine regimen and 2.2% with magnesium sulphate and nifedipine regimen. 4.4% mortality rate was observed in those treated with lytic cocktail and 17.8% had aspiration pneumonia.
46	Hospital-based	Central, Madhya Pradesh, Bhillai	Compare efficacy of escalating oxytocin infusion with a single dose of intracervical PGE2 application in women having unfavourable cervix. Sample - 263 consecutive women with unfavourable cervix	Incidence of caesarean was much lower in those induced with PGE2 than Oxytocin (primigravidas). A higher mean cervical score was also found at the end of 12 hours.
47	Hospital-based	South, Tamilnadu, Vellore	Compare urine microscopy and the Griess test as a screening test for asymptomatic bacteriuria in pregnancy. Sample - 483 pregnant women	Sensitivity of the Griess test was 63.3%, specificity - 95.5%, when gram infections were considered the sensitivity was 78%. In the case of urine microscopy all the values were much lesser.

48	Hospital-based (prospective)	West, Maharashtra, Latur	Compare advantage if any of modified squatting position over lithotomy position. Sample - 326 women	Total mean time spent in second stage of labour was lower in MSP than in LP. 875 of the women found the MSP to be a convenient posture. Complication rates were not vastly different, although postpartum vulval oedema was observed only among women in the squatting position.
49	Hospital-based	North, Punjab, Patiala	Assess the accuracy of placental localisation by sonography. Sample - 140 women	About 50% of the cases previously diagnosed as having placenta previa had PP. Sensitivity and specificity in detecting PP was 96.8% and 98.8%, respectively.
50	Hospital-based	South, Kerala	Assess whether the distribution of iron and folic acid tablets through primary health care centres had a positive impact on the haemoglobin status of women.	Women presenting at the rural institutions had higher prevalence of anaemia as compared to those at the urban institutions.
51	Community-based	South, Tamil Nadu	Evaluate the prevalence of anaemia and assess associated risk factors.	Anaemia was widely prevalent, and less than 50% of the currently pregnant women were taking the supplements.
52	Community-based	South, Vellore	Assess provider and client perspectives regarding perceptions, knowledge, beliefs and practices related to maternal anaemia.	Recognition of maternal problems associated with maternal anaemia was low and not uniform among health care providers.
<b>GYNAECOLOGICAL MORBIDITY (General)</b>				
53	Community-based	West, Maharashtra, Bombay	Delineate experiences of slum dwelling women regarding weakness. Sample - 60	There was a strong association of weakness with sterilisation and negative outcomes of pregnancies experienced. Health seeking behaviour was haphazard in nature. Poor association between constant neglect of diet and weakness.
54	Community-based	West, Rajasthan	Study the determinants as perceived by the women. Sample - 250 women	47.9% (n=240) of the women reported menstrual problems. 20% (n=250) reported prolapse. Economic hardship was considered a significant underlying cause of all women's illnesses.
55	Community-based	West, Gujarat, Kheda	Estimate levels of morbidity. Sample - 800 women from 5 contiguous villages	75% of the women reported some disorder. Only about a third discussed with family members.
56	Community-based	South, Karnataka	Analyse self-reported symptoms of morbidity. Sample - 3,600 women (< 35 years)	Anaemia, lower RTIs followed by acute PID and menstrual problems were the most frequently reported.
57	Community-based	South, Karnataka	Determine levels, patterns and correlates of morbidity. Sample - 385 women	Average number of complaints was 1.5. About 1/10th suffered from STDs. More than 1/2 had endogenous infections.



58	Community-based (cross-sectional)	South, Kerala	Report gynaecological morbidity and assess the sensitivity and specificity of clinical and cytological examination. Sample - 1,383 women (age 13-68 years)	Discharge per vaginum, back pain, lower abdominal pain and vaginal itching were reported symptoms. Sensitivity and specificity of vaginitis and with reported vaginal discharge were 75% and 76%.
59	Community-based	South, Tamilnadu, Vellore	Determine the nature and extent of gynaecological morbidity. Sample - 451 married women	59% reported one or more problems. While 48.5% had reproductive tract infections as diagnosed by clinical/laboratory examination. Bacterial vaginosis was the most common infection reported.
60	Community-based	West, Maharashtra	Study experiences of urban low-income women in relation to gynaecological morbidity and common mental disorders. Sample - 660 women	Highest morbidity was reported in the 26-30 years age group. Symptoms and morbidities were reported as women's illnesses across ethnic groups and religious beliefs.
61	Community-based	West, Maharashtra	Ascertain the extent of gynaecological morbidity among the currently married women before and after sterilisation. Sample - 511 women	While 37% women reported at least one problem, 29% were found to have at least one on clinical diagnosis. First degree uterine prolapse was found in 9.5% of the women.
62	Community-based	West, Maharashtra	Gain insights into health seeking behaviour among poor urban women. Sample - 60 women	One-third reported menstrual problems that were perceived to be due to excess consumption of certain foods. 50% reported white discharge and about a third reported problems such as painful intercourse.
63	Community-based	West, Gujarat	Study women's perceptions and understanding of reproductive health problems. Sample - 69 women	122 episodes of reproductive health problems were reported. White discharge and urino-genital problems were the most commonly reported problems.
64	Community-based	South, East and West	Review community-based surveys on morbidity.	Marked variation in patterns and levels of both self-reported and clinically diagnosed morbidity.
<b>GYNAECOLOGICAL MORBIDITIES (Specific Non-Sexually Transmitted)</b>				
65	Hospital-based	West, Gujarat, Baroda	Evaluate the prevalence of RTIs among users and non-users of FP methods. Sample - 671	Vaginal infections were the most common among non-users, condom users and tubectomy cases. Cervical infections were most common among IUD and hormonal contraception users.
66	Hospital-based	North, New Delhi	Study prevalence of reproductive tract infections among ever-married women in an urban slum. Sample - 446 ever-married women in the reproductive age group	72% of the women were found to have one or more infections. Bacterial vaginosis (41.5%) and Chlamydia (28.7%) were the most commonly detected infections.
67	Hospital-based	North, New Delhi	Study clinical presentations and etiologic agents of RTIs among women. Sample - 144	Vaginal discharge was the most common symptom reported. Cervical lesions were the most common in clinical examinations. Vulvo-vaginal lesions were present in 23% of the cases.

68	Community-based	North, Chandigarh	Study treatment seeking behaviour of women having vaginal discharge. Sample - 1,682	21.6% had vaginal discharge. 45% sought medical help. The period from onset to seeking treatment ranged from 7 days to 1 year.
69	Community-based	North, Chandigarh	Follow up chronic vaginal discharge cases in an urban slum. Sample - 241	70% of the women were relieved of their symptoms by the second year. The remaining were unwilling to continue treatment.
70	Hospital-based	West, Maharashtra, Bombay	Assess microbial flora in women with complaints of vaginitis. Sample - 300, control - 100	G.vaginalis was isolated in 22.6%, T.vaginalis in 17.6%, Candida in 21%, U.urealyticum in 21% and M.hominis in 10.6%. While C.trachomatis was detected in 2.6%.
71	Hospital-based	North, Chandigarh	Study spectrum of bacterial flora associated with bacterial vaginosis. Sample - 100, control - 50	U.urealyticum had the highest isolation rate among aerobes and bacteriodes in the anaerobic isolates.
72	Hospital-based	North, Punjab, Ludhiana	Study incidence of G.vaginalis in non-specific vaginitis. Sample - 500 women	Above 50% of the cases tested +ve for G.vaginalis.
73	Hospital-based	North, Uttar Pradesh, Allahabad	Study prevalence of G.vaginalis infection among women attending a gynaecology clinic. Sample - 250	14.4% tested +ve for T.vaginalis. 12.8% for Candida and 20.4% for G.Vaginalis. Vaginal discharge was the most common symptom in those with G.Vaginalis.
74	Hospital-based	North, Uttar Pradesh, Agra	Analyse the role of mycoplasma in the pathogenesis of various types of abortions. Sample - 100, control - 50	M.hominis and U.urealyticum were isolated in 5% and 26% of the study group. Association of anaerobic organisms with U.urealyticum strongly suggests a synergistic action in the case of habitual abortions.
75	Hospital-based	South, Tamilnadu, Vellore	Determine prevalence of genital mycoplasma and ureaplasma infections in pregnant women and their outcomes. Sample - 200 women	17% of the women were infected with mycoplasma and 17% with urea plasma. No significant differences in outcomes were observed due to the infections.
76	Hospital-based	North, Punjab, Amritsar.	Find out the microbial profile of pelvic inflammatory disease. Sample - 100 (women who had tubectomy)	30% showed bacterial growth from one or both of the fallopian tubes. In the case of high vaginal smears 50% showed growth. Similar organisms were found in both the tests.
<b>SEXUALLY TRANSMITTED INFECTIONS</b>				
77	Hospital-based	West, Maharashtra, Bombay	Study prevalence rates of some STDs in women attending a family planning clinic. Sample - 356	32.6% were detected with at least one STD. Bacterial vaginosis was the most frequent complaint. Chlamydia was isolated in 5.4% of the women. 96% of the women were asymptomatic.

78	Hospital-based	North, Uttar Pradesh, Allahabad	Analyse the socio-demographic profile of STDs in women. Sample - 500	Candidiasis was found in 16% and Trichomonas in 11.8% of the women.
79	Hospital-based	North, Himachal Pradesh, Shimla	Screen VDRL reactivity of samples collected from different parts of the state. Sample - 1,193 study group; 753 control group	21.5% of the sera was reactive. Prevalence was highest in the Kinnaur region.
80	Hospital-based	North, Punjab	Study the magnitude of asymptomatic gonorrhoea in women attending a hospital. Sample - 500 women	Overall prevalence of positive gonococcal culture was 0.8%. Among Copper-T users it was 17.5% and in infertile women it was 13.8%.
81	Hospital-based	West, Maharashtra, Bombay	Study prevalence of RTIs and their contribution to pelvic infection. Sample - PID -151, infertile - 295, control - 2,433	21.7% had vaginal discharge and 26.4% pain during intercourse. History of TB was reported in 7.25% and 5.35% of the infertile and PID women.
82	Hospital-based	North, Uttar Pradesh, Agra	Explore possible association of Candida with C.trachomatis in women attending a STD clinic. Sample - 200 (study); 100 control (non-pregnant paramedical workers)	Germ tube +ve candida was isolated in 60% of the sample. It increased with a decrease in Hb concentration. The association was statistically significant.
83	Hospital-based	North, Haryana, Rohtak	Explore relationship between chlamydia infections and perinatal outcomes. Sample - 64 (unexplained preterm birth), 20 (normal term delivery)	40.6% with preterm tested +ve for chlamydia infection. while in the others it was 15%. Perinatal deaths were more in those who tested +ve vis-à-vis those testing -ve.
84	Hospital-based	North, Punjab, Ludhiana	Study incidence of aerobic bacteremia in cases of CuT insertion. Sample - 125	Overall incidence of bacteremia was 21.5%. Primary insertion - 16.6%, removal and reinsertion - 27%, MTP with CuT - 22% and LSCS with CuT - 40%.
<b>MENSTRUATION/ABNORMAL BLEEDING (Related Gynaecological Morbidity)</b>				
85	Community-based	North, New Delhi	Find out prevalence of dysmenorrhoea and grade based on working ability. Sample - 300 girls (11-18 years)	70.8% of the girls had dysmenorrhoea. The mean days of menstrual flow significantly correlated with dysmenorrhoea.
86	Community-based	West, Maharashtra, Pune	Seek to prove efficacy of oral vitamin B1 administration for the treatment of primary dysmenorrhoea. Sample - 556 girls (12-21 years)	87% were completely cured, 8% relieved and 5% showed no effect after 90 days of administration. The results were the same 2 months later.
87	Hospital-based	West, Maharashtra, Bombay	Analyse amenorrhoea in adolescent girls. Sample - 60 girls	83.35% had primary amenorrhoea among whom mullerian anomalies accounted for 38%. 16.7% had secondary amenorrhoea (tuberculosis a leading cause).

88	Community-based	West, Bombay	Compare menopausal problems of working and non-working women. Sample - 33 working and 33 non-working women	Non-working women were less aware of menopause issues. Significant differences were found between working and non-working women.
89	Hospital-based	North, Uttar Pradesh, Aligarh	Find out the incidence of etiopathological factors in cases of abnormal uterine bleeding. Sample - 104 cases	Metrorrhagia was the most common bleeding pattern. Adenomyosis uteri and leiomyoma was seen in 46.7% of the D and C and 40% of the hysterectomy specimens.
90	Hospital-based	North, Himachal Pradesh, Shimla	Determine epidemiological factors in cases of excessive/irregular bleeding. Sample - 95 consecutive women, control group -50 women	22.7% reported excessive bleeding problems. 72.7% of the women were gravidity III or above.
91	Sub-centre-based	East, West Bengal, Calcutta	Report menstrual patterns of women exposed to chronically high levels of arsenic in drinking water. Sample- 100 study group, 100 control group	32% had amenorrhoea, 41% oligomenorrhea, 10% menorrhagia and 17% normal pattern. Arsenic values in the urine ranged from 20-40 microgram/L.
92	Community-based	South, Andhra Pradesh, Guntur.	Study knowledge and practices of school-going girls about menstruation. Sample - 65 girls	Majority of the girls expressed that it was a physiological process but some felt that it was a curse of god. Very few girls used boiled and dried cloth as an absorbent.
93	Hospital based (retrospective)	North, New Delhi	Evaluate post-coital bleeding to assess risk factors. Sample - 110 women	Benign lesions of the cervix accounted for 85.5% of the cases. Cytology had a sensitivity and specificity of 56% and 90%, respectively.
94	Hospital-based	West, Maharashtra, Wardha.	Present a clinical study of leiomyomata uteri. Sample - 200	Abnormal uterine bleeding was the most common presentation (63.5%). Menorrhagia was the most common indication for surgery. In 8% endometrial hyperplasia was seen, endometrial carcinoma in 0.58% and proliferative endometrium in 40%.
95	Hospital-based	West, Maharashtra, Wardha.	Analyse and evaluate the possibility of vaginal management in uterocervical myomas. Sample - 100	Abnormal uterine bleeding (42%) was the most common presentation. Vaginal management was not possible in 50% cases.
<b>INFERTILITY</b>				
96	Community-based	North, Chandigarh	Determine prevalence of infertility. Sample - 2,282 women	6.4% were found to be infertile. Duration varied from 2 to above 12 years.
97	Hospital-based	North, Haryana, Ambala	Examine operational aspects of identifying infertile couples. Sample - 28,839 population	298 were listed as infertile initially of whom 161 were excluded. Key informants yielded the most accurate information.

98	Hospital-based	North, Chandigarh	Evaluate the place of hysteroscopy in infertility. Sample - 60 consecutive infertile women	There was 75% agreement between the two methods of hysteroscopy and hystero-graphy.
99	Hospital-based	South, Karnataka, Bangalore	Study specimens to determine cause of infertility. Sample - 2,616 biopsies; 1,022 had primary infertility	238/1,022 had definite hormonal derangements, of whom in 10.75% the dominant effect of estrogen was manifested.
100	Hospital-based	South, Kerala, Trivandrum	Evaluate the diagnosis and management of endometriosis. Sample - 238 laparoscopy cases	Incidence of endometriosis was 21.4%. In 50% of the cases pelvic findings were not positive and were purely laparoscopic diagnosis. Conservative laparotomy done in severe endometriosis yielded pregnancy in 4.25 cases.
101	Hospital-based	West, Maharashtra, Bombay	Evaluate women with bad obstetric histories microbiologically. Sample - 300 pregnant women	Isolation of genital mycoplasmas was significantly higher in the study than in the control group.
102	Hospital-based	West, Rajasthan, Ajmer	Ascertain if endometrial glycogen can be an important parameter of infertility. Sample - 150 (infertile) and 50 (proven fertile cases)	Glycogen was mild in 45%, moderate in 43.33%, heavy in 8.33% and intense in 3.33% of the infertile group. In the fertile a reverse trend could be seen.
103	Hospital-based	North, Uttar Pradesh, Varanasi	Study correlation if any between antichlamydial bodies and tubal factor infertility. Sample - 57 women (infertile); 20 women seeking tubal ligation taken as controls	Chlamydial seropositivity was about 5 times more frequent in infertile women than in controls.
104	Hospital-based	West, Maharashtra, Bombay	Study incidence of infections in women with bad obstetric history. Sample - 365, control - 100	T.Gondii, M.hominis, and C.trachomatis were detected in 44%, 27% and 28%, respectively. These were significant as compared to controls.
105	Hospital-based	North, Uttar Pradesh, Meerut	Seek to establish the relative importance of C.trachomatis and N.gonorrhoeae in the etiology of tubal infertility. Sample - 81 women; control - 40	74.07% cases of tubal infertility showed +ve assay for C.trachomatis infection.
106	Hospital-based	North, Uttar Pradesh, Agra	Explore possible role of mycoplasma as a causative agent. Sample - 200 sterile women	Ureaplasma urealyticum was consistently higher in sterile cases than in controls.
107	Hospital-based	North, Uttar Pradesh, Meerut	Explore possible role of ureaplasma urealyticum in male infertility. Sample - 90 males	Presence of pus cells was significantly associated with reduced sperm count. U.urealyticum was found only in 7.8% of the men.
108	Community-based	South, Andhra Pradesh,	Explore treatment seeking behaviour and consequences of childlessness. Sample - 332 women	The rate of childlessness was 5%. On an average the women started allopathic treatment and visits to holy places after three years of not having a child. Two-thirds of the women experienced violence from their husbands and 13% thought that this was due to childlessness.

**SEXUALLY TRANSMITTED INFECTIONS AND CANCER**

109	Hospital-based	North, Uttar Pradesh, Lucknow	Study association of viral infections with dysplasia of the uterine cervix and cervical carcinoma. Sample - 5,278	Incidence of Herpes Simplex and Condyloma were 0.1% and 0.6%, respectively. Herpes was associated with cervical dysplasia in 66.6% and Condyloma with 45.7%. Malignancy was noted in 33.3% of the Herpes cases but none with Condyloma.
110	Hospital-based	East, Bihar, Patna	Study prevalence of wart virus infections (WVI) in women attending a hospital. Sample - 500	6.8% demonstrated WVI cytologically. 20.8% and 5.6% of dyskaryotic smears and inflammatory smears had evidence of WVI.
111	Hospital-based	West, Maharashtra, Sevagram, Wardha	Study correlation between Papanicolou grading in women with cervical erosion and chlamydial infection detected by ELISA. Sample - 100	3% had ELISA +ve smears and grade III dysplastic smears. 6.3% had Grade I and 90.7% Grade II smears.
112	Hospital-based	North, New Delhi	Study association of genital tract infection (GTI) with abnormalities in the cervical transformation zone. Sample - 257 consecutive women	Immature metaplasia and ATZ were seen to be associated with GTIs.

- Author(s)** : Lal, Sunder, Sidhartha Satpathy, Pardeep Khanna, et al.
- Title** : Problem of Mortality in Women of Reproductive Age in Rural Area of Haryana
- Source** : Indian Journal of Maternal and Child Health, 1995, vol. 6(1), pp. 17-21
- Place of study** : Haryana
- Period of study** : 1992
- Aims and objective** : To assess the extent of mortality in women (15-44 years) of reproductive age group; to know the characteristic profile of women who die in the reproductive age group; to ascertain the causes of mortality in the reproductive age group.
- Study conducted by** : Not stated
- Nature of study** : Community survey

**Methodology:**

The study area covered three community development blocks with a population of 300,907. All the deaths in women aged 15-44 years that occurred in the calendar year 1992 were identified and investigated by teams of trained investigators with the help and support of the resident *anganwadi* (child care centre) workers.

Records from the *anganwadi* worker's registers were corroborated with enquiry from the heads of households. Information was collected on pre-tested proformas.

**Findings:**

- The total female population in the 15-44 year age group was 58,961. There were 219 deaths in this age group of women during the study period. The mortality rate in this age group in the three study blocks ranged between 3.4 to 4.1 per 1,000 women per annum (3.7/1,000 overall).
- Out of 219 deaths in one year, 172 (78.5%) were classified as non-maternal deaths and were attributable to causes other than pregnancy and childbirth. Major causes of non-maternal deaths were: accidents and injuries (51 women), respiratory disorders (25 women), poisoning (22 women), digestive disorders (20 women) and fever (13 women).
- Most women died young: 20.9%, 25.6% and 18.6% of women experienced mortality in the age group of 15-20 years, 20 to 25 years and 25 to 30 years, respectively.
- 65.1% of these women died at home. 58.1% sought medical intervention prior to death.
- There were 47 (21.46%) maternal deaths as per the standard definition of maternal mortality. Thus, one out of every five deaths among women in their childbearing age was related to pregnancy. The overall maternal mortality rate was 475 per 100,000 live births.
- 21.3% of mothers died during labour, while 68% of them died during puerperal period.
- Antenatal services were utilized by 61.7% of women, and the others did not seek it. 55.3% of the mothers were delivered by trained birth attendants. 19.1% by untrained birth attendants, and 6.4% were delivered by multipurpose health workers (female).
- Primigravida and primipara women experienced high mortality, 25.5% and 31.9%, respectively.
- The major causes of maternal mortality as ascertained from head of the household of the deceased and *anganwadi* worker of the area were: postpartum haemorrhage (17.0%); puerperal sepsis (17.0%); anaemia (12.8%); pre-eclampsia and eclampsia (14.9%); obstructed labour (6.4%); antepartum haemorrhage (4.25%); abortions and MTP (10.6%) and indirect causes (12.8%).

## ABSTRACT NO. 2

- Author(s)** : Nayak, Arun H., and Asha R. Dalal
- Title** : A Review of Maternal Mortality
- Source** : Journal of Obstetrics and Gynaecology of India, 1993, pp. 364-368
- Place of study** : Mumbai (Bombay), Maharashtra
- Period of study** : 1983-91
- Aims and objectives** : Do a retrospective analysis to determine the most common causes of maternal death.
- Study conducted by** : B.T.L. Nair Hospital, Mumbai (Bombay)
- Nature of study** : Retrospective, hospital-based

### Methodology:

*Sample:* 39 maternal deaths

A total of 39 deaths that had occurred in the time period of study formed the sample. The individual case papers were scrutinized for the following factors: age, parity, antenatal care (ANC) registration, mode of delivery and cause of death.

### Findings:

- There were 39 maternal deaths from 25,886 deliveries, giving a maternal mortality rate of 150.6 per 100,000 deliveries.
- A majority of the deaths occurred to women in the age group of 21-30 years (25/39 or 64.1%), followed by those in the less than 20 years category (10/39 or 25.6%).
- 17/39 (43.6%) of the deaths occurred in women who were delivering their first babies and 22/39 were of higher-order pregnancies.
- 76.92% of the deaths (30/39) occurred in the postpartum period. Four deaths occurred in the first trimester of pregnancy and the remaining five, during the second and third trimesters.
- Very few (9/39) of the women who died were registered for antenatal care. 30/39 (76.9%) were unregistered emergency cases.
- Five women (12.5%) died prior to delivery, four (10%) deaths occurred following ectopic pregnancy or abortion. Of the remaining 30 women, 1 died following vacuum/forceps delivery in a twin delivery, and 7 died following a c-section.
- Direct causes accounted for 74.35% (29/39) of the deaths, and 25.64% (10/39) were due to indirect causes.
- Among the direct causes, haemorrhage (11/29 - 28.2%) and eclampsia (8/29 - 20.51%) were the two major causes followed by septicaemia (6/29 - 15.38%). Vesicular mole (2/29 - 5.12%) and ectopic pregnancy (2/29 - 5.12%) accounted for the remaining.
- Among the indirect causes, hepatitis (3/10) and heart disease (2/10) were the main causes.

### Reviewer's note:

It is important to note that observations such as 'the majority of deaths occurred in age group 21-30 years' mean simply that most of the 39 deaths were in this age group, and not that there is a greater risk of maternal death to women in this age group. To be able to evaluate relative risks, we would need to know the total number of deliveries occurring to women in the 21-30 age group, and calculate the maternal mortality rate for the age group.



### ABSTRACT NO. 3

- Author(s)** : Sarbajna, Shankar
- Title** : Determination of Maternal Mortality and Assessment of Primary Avoidable Factor in an Industrial Hospital
- Source** : Journal of Obstetrics and Gynaecology of India, 1993, pp. 355 -358
- Place of study** : Burnpur, West Bengal
- Period of study** : 1984-90
- Aims and objectives** : Critically analyse maternal deaths to identify preventable factors.
- Study conducted by** : Indian Iron and Steel Company Hospital, Burnpur
- Nature of study** : Hospital-based

**Methodology:**

Fourteen maternal deaths of 11,702 pregnancies recorded in the study period formed the sample. Analysis of the individual case records was in relation to their age, parity, socio-economic status, cause of death and antenatal registration.

**Findings:**

- Direct causes: Sepsis (post-abortal sepsis), haemorrhage and rupture of the uterus accounted for two deaths (14.28%) each. Three women died due to toxemia eclampsia.
- Indirect causes: Heart disease and pulmonary tuberculosis accounted for one death each and anaemia accounted for three deaths.
- Sixty percent of the deaths were found to be avoidable (definition not given) of whom 40 percent were due to relatives or patients and 20 percent due to medical attendants.

**Reviewer's note:**

The author never mentions what is meant by avoidable factors, or in what manner the relatives or medical attendants could be held responsible for the deaths. While in the materials and methods section there is a mention of analysis being done in relation to factors like age, the study does not present any analysis based on socio-demographic parturient haemorrhagic characteristics of the women who died.

### ABSTRACT NO. 4

- Author(s)** : Bhatt, Rohit
- Title** : Maternal Mortality in India - FOGSI-WHO Study
- Source** : Journal of Obstetrics and Gynaecology of India, 1997, pp. 207-214
- Place of study** : All India

**Period of study** : 1992-94

**Aims and objectives** : To identify obstetrical complications that cause maternal death, and identify factors responsible for not seeking health care or delay in seeking help; to evaluate health services factors such as providing substandard care, and identify easily implementable interventions that may reduce maternal deaths.

**Study conducted by** : Federation of Obstetric and Gynaecological Societies of India

**Nature of study** : Prospective study covering hospitals and primary health centres

**Methodology:**

*Sample:* 55 medical colleges, 10 district hospitals, and primary health centers in 3 community blocks. Data was collected every three months during the study period. Information was collected for 4,369 maternal deaths in 763,477 deliveries. A sub-sample of 1,487 deaths was examined in detail to ascertain cause of death and avoidable factors associated with the maternal death.

**Findings:**

- The maternal mortality ratio was 572.3 per 100,000 births. This represented a 25% decline over the maternal mortality ratio of 753 reported by a similar FOGSI study covering 1980-82.
- Kerala had the lowest maternal mortality ratio of 223 deaths per 100,000 births as compared to Bihar (1,668). The combined maternal mortality ratio of four states, Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh, was 1120.7, double the national average. If these states were excluded, the maternal mortality ratio for the rest of the country was 489.2.
- 26.6% of the women died undelivered, 12.6% died during labour, and 60.8% died after childbirth.
- Although data were collected predominantly from health facilities located in urban areas, 60.3% of those who died belonged to rural areas.
- Acute anaemia was associated with a large number of deaths. Almost 65% of deaths in a sub-sample of 1,487 maternal deaths had a haemoglobin value of less than 9gms. Of these, 21.6% had a haemoglobin value of less than 5gms, and 42.8% had between 6-8gms.
- Among causes of maternal death (sub-sample of 1,487), 25.5% were due to pre-eclamptic toxæmia/eclampsia.
- 20.6% of the maternal deaths were due to sepsis, 19.8% due to haemorrhage, and 5.4% from ruptured uterus. Abortion-related causes accounted for 11.1% of the maternal deaths, and tetanus for 2.6% of the maternal deaths.
- Indirect causes included infective hepatitis (8.7%), malaria (2.9%), heart disease (5.3%) and acute renal failure (2.5%).
- Lack of timely transport was associated with delay in arriving at the health facility in 13.7% of the maternal deaths (sub-sample of 1,487), lack of money (18.3%), reluctance of the relatives/patients (25.4%) and ignorance of the seriousness of the condition (46.1%).
- Avoidable factors in the health facility (sub-sample of 1,487) were associated with a significant proportion of the deaths. There was delay in providing service in 8.9% of the cases, lack of blood and blood products in 13.9% of the cases, and lack of drugs in 3.3% of the cases. The doctor/nurse was responsible in 19.7% of the maternal deaths. Further probing revealed that there was a delay in diagnosis, wrong diagnosis or wrong assignment of responsibilities. Junior doctors were often allowed to treat difficult and high-risk cases without supervision. The problem was especially acute during nights and weekends when there was a shortage of staff.

## ABSTRACT NO. 5

- Author(s)** : Swain, S., A. Agarwal, K. N. Ojha, et al.
- Title** : Determinants of Maternal Mortality: A Hospital-Based Study from North India
- Source** : Journal of Obstetrics and Gynaecology of India, 1994, pp.738-742
- Place of study** : Varanasi, Uttar Pradesh
- Period of study** : 1998
- Aims and objectives** : To audit and analyse the determinants of maternal mortality.
- Study conducted by** : Banaras Hindu University, University Hospital
- Nature of study** : Prospective hospital-based study

### Methodology:

*Sample:* 45 maternal deaths in the year 1988

Determinants studied included socio-economic status, residence, literacy, distance travelled, source of referral, antenatal care received, age, parity, obstetric complications, mode of delivery, period of gestation, operative interventions and cause of death. The data were analysed by simple percentages.

### Findings:

- Maternal mortality ratio for the study year was 21.9/1,000 live births (45 deaths/2,051 deliveries).
- Mortality by direct causes was 35/45 (77.8%); mortality by indirect causes was 10/45(22.2%)
- Haemorrhage (9 deaths, 20%), pre-eclampsia/eclampsia (15 deaths, 33.3%) and sepsis (6 deaths, 13.3%) accounted for the majority of the deaths. Five of the six sepsis deaths were from septic abortion.
- There were three deaths from infective hepatitis, four from severe anaemia and three associated with heart disease.
- Majority had to travel distances of 60-90kms (16/45, 35.6%); >90kms (16/45 -35.6%) to reach the hospital.
- One-third (16/45, 35.6%) had received no medical help prior to reaching the hospital, and a similar proportion had been treated by *dais* (16/45, 35.6%).
- Almost all the women were brought in by relatives (41/45, 91.1%), and there were negligible formal referrals.

## ABSTRACT NO. 6

- Author(s)** : Kumar, Rajesh
- Title** : Maternal Mortality in a North Indian Community, Estimation by an Indirect Method
- Source** : Journal of Obstetrics and Gynaecology of India, 1993, pp. 221-224
- Place of study** : Ambala district, Haryana
- Period of study** : Not stated

**Aims and objectives** : Use the sisterhood method to estimate maternal mortality risk in a community in North India.

**Study conducted by** : Department of Community Medicine, Post Graduate Institute of Medical Research, Chandigarh

**Nature of study** : Retrospective, community-based study

**Methodology:**

Six *Anganwadi* areas (approximately 6,000 population) were selected by the stratified random sampling method. The target population was all adults in the 15-49 age group resident in the selected *anganwadi* area. Data were tabulated manually. Number of respondents, sisters ever married, deaths and maternal deaths were computed in 5-year age groups. Lifetime risk of maternal deaths and time location of the estimates were calculated by using a procedure developed by Graham (1989). There were a total of 3,028 respondents (1,676 male, 53.4%). The survey was completed in nine days. Six teams surveyed an average of 50 households per day. The total cost estimate was nearly Rs 6000.

**Findings:**

- Of the 192 reported deaths, 43 (22.4%) occurred in pregnancy, childbirth or puerperium.
- Overall estimate of risk of maternal death was found to be 0.17. In other words, the lifetime risk of dying during pregnancy, childbirth or puerperium was 1 in 59.
- The maternal mortality ratio estimated by this method is 323/100,000 live births.

ABSTRACT NO. 7

**Author(s)** : Trivedi, S.K., and Anoop Kumar

**Title** : Study of Causes of Maternal Mortality at the Sub-District Level

**Source** : Health and Population Perspectives and Issues, 18(1), 1995, pp. 37-44

**Place of study** : Ajmer, Rajasthan

**Period of study** : Retrospective - 1/4/1992 to 31/9/1994; Prospective - 1/10/1993 to 31/3/1994

**Aims and objectives** : To analyse causes of maternal deaths and suggest concrete measures to reduce the incidence of preventable maternal mortality.

**Study conducted by** : Training Interventions Project, Indian Institute of Health Management Research

**Nature of study** : Retrospective and prospective, hospital cum community-based study

**Methodology:**

*Retrospective:* All maternal deaths that took place during the study period at Jawaharlal Nehru Hospital, Ajmer, Post-Partum Centre, Kekri and Post-Partum Centre, Kishangarh were analysed.

Twenty-two maternal deaths were identified at both the postpartum centres and 52 deaths at the hospital in Ajmer.

Controls (women who survived) equal to the number of maternal deaths were taken to compare and study how the women who die differ from those who give birth and survive.

*Prospective:* A sub-centre (sample) of 42 women was selected for the prospective study. A house-to-house survey was conducted in the community covered by this subcentre. Women in the third trimester of pregnancy were identified and registered. They were then followed through their deliveries and postnatal period of 42 days.

### **Findings:**

#### **Retrospective study**

##### *Postpartum centre sample:*

- Seventy-seven per cent of the deceased had haemoglobin levels of less than 8 g/dL. Anaemia was a primary cause in at least 36% of the maternal deaths.
- 7/22 deaths occurred during pregnancy (fever and antepartum haemorrhage), 10 during labour and 5 during puerperium.

##### *JLN hospital sample:*

- 59% of the deceased were fifth or more gravida.
- 30.8% were severely anaemic with haemoglobin levels of less than 5 g/dL.
- The most common complication during pregnancy was anaemia, followed by antepartum haemorrhage. During labour, the most common complication was cephalopelvic disproportion followed by sepsis and accidental haemorrhage.
- There was a greater proportion of women in the poor socio-economic status group among cases as compared to controls, and a lower proportion of literate women (18.2% as compared to 40.9% among controls).
- There was also a greater proportion of women in the 15-25 and 35-39 years age group among women who died as compared to women in the control group. Further, there was a greater proportion of first pregnancies and pregnancies above third order (first pregnancy: control - 13.7%, cases - 27.3%; above third pregnancy: control - 27.3%, cases - 36.4%). Haemoglobin levels were higher in the control group as compared to women who died. Fifty percent of the cases had a haemoglobin level below 5g/dL as compared to only 18.2% among controls. Percentage of women having haemoglobin above 9g/dL was 18.2% and 45.5%, respectively, among cases and controls.

#### **Prospective**

- Only 4/42 deliveries were conducted in a hospital, no deliveries were conducted at the sub-centre, and the remaining deliveries were conducted at home. Of these, about 74% of the deliveries were conducted by traditional birth attendants and 26% by relatives of the woman delivering.
- Tetanus toxoid immunisation was not given in the case of 16.7% of the women and 23.8% did not take iron and folic acid prophylaxis for anaemia during pregnancy.
- 11.9% of the women were found to be anaemic.

## ABSTRACT NO. 8

<b>Author(s)</b>	: Kumar, Majhi Arup, Sanyal Pradipta, Chakraborty Tapati, et al.
<b>Title</b>	: Changing Trends in Maternal Mortality in a Teaching cum Referral Hospital
<b>Source</b>	: Journal of Obstetrics and Gynaecology of India, 1996, pp. 345 -353
<b>Place of study</b>	: Calcutta, West Bengal
<b>Period of study</b>	: 1985-94
<b>Aims and objectives</b>	: To analyse the causative factors and changing trends in maternal mortality and to discuss measures to reduce maternal mortality.

**Study conducted by** : R.G. Kar Medical College Hospital, Calcutta

**Nature of study** : Retrospective, hospital-based study

**Methodology:**

Retrospective study of all maternal deaths during the study period, based on data from hospital records. Age, parity, socio-economic status, antenatal care, hospital stay, treatment given and causative factors of death were examined.

**Findings:**

- There were 572 maternal deaths out of 87,216 live births during the study period, giving a maternal mortality ratio of 656 per 100,000 live births. The maternal mortality ratio calculated annually for the various years fluctuated between 772 and 511 per 100,000 live births during this ten-year period.
- About half (48.95%) of the maternal deaths occurred within 24 hours of admission. Thirty-nine percent of the deaths occurred between 24 hours and 7 days postpartum, while 12% died after 7 days. This is important from the point of view of the need for postpartum monitoring and care.
- 478 (83.56%) women died from direct causes. There were 197 deaths (34.4%) from toxæmia, 138 deaths (24.3%) due to obstetric haemorrhage, while sepsis caused 133 (23.25%) deaths.
- The toxæmia group included eclampsia (170/197) and fulminant toxæmia (27/197). The majority of the patients had been treated either by the lytic cocktail regime or diazepam therapy.
- In the sepsis group, post-abortal sepsis was responsible for more than 70% (96/133) of the deaths, while puerperal sepsis (34/133) contributed to 25 percent.
- In the haemorrhagic group, postpartum haemorrhage (32/138), antepartum haemorrhage (32/138), retained placenta (22/138), ruptured uterus (15/138) and incomplete abortion (13/158) were the main causes of death.
- Infective hepatitis (25/78), severe anaemia (24/78), pulmonary embolism (15/78) and heart disease (10/78) were the main indirect causes.
- There was an overall declining trend in mortality due to sepsis and to some extent in haemorrhagic deaths. The proportion of deaths from sepsis declined from 26.6% during 1985-89 to 19.8% during 1990-94, and in haemorrhage-related deaths from 27% to 21.2%. The comparable figures for deaths from toxæmia were 26.3% and 42.8%. Infective hepatitis and severe anaemia together contributed to about 10% of the maternal deaths during both time periods.

**ABSTRACT NO. 9**

**Author(s)** : Keskar, M., A. Nagonkar, M. Tambe, et al.

**Title** : Lifetime Maternal Mortality Risk: A Community-Based Study by Sisterhood Method

**Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp.207-211

**Place of study** : Pimpia, Lockandi and Chanai villages, Maharashtra

**Period of study** : Not stated

**Aims and objectives** : To estimate lifetime maternal mortality risk using the sisterhood method.

**Study conducted by** : S.R.T.R. Medical College, Ambajogai, Maharashtra

**Nature of study** : Retrospective, community-based study

**Methodology:**

All adults 15 years and above were the target population. A total of 3,584 respondents were interviewed.

The following questions were asked of each of them:

*How many ever married sisters have you ever had (sisters born of the same mother)?*

*How many of them are alive now?*

*How many are dead?*

*How many of those who died, died while they were pregnant, during childbirth, or during the six weeks following the end of pregnancy or childbirth?*

Relevant information was recorded on a pre-tested semi-open proforma. Two rounds were scheduled for complete coverage. The survey work took six days and was conducted by five teams.

**Findings:**

- Out of a total of 345 deaths recorded, only 40 occurred during pregnancy, childbirth or puerperium.
- The overall estimated risk of maternal death was 0.009 or overall lifetime risk of dying during pregnancy, childbirth or puerperium was 1:106.
- The maternal mortality ratio was estimated to be 298/100,000 live births.

**ABSTRACT NO. 10**

**Author(s)** : Ramteke, Sangita, and S. P. Pajai

**Title** : A Study of Maternal Mortality in a Rural Medical College Hospital

**Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 77- 82

**Place of study** : Yavatmal, Maharashtra

**Period of study** : 1992-94

**Aims and objectives** : To study the causes of maternal deaths.

**Study conducted by** : Shri V.N.G. Medical College, Yavatmal

**Nature of study** : Retrospective, hospital-based study

**Methodology:**

Medical records of all maternal deaths in the hospital during the three-year period were analysed.

There were 14,009 live births and 147 maternal deaths.

**Findings:**

- The maternal mortality ratio was 1048.24/100,000 live births.
- 85/147 deaths were due to direct causes: haemorrhage 43/85, toxemia 19/85, sepsis 18/85.
- Thirty-one deaths were due to indirect causes: anaemia 19/31, jaundice 8/31, heart disease 4/31. The remaining 31 deaths were recorded as deaths from unrelated causes. These included conditions such as encephalitis, malarial fever, meningitis, tetanus and pulmonary tuberculosis.

- The toxæmia group included eclampsia (18/19) and pre-eclamptic toxæmia (1/19). Fifteen of the 18 eclampsia deaths were from antepartum eclampsia.
- In the sepsis group, puerperal (14/18) and post abortal sepsis (4/18) were the main causes.
- In the haemorrhagic group, postpartum haemorrhage (14/43), antepartum haemorrhage (12/43), retained placenta (4/43), ruptured uterus (9/43) and placenta prævia (11/43) were the main causes of death.
- About half the maternal deaths occurred within 24 hours of admission.
- Preventable factors were present in 90% of the maternal deaths. These deaths could have been avoided with proper antenatal and intranatal care, correction of anaemia and provision of timely blood transfusion.

## ABSTRACT NO. 11

- Author(s)** : Goswami, A. K., and H. Kalita
- Title** : Maternal Mortality at Gauhati Medical College Hospital
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 785-790
- Place of study** : Gauhati, Assam
- Period of study** : 1987-94
- Aims and objectives** : To analyse causes of maternal deaths.
- Study conducted by** : Gauhati Medical College Hospital, Gauhati
- Nature of study** : Retrospective, hospital-based

### Methodology:

Retrospective analysis based on medical records of all maternal deaths occurring in the hospital during the study period. There were a total of 42,458 live births and 524 maternal deaths. These deaths form the study group.

### Findings:

- The maternal mortality ratio was 1,234 per 100,000 live births.
- More than 75% of the women who died had been admitted as emergency cases.
- 398/524 deaths were due to direct causes: haemorrhage 88/398, toxæmia 156/398, sepsis 148/398.
- 106/524 deaths were due to indirect causes: anaemia 64/106, heart disease 13/106, cerebral malaria 7/106. Acute renal failure and jaundice accounted for four deaths each, pulmonary embolism and cardiovascular conditions for three deaths each, and encephalitis and bronchial asthma for one death each.
- The toxæmia group, which was the leading cause of maternal mortality, included eclampsia (150/156) and hypertensive disorders of pregnancy (6/156).
- In the sepsis group, post-abortal sepsis caused the vast majority of deaths (142/148), while puerperal sepsis accounted for the remaining six deaths.
- In the haemorrhagic group postpartum haemorrhage (34/88), ruptured uterus (18/88), placenta prævia (12/88), abruptio placentæ (8/88), ectopic pregnancy (6/88) and incomplete abortion (6/88) were the main causes of death.



**ABSTRACT NO. 12**

**Author(s)** : Kulkarni Sunanda, Athani Sumangala, and Seetharam Shatha  
**Title** : Maternal Mortality of Headquarters Hospital, Bellary  
**Source** : Journal of Obstetrics and Gynaecology of India, 1997, pp. 492-496  
**Place of study** : Bellary, Karnataka  
**Period of study** : 1988-95  
**Aims and objectives** : To analyse causes of maternal deaths.  
**Study conducted by** : Headquarters Hospital, Bellary  
**Nature of study** : Retrospective, hospital-based

**Methodology:**

All maternal deaths occurring in the study period were analysed based on hospital records. A total of 21,314 live births and 367 maternal deaths formed the study group.

**Findings:**

- 252/367 deaths were due to direct causes: pregnancy-induced hypertension (89/252), haemorrhage (87/252) and sepsis (77/252).
- 110/367 deaths were due to indirect causes, with two major causes predominating: severe anaemia (66/110) and jaundice (44/110).
- Haemorrhage led to death in many cases because most women were moderately anaemic. Accidental haemorrhage, postpartum haemorrhage, placenta previa, retained placenta, ruptured uterus and ectopic pregnancy were among the major causes. Twelve women who died of ruptured uterus had been admitted with prolonged labour and bleeding. Replacement of blood was either impossible or delayed in all cases of death due to haemorrhage.
- In the sepsis group, chorioamnionitis due to handling by untrained birth attendants (49/76) and peritonitis (25/76) owing to septic abortion were the main causes.
- The majority of the patients died within 24 hours after admission.

**ABSTRACT NO. 13**

**Author(s)** : Shekaran, P. K., P. K. Syamala Devi, G. Rajalekshmi, K. Radhamony, et al.  
**Title** : Maternal Mortality in the Medical Colleges of Kerala  
**Source** : Challenges in Safe Motherhood Initiative in Kerala, India, eds. Shenoy, Shenoy and Devi, Medical College, Trivandrum, 1999, pp. 26-33  
**Place of study** : Trivandrum, Calicut, Allepey, Kottayam, Trissur  
**Period of study** : 1993-97

**Aims and objectives** : To compile the causes of maternal deaths.

**Study conducted by** : Maternal Mortality Study Group, Kerala

**Nature of study** : Retrospective, hospital-based

**Methodology:**

The study retrospectively analysed all maternal deaths occurring during the study period. A total of 234,690 live births and 310 maternal deaths formed the study group.

**Findings:**

- The maternal mortality ratio was 132 per 100,000 live births.
- Hypertensive disorders of pregnancy (HDP) was the main cause of death in all the medical colleges and accounted for 23% of the deaths.
- Haemorrhage constituted the second leading cause (17%) in all the centres except Trissur where septic abortions constituted the second cause.
- Septicaemia contributed to 8.5% of the total maternal deaths, maximum of which were at the Kottayam centre (15%) followed by Trivandrum and Calicut (10-11%). Trissur and Allepey did not report any deaths due to septicaemia.
- 3.9% of the total deaths were due to ruptured uterus and 2.4% due to septic abortion.
- Overall 60% of the total deaths were due to direct causes and the remaining from indirect causes.
- Among the indirect causes, hepatitis in pregnancy (16.5%) was the leading cause, and cardiac disease complicating pregnancy (9.5%) was the second leading indirect cause.
- The authors observed that the following factors were associated with maternal mortality: absence of good critical care unit for management intra- and post-operatively, because most of the deaths due from hypertensive disorders of pregnancy occurred in the immediate postpartum period. Deaths due to haemorrhage were due to late referrals from the first referral unit where there were inadequate blood bank facilities and anaesthetists. In addition, delay in transportation and lack of good critical care facilities in the tertiary hospitals were the other reasons.

**ABSTRACT NO. 14**

**Author(s)** : Shenoy, Sheela T.

**Title** : Trends in Maternal Mortality in a Tertiary Referral Hospital, Trivandrum

**Source** : Challenges in Safe Motherhood Initiative in Kerala, India, eds. Shenoy, Shenoy and Devi, Medical College, Trivandrum, 1999, pp. 34-39

**Place of study** : Trivandrum

**Period of study** : 1966-97

**Aims and objectives** : To ascertain trends in maternal mortality at the hospital.

**Study conducted by** : Department of Obstetrics and Gynaecology, Sree Avittom Tirunal Hospital, Trivandrum

**Nature of study** : Retrospective, hospital-based

**Methodology:**

Retrospective review to ascertain trends in maternal mortality occurring in the study period. Information is based on studies, workshops and summary of maternal mortality data compiled by the department in the past four decades.

**Findings:**

A decline in the maternal mortality ratio was observed from 708 in 1966 to 160 in 1997. Transition in causative factors is as follows: Haemorrhage was the leading cause in the 1960s; in the latter half of the 1970s and the 1980s sepsis was the leading cause; and by the later half of the 1990s hypertensive disease in pregnancy (HDP) seems to be the cause in a majority of the deaths.

**Reviewer's Note:**

Although transition in causative factors has been discussed, no data have been provided to actually show the transition.

**ABSTRACT NO. 15**

- Author(s)** : Ganatra, B. R., K. J. Coyaji, and V. N. Rao
- Title** : Community cum Hospital-Based Case Control Study on Maternal Mortality
- Source** : K.E.M. Hospital Research Centre, Pune, unpublished monograph
- Place of study** : Pune, Maharashtra
- Period of study** : 15 January 1993 to 15 December 1995 (35 months)
- Aims and objectives** : To examine factors that determine survival in pregnant women who develop complications.
- Study conducted by** : K.E.M. Hospital Research Centre, Pune
- Nature of study** : Prospective, hospital cum community study

**Methodology:**

**Community study:** 400 villages (21 primary health centres), covering a population of 686,000.

Cases included in the study were maternal deaths occurring during the study period among:

- residents of the defined rural community area, whether or not the actual death took place inside or outside the study area.
- non-resident women if the death occurred within the study area.

**Hospital study:** 7 hospitals.

Cases included maternal deaths occurring during the study period in any of the seven selected hospitals. Data were collected through a combination of quantitative and qualitative methods such as surveys using structured pre-coded schedules, medical records, verbatim episode narratives and medical records at home and in the health facilities.

The study sample consisted of 345 maternal deaths, of which 121 occurred in the community and 224 in hospitals.

### Findings:

- *Under-reporting of deaths:* 71.9% of the deaths were under-reported either due to non-registration (31.4%) or misclassification (40.5%). Even where death reporting depended on qualified doctors, there was 41% misclassification. Despite following WHO guidelines that include information on pregnancy and delivery status of women at the time of the death, this information was missing in 60% of the cases.
- *Medical cause of deaths:* Direct obstetric causes contributed to the vast majority of maternal deaths in the community (71.9%), while both direct and indirect causes were almost equally important as causes of maternal deaths in hospitals (54.9% from direct and 45.1% from indirect causes).

Cause	Community series	Hospital series
Postpartum haemorrhage	37 (30.6%)	22 (9.8%)
Antepartum haemorrhage	6 (4.9 %)	8 (3.6%)
Puerperal sepsis	16 (13.2%)	19 (8.5%)
Pregnancy-induced hypertension, eclampsia	10 (8.3%)	47(21%)
Ruptured uterus	1 (0.8%)	7(3.1%)
Anaemia, CCF	7 (5.8%)	10 (4.5%)
Abortion-related (haemorrhage, perforation)	4 (3.3%)	6 (2.6%)
Infective hepatitis	9 (7.4%)	51 (22.7%)
Other infections (malaria, pneumonia, typhoid, etc.)	17 (14%)	26 (11.6%)
Pre-existing medical conditions	8 (6.6%)	24 (10.7%)

- *Non-maternal pregnancy-related deaths:* Additional deaths mainly related to domestic violence accounted for 19 in the community series and 29 in the hospital-related series. And if they were included in the definition of maternal death, then they would account for 15.7% (community) and 12.9% (hospital) of the overall mortality.
- *Care received for complications:* 63% of deaths were because the women were unable to reach the level of care needed to treat their complication. Women with postpartum haemorrhage or puerperal sepsis were the least likely to reach the hospital.
- *Factors contributing to maternal death:* 40% of deaths were due to family neglect at the time of illness, 52% by misreferrals by the lower levels of the health system, and 25% were due to inadequate medical management at the hospital.
- *Determinants of survival:* Instituting prompt medical management once a complication develops determines survival. Residing in a village proper rather than a hamlet, availability of a trained attendant, and an educated husband had a protective effect.

### ABSTRACT NO. 16

<b>Author(s)</b>	: Anandalakshmy, P. N., and P. P. Talwar
<b>Title</b>	: Management of High-Risk Mothers and Maternal Mortality in Indian Population
<b>Source</b>	: Indian Journal of Maternal and Child Health, 4(4), 1993, pp. 108-110
<b>Place of study</b>	: New Delhi, North India
<b>Period of study</b>	: January 1983 - December 1985

**Aims and objectives** : To develop a parsimonious model to predict risk of maternal mortality.

**Study conducted by** : All India Institute of Medical Sciences, New Delhi and National Institute of Health and Family Welfare, New Delhi

**Nature of study** : Retrospective, hospital-based

**Methodology:**

The sample consisted of 252 maternal deaths that occurred during the reference period. A one-to-one matched pair-wise case control study design was adopted. Matching was done for same age, parity and registration status for antenatal services. A linear logistic regression model was fitted to the data to determine variables that were significantly associated with the probability of dying in maternity. Factors considered were severe anaemia (haemoglobin level below 8.5g/dL), birth interval since the last birth, haemorrhage, pregnancy induced hypertension and puerperal sepsis.

**Findings:**

- The odds of a woman dying of maternal causes was elevated by nine times in women with a history of severe anaemia as compared to non-anaemic women. Controlling for all other risk factors, the odds ratio remained as high as 7 times.
- The combination of risk factors - severe anaemia, haemorrhage and pregnancy-induced hypertension - had the best predictive value for maternal deaths, with a sensitivity of 90 percent.

**ABSTRACT NO. 17**

**Author(s)** : Sarin, A. R., Singla Prem, and Kaur Harveen

**Title** : Maternal Mortality-Aetiological Factors: Analytic Study from a Teaching Hospital of Punjab

**Source** : Indian Journal of Maternal and Child Health, 3(3), 1992, pp. 69-73

**Place of study** : Patiala, Punjab

**Period of study** : January 1978 - December 1991

**Aims and objectives** : To study the aetiological factors underlying maternal deaths.

**Study conducted by** : Government Medical College, Patiala

**Nature of study** : Retrospective, hospital-based

**Methodology:**

The sample consisted of 339 maternal deaths in hospital during the study period. Information on the women's age, parity, socio-economic characteristics and immediate cause of death was obtained and preventability of death was evaluated.

**Findings:**

- There were 339 maternal deaths out of 33,160 births, yielding a maternal mortality ratio of 1,002 per 100,000 live births.

- 83.1% of the deaths (282/339) were due to direct obstetric causes. Leading causes of death were: sepsis 37%, haemorrhage 26%, toxemia of pregnancy 21%, and obstructed labour 15%.
- 15.3% of the maternal deaths (52/339) were due to indirect causes. Of these, 31 deaths were from severe anaemia, 7 from jaundice, 4 from heart disease, and 10 from complications of anaesthesia.
- Six deaths (1.7%) were from meningitis, two from intestinal obstruction, and two from encephalitis.
- 63% of the patients died within 24 hours of admission.
- About half of the deaths (50.3%) occurred during labour, 30.6% during pregnancy and 19.1% in the postpartum period. Of the deaths occurring during pregnancy, 15.3% were abortion-related.

## ABSTRACT NO. 18

- Author(s)** : Pal, Bhaskar, Geeta Niyogi, and Vivek Patkar
- Title** : Maternal Mortality in Eclampsia
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 236-239
- Place of study** : Mumbai (Bombay), Maharashtra
- Period of study** : January 1975 - December 1992 (18 years)
- Aims and objectives** : To analyse maternal deaths occurring in patients with eclampsia.
- Study conducted by** : Lokmanya Tilak Municipal General Hospital, Mumbai (Bombay)
- Nature of study** : Retrospective, hospital-based

### Methodology:

*Sample:* 737 cases of eclampsia treated in the hospital during the study period

### Findings:

- Incidence of eclampsia was 0.73%.
- 62.5% of the cases were primigravidae and 9.9% were grand multipara.
- 76% of the cases were referrals either from peripheral hospitals or private doctors.
- Eclampsia occurred at gestation period greater than 37 weeks in 61.2% of the cases. In 8.7% of the cases it occurred at less than 28 weeks gestation. 51.2% were antepartum eclampsia cases, 37.5% were intrapartum cases, and 11.4% were postpartum eclampsia cases.
- Overall mortality rate due to eclampsia was 10.72% (79/737). The mortality rate had consistently increased over the 18-year period, from 7.82% and 7.48% during 1975-80 and 1981-84, to 14.72% and 14.63% during 1985-88 and 1989-92.
- Eclampsia-related deaths constituted 14.1% of all maternal deaths (79/561). There was no systematic trend over time during the study period.
- Cardio-respiratory causes accounted for 40.5% (32/79) of the deaths. Of these, pulmonary oedema was the most common cause and resulted in 11 deaths. This is different from findings in other studies that show cardio-vascular causes to be most commonly associated with eclampsia deaths. It may be noted that pulmonary oedema is a common complication of lytic cocktail regimen, which was a therapy popular in India in the early years of the study.
- Cerebro-vascular causes accounted for 24 of the 79 deaths (30.4%), and renal causes contributed to 15 (19%) deaths.
- Autopsies of the deaths revealed that in a majority of the cases more than one organ was involved.

**ABSTRACT NO. 19**

- Author(s)** : Kamal, Prabhijot, K. Ramprasad, and P. R. Batliwala
- Title** : Analysis of High-Risk Factors and Maternal Mortality in Postpartum Haemorrhage
- Source** : Journal of Obstetrics and Gynaecology of India, 1995, pp.738-742
- Place of study** : Mumbai (Bombay), Maharashtra
- Period of study** : 1988-93
- Aims and objectives** : To analyse risk factors for postpartum haemorrhage and maternal mortality.
- Study conducted by** : Cama and Albless Hospital for Women and Children, Mumbai (Bombay)
- Nature of study** : Retrospective, hospital-based study

**Methodology:**

*Sample:* 130 cases of postpartum haemorrhage from medical records. Primary postpartum haemorrhage was defined as "excess bleeding in 24 hours after birth of a baby with a minimum of 600ml" (WHO 1990). Women were also considered as postpartum haemorrhage cases if heavy bleeding was noted in the first postpartum day and their haemoglobin level was less than 8g/dL or shock/transfusion was recorded. Blood loss was based on measurement from basins and blood loss on linens and sponges.

**Findings:**

- The most common cause of postpartum haemorrhage was uterine atony (88/130, 67.7%). Other causes included vaginal lacerations (5), cervical tear (6), perineal tear (4), retained placenta (4), ragged membranes and central placenta previa. Secondary haemorrhage occurred in 17 cases.
- 64/130 (49.24%) of the women had blood loss ranging from 800-999ml, while 30/130 (23.07%) had loss in the range of 1000-1299ml.
- A third of the cases had haemoglobin levels of less than 8gms/decilitre on the first visit.
- Prolonged labour was seen in 29 (1st stage) and 44 (2nd stage), while 12 cases had breech presentations.
- 6/130 women died, 1 due to atonic uterus, 1 from central placenta previa, and 4 from shock.

**ABSTRACT NO. 20**

- Author(s)** : Sarin, A. R.
- Title** : Severe Anaemia of Pregnancy, Recent Experience
- Source** : Indian Journal of Obstetrics and Gynaecology, 50, suppl. 2, 1995, S45-S49
- Place of study** : Patiala, Punjab
- Period of study** : Community-based 1990-94; hospital-based 1982-94

**Aims and objectives** : To determine the current prevalence of anaemia in pregnant women and its impact on maternal and perinatal mortality and morbidity.

**Study conducted by** : Department of Obstetrics and Gynaecology, Government Medical College, Patiala, Punjab

**Nature of study** : Community study: population survey of rural and urban areas using cluster sample design. Retrospective, hospital-based study based on medical records.

### **Methodology:**

*Population-based survey:* 52 urban clusters (41 urban colonies and 11 slums) and 54 villages within 5 kms of a PHC or 17 kms of the hospital were studied. Survey data were collected by female physicians and paramedics using a structured questionnaire. Screening for anaemia was done by the Tallqvist technique (based on a drop of whole blood on a filter paper against a standard of colours.) After screening, quantitative estimation was done using Sahli's method in all cases with haemoglobin levels less than 10.9g/dl or less by Tallqvist method.

Women with a haemoglobin level of 11g/dl were classified as anaemic, those with levels <7g/dl as severely anaemic, and those with haemoglobin levels less than 4g/dl as decompensated. In cases with serial haemoglobin determinations, the lowest haemoglobin level was considered for analysis.

*Hospital-based:* Maternal and perinatal mortality and morbidity data were gathered from the hospital records. All pregnant women on admission had one or more haemoglobin estimations by Sahli's method. The overall in-hospital maternal and perinatal mortality and morbidity rates were compared with those obtained from anaemic pregnant women.

### **Findings:**

*Population-based survey:*

- Among the rural population 93.2% (2,405/2,580) of the women were anaemic, while in the urban colonies (UC) 69.4% (1,088/1,567) were anaemic. In the urban slums (US) 98.8% (598/605) were found to be anaemic.
- A similar pattern could be seen among women who were severely anaemic (R - 62.2%, UC - 41.5% and US - 66.9%), and in those mildly anaemic (R - 28.7%, UC - 26.2% and US - 31.9%).
- 2.2% of the women in the rural areas, 1.7% in UC and 0.83% in US had decompensated anaemia.

*Hospital-based:*

- Of 38,565 pregnant women admitted for deliveries during the study period, 19,646 (50.9%) were mildly anaemic and 8,348 (21.6%) were severely anaemic.
- Of the 339 maternal deaths overall, 184 occurred in women with mild anaemia, and 117 in women with severe anaemia. The maternal mortality ratio per 100,000 live births was 566 for women who were not anaemic, 927 for mildly anaemic women and 1,769 for severely anaemic women.
- Overall, 0.1% of women without anaemia had pre-term labour, as compared to 2.7% among women with mild anaemia and a high 31.2% among women with severe anaemia. The mean birth weights of babies also declined steeply in women with mild and severe anaemia as compared to those with normal haemoglobin levels.
- The perinatal mortality rate per 1,000 births was 19 for women who were not anaemic, and rose steeply to 46 and 65 in mildly anaemic and severely anaemic women, respectively.



## ABSTRACT NO. 21

- Author(s)** : Rani, Reddi P., A. Bupathy, and S. Balasubramanian
- Title** : Maternal Mortality Due to Septic Induced Abortion
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 73-76
- Place of study** : Pondicherry, South India
- Period of study** : 1986-93
- Aims and objectives** : To examine the causes of death due to septic induced abortion.
- Study conducted by** : Jawaharlal Nehru Institute of Post Graduate Medical Education and Research, Pondicherry
- Nature of study** : Retrospective, hospital-based

### Methodology:

Retrospective analysis of case records of all women admitted in the hospital due to septic induced abortion during the reference period was carried out. A total of 358 patients were admitted with a diagnosis of septic abortion. Of these, 34 women died and they constitute the study group.

### Findings:

- Of the total 88 maternal deaths during the study period, 34 were from septic induced abortion (38.6%).
- Only 6/34 (17.6%) were unmarried and below 19 years of age.
- In 25/34 women, abortion was induced by using a stick or sharp instrument either by an untrained person or by the traditional *dai*. In three women who went to a general practitioner, fetex paste was used. All three were admitted with renal failure.
- Majority of the patients reported to the hospital 7-10 days after the illegal abortion.
- Grade III sepsis was present in 26/34 (76%) of the patients at the time of admission. Of these, five also had tetanus.
- About 47% of the deaths occurred within 48 hours of admission.
- Septicaemia was the most common cause of death (19/34), while five died of septicaemia complicated by acute renal failure. Five women died of tetanus, four of acute renal failure and one woman of pulmonary embolism.

## ABSTRACT NO. 22

- Author(s)** : Naik, Beena, J. T. Gohil, and S. L. Pagi
- Title** : Rupture Uterus: A 12 Years Review
- Source** : Journal of Obstetrics and Gynaecology of India, 1997, pp. 334-340
- Place of study** : Baroda, Gujarat
- Period of study** : 1984-95

**Aims and objectives** : To study the etiological factors responsible for ruptured uterus.

**Study conducted by** : S.S.G. Hospital, Baroda

**Nature of study** : Retrospective, hospital-based

**Methodology:**

One hundred and sixty-eight women who presented to the labour ward at S.S.G. hospital with a diagnosis of ruptured uterus during the study period were selected as cases. Details taken into consideration for analysis included the most probable aetiological factors, type of rupture, management and morbidity.

**Findings:**

- 87.5% were emergency cases (of whom 97.76% were from rural areas).
- Spontaneous rupture occurred in 63.7% of the cases. 14.28% had traumatic rupture and 22% had rupture of a scarred uterus.
- Among the spontaneous ruptures, obstructed labour due to cephalo-pelvic disproportion, malpresentation and multiparity were major etiological factors.
- Obstetric manipulation contributed to 67% of the traumatic rupture, and use of oxytocin to 21%.
- Complete rupture with the involvement of lower segment including the broad ligament was seen in a majority of the cases (76.8%).
- There were 14 maternal deaths - a case fatality of 8.33%. Wound sepsis was the most common post-operative morbidity seen and occurred in 22 women (13%). Six women developed vesico-vaginal fistula, and two women developed psychosis.

**ABSTRACT NO. 23**

**Author(s)** : Shobana, P., Rao Kuntal, and V. Ramkumar

**Title** : Adolescent Pregnancy

**Source** : Journal of Obstetrics and Gynaecology of India, 1997, pp. 236-239

**Place of study** : Manipal, Karnataka

**Period of study** : 1989-93

**Aims and objectives** : Retrospectively analyse obstetric outcomes of teenage pregnancies.

**Study conducted by** : Kasturba Medical College (referral hospital), Manipal

**Nature of study** : Retrospective, hospital-based

**Methodology** :

347 pregnancies including all gravidae under 20 years of age at the time of delivery (5.5% of all admissions for delivery) were included in the study. The medical and obstetric aspects of these pregnancies were studied.

**Findings:**

- Most of the pregnancies were in the age group of 17-20 years (94.2%).

- The majority were primigravidae (82.2%), and the remaining were second gravidae (17.8%).
- Unwed mothers constituted 3.1% of the pregnant women.
- 59.6% sought regular antenatal check-up while the remaining had either inadequate or no antenatal check-up.
- Fifty-seven percent of the women had spontaneous vaginal delivery. Almost a third of the deliveries were by cesarean section (31%). Forceps/vacuum delivery was conducted in 11.25% of the cases while three women had assisted breech deliveries.
- Antenatal complications were found in 64% (222/347) of the women.
- Abortion (25%) and pre-eclampsia (20%) were the most common complications, followed by anaemia in 16.5% of the cases. Eclampsia was found in 2.64% of the pregnancies.
- There was only one maternal death due to postpartum haemorrhage.
- However, pregnancy outcomes were poor in many instances. There were 24 stillbirths and 7 neonatal deaths. Two babies were born with congenital anomalies. About 13% of the deliveries were pre-term, while more than a third of the adolescents (163/437 or 37.3%) delivered low birth weight babies.

## ABSTRACT NO. 24

- Author(s)** : Begom, Ayesha A.
- Title** : High-Risk Pregnancies and Their Clinical Outcomes: A Prospective Descriptive Study of the Clinical Outcomes of High-Risk Pregnancies at a Public Sector Tertiary Care Centre, Kerala
- Source** : Masters in Public Health Dissertation submitted to Achutha Menon Centre for Health Science Studies, Sree Chitra Thirunal Institute of Medical Sciences and Technology, Thiruvananthapuram, 1998
- Place of study** : Thiruvananthapuram, Kerala
- Period of study** : 1998
- Aims and objectives** : To investigate the incidence of high-risk pregnancies in a tertiary care referral hospital and to study the short-term 'in hospital' outcomes of these, using the 'normal risk' pregnancies as a comparison group. Also to examine the relation of selected predictor variables to maternal and foetal outcomes.
- Study conducted by** : Achutha Menon Centre for Health Science Studies, Thiruvananthapuram, Kerala
- Nature of study** : Prospective, hospital-based, descriptive

### Methodology:

At the Sree Avittom Thirunal Hospital, Thiruvananthapuram, of 2,002 cases from 1 Jan to 14 Feb 1998 (45 days) admitted to labour room with active labour pain, 1,672 (83.7%) patients were included in the sample. The mother was personally interviewed, and the mother and infant were followed up for 7-10 days and health outcomes were recorded. These data included details about maternal mortality and morbidity, type of delivery, perinatal mortality and incidence of low birth-weight. Pregnancies were classified according to risk criteria based on Cooplund's (modified) scoring system. A pre-tested, structured, close-ended questionnaire was used to collect data.

**Findings:**

- Of 1,672 pregnant women, 1,513 (90.5%) were from rural areas and two-thirds belonged to lower socio-economic group. Primigravida were 752 (45%), and 93% had regular antenatal visits.
- According to Cooplads criteria, 691 (41.3%) were low-risk pregnancies, 892 (53.3%) were high-risk, and 89 (5.3%) were of severe-risk group ratings.
- There were two maternal deaths among the high-risk pregnancy group and were related to cesarian section. Ceasarian section was greater (25.1%) in the high-risk group compared to the low-risk (14.4%) group ( $P<=0.001$ ).
- There was an increase in the rate of c-sections as maternal age ( $P<0.001$ ) and parity ( $P<0.01$ ) increased.
- Perinatal mortality and low birth-weight were associated with high-risk pregnancies ( $p<0.001$ ).
- Manual labour and reduced food intake during pregnancy were also associated with adverse outcomes ( $p<0.001$ ).
- Multivariate logistic regression analysis showed that high-risk pregnancy scores and socio-economic status of the patients were the principal factors influencing maternal and foetal outcomes.

**ABSTRACT NO. 25**

- Author(s)** : Rathore, Asmita Muthal, A. Sasikala, S. Raghavan, et al.
- Title** : Obstetric Outcome of Pregnancies Complicated by Genital Prolapse
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 630-633
- Place of study** : Pondicherry, South India
- Period of study** : August 1984 - July 1994
- Aims and objectives** : To analyse the obstetric outcome of pregnancies complicated by genital prolapse.
- Study conducted by** : Department of Obstetrics and Gynaecology, Jawaharlal Nehru Institute of Post Graduate Medical Education and Research, Pondicherry
- Nature of study** : Retrospective, hospital-based study

**Methodology:**

*Sample:* 98 pregnancies with a diagnosis of genital prolapse during the study period.

**Findings:**

- Incidence of genital prolapse was found to be 1 in 373 deliveries (a total of 35,569 deliveries recorded during this period).
- Six of the 98 women (6.1%) were below 20 years of age, 76 (77.5%) were in the age group 21-30 years, and 16/98 (16.3%) were between 31-40 of age.
- About a third of the women had no previous pregnancies, or only one pregnancy; eight of the 98 women (8.16%) were nulliparous, and 23/98 (23.5%) were primipara. 32/98 (32.6%) had 2 children and 35/98 (35.7%) were of parity 3 or more.
- In 40% (39/98) the duration of prolapse was less than a year, in 30.6% (30/98) between 1-3 years, and in 29.5% (29/98) more than 3 years.

- All patients had third degree prolapse. 91.8% (90/98) had associated cystocele, rectocele and enterocele, while the remaining had an elongation of cervix.
- Retention of urine was the most common urinary complication (25/98).
- Abortion (14/76) and premature labour (7/76) were the most common obstetric complications observed.

## ABSTRACT NO. 26

- Author(s)** : Bhandari, N. R., I. Kambo, A. Nair, et al.
- Title** : Reproductive Outcomes Subsequent to Gas Leak in Bhopal: An ICMR Study
- Source** : Indian Journal of Preventive and Social Medicine vol 27, no. 3 and 4, 1996, pp. 45-51
- Place of study** : Bhopal, Madhya Pradesh
- Period of study** : May 1998 - October 1998
- Aims and objectives** : To study the outcome of reproductive events since the gas leak.
- Study conducted by** : Indian Council for Medical Research, New Delhi
- Nature of study** : Retrospective, community-based study

### Methodology:

The study included 2,663 women from the area exposed to the gas leak and 1,445 women from a control area.

Details of reproductive outcomes were gathered in a retrospective manner along with demographic and obstetric characteristics. All women were married in the reproductive age group of 15-49 years. The reference period for reproductive events was 1 May 1988 to the day of the survey. Surveys were carried out simultaneously in the reference as well as control area.

### Findings:

- 754/2,663 (28.3%) women in the exposed area and 357/1,445 (24.7%) in the control area were pregnant at the time of the gas leak. Of these, 25% in the exposed and 32% in the control sample reported no pregnancy in the reference period.
- The interval from gas leak to first live birth was significantly longer ( $p < 0.5$ ) for the women in the exposed ( $7.3 \pm 7.2$  months) as compared to the control area ( $5.6 \pm 6.7$  months). This may be due to significantly higher abortions in the exposed area.
- The outcome of pregnancies exposed to gas was abortion in 19.4% in the exposed as compared to 10.7% in the control area. For the first conception after the gas leak a similar profile was seen.
- The overall abortion rates were higher in the exposed area (16.5% and 11.0%) as compared to the control area (9.4% and 6.2%) in women who were pregnant or not pregnant at the time of the gas leak.

## ABSTRACT NO. 27

- Author(s)** : Jain, M. L., and A. K. Garg
- Title** : Burns with Pregnancy: A Review of 25 Cases
- Source** : Burns, 19(2), 1993, pp. 166-167
- Place of study** : Bhilai, Madhya Pradesh
- Period of study** : 1986-91
- Aims and objectives** : To review pregnancy outcomes in 25 pregnant women admitted to the hospital with burns.
- Study conducted by** : J.L.N. Hospital and Research Centre, Bhilai
- Nature of study** : Prospective, hospital-based study

### Methodology:

The sample consisted of all 25 pregnant women admitted to the burns ward during the five-year period under study. Patients were classified according to the extent of burns, and pregnancy outcomes and associated morbidity were studied.

### Findings:

- 16/25 had full-term normal babies, and 9/25 aborted the pregnancy. Of the 25 patients, 5 died (3 following abortion and 2 due to burns ranging from 95-100%).
- Out of 6 patients in the first trimester, 4 aborted and none died following abortion. Out of 12 patients in the second trimester, 4 aborted and 2 died due to septicaemia. Out of 7 patients in the third trimester, only 1 aborted and died.
- Wound infection and septicaemia were the most common causes of abortion in this series.
- The deaths mainly occurred in patients who sustained burns of 50% and above.

## ABSTRACT NO. 28

- Author(s)** : Nayak, Arun H., and Asha R. Dalal
- Title** : A Review of Stillbirths
- Source** : Journal of Obstetrics and Gynaecology of India, 1993, pp. 225-229
- Place of study** : Mumbai (Bombay), Maharashtra
- Aims and objectives** : Study the probable causes of stillbirths and find out the preventive factors.
- Study conducted by** : B.Y.L. Nair Hospital, Ambala
- Nature of study** : Prospective, hospital-based study

**Period of study** : July 1987 - June 1991

**Methodology:**

A total of 262 stillbirths in the study period at the hospital formed the sample studied. They were classified into two groups: Group A - 125 fresh intrapartum stillbirths, and Group B - 137 antenatal stillbirths. Stillborn babies with weight less than 500gms were excluded from the study.

**Findings:**

- Of the 125 intrapartum stillbirths, 36/125 (28.8%) babies were premature with weights as low as 700gms in some cases. Thirty-two babies died of severe intrapartum asphyxia leading to death. No contributory cause could be found in 11.2% of the cases.
- In group B (antenatal stillbirths), 40/137 (29.19%) were due to pregnancy-induced hypertension. Nine each were associated with anaemia and with the mother being VDRL positive (for syphilis infection). Abruptio placentae was the cause of 22 antepartum stillbirths (16.1%) and a further 11 stillbirths were due to other placental causes. In as many as 30 cases, no contributory causes could be found.
- According to the authors, almost 70% of the stillbirths (183 of 262) in this study were preventable. Antenatal care to treat underlying medical conditions could have prevented about 36% of stillbirths, and timely admission to hospital during labour a further 24.4%. Error and delay in labour management in hospital accounted for about 9% of the stillbirths and could have been prevented with more skilled attendance and/or better quality of care.

**ABSTRACT NO. 29**

**Author(s)** : Ravikumar, M., Devi Anjana, Vishnu Bhat, et al.

**Title** : Analysis of Stillbirths in a Referral Hospital

**Source** : Journal of Obstetrics and Gynaecology of India, 1997, pp. 791-796

**Place of study** : Pondicherry, South India

**Period of study** : 1992-94

**Aims and objectives** : To examine the causes of stillbirths and find preventive measures.

**Study conducted by** : Jawaharlal Nehru Institute of Post Graduate Medical Education and Research, Pondicherry

**Nature of study** : Retrospective, hospital-based

**Methodology:**

The study retrospectively analysed all stillbirths occurring in the hospital during the study period. Maternal details analysed include age, parity, medical illnesses, presence of antepartum haemorrhage, pregnancy-induced hypertension and eclampsia. Patients who attended the hospital's antenatal clinic at least three times were considered as booked cases. A total of 12,385 deliveries were admitted of which 552 were stillbirths and form the study group.

**Findings:**

- The stillbirth rate was 43 per 1,000 births.

- The majority (74.6%) of stillborn babies had low birth weight, and 48.4% were pre-term births.
- Almost 90 percent of the stillbirths were related to obstetric complications. Pregnancy-induced hypertension and eclampsia accounted for 18.9% of the stillbirths. Antepartum haemorrhage following abruptio placentae or placenta praevia were associated with 76 stillbirths (13.8%), rupture of the uterus with 56 (10.3%), obstructed labour with 19 (3.5%) and chorioamnionitis (infection following early rupture of membranes) for 9 stillbirths (1.6%).
- Fifty-seven stillbirths (10.3%) were in babies with congenital malformations.

## ABSTRACT NO. 30

<b>Author(s)</b>	: Sawhney, H., V. Suri, K. Vasishta, et al.
<b>Title</b>	: Pregnancy and Congenital Heart Disease: Maternal and Fetal Outcome
<b>Source</b>	: Australia New Zealand Journal of Obstetrics and Gynaecology, 38(3), 1998, pp. 266-271
<b>Place of study</b>	: Chandigarh
<b>Period of study</b>	: 1980-96
<b>Aims and objectives</b>	: To evaluate the maternal and foetal outcomes in patients with congenital heart disease.
<b>Study conducted by</b>	: Post Graduate Institute of Medical Education and Research, Chandigarh
<b>Nature of study</b>	: Retrospective, hospital-based

### Methodology:

The study retrospectively analysed 275 pregnancies in 256 patients with congenital heart disease. There were a total number of 55,271 deliveries. Patients with heart disease accounted for 1,184 deliveries (2.1%) of which 900 deliveries (76%) occurred in patients with rheumatic heart disease, and the remaining in patients with congenital heart disease.

The sample consists of 251 pregnancies of women with acyanotic and 24 pregnancies of women with cyanotic heart disease (235 women with acyanotic heart disease (ACHD) and 21 women with cyanotic heart disease (CHD)).

Previous reproductive outcomes, antenatal complication, intrapartum maternal-fetal events, mode of delivery and perinatal outcome were noted. These parameters were compared in acyanotic and cyanotic heart disease. Pregnancies terminated between 28-37 weeks were considered as premature.

No woman with congenital heart disease was excluded from the study because of termination of pregnancy.

### Findings:

- Congenital heart disease was diagnosed during the index pregnancy in 26.9% of women with acyanotic heart disease, while in cyanotic heart disease, all patients were aware of their cardiac problem prior to conception.
- Patients with cyanotic heart disease had bad obstetrical histories compared to those with acyanotic heart disease. 23.2% in ACHD and 51.3% in CHD had previous spontaneous abortions. 6.1% and 12.8% had previous stillbirths, 6.6% and 17.8%, respectively, had previous preterm deliveries.



- In the current pregnancy the incidence of pregnancy-induced hypertension (16.7%), preterm labour (33.3%) and antepartum haemorrhage (8.3%) in CHD was higher than those in ACHD: pregnancy-induced hypertension (9.6%), preterm labour (8.4%) and antepartum haemorrhage (2.4%).
- Third stage complications such as atonic postpartum haemorrhage, retained placenta and vulval haematoma were present in 5/251 pregnancies in women with ACHD (2%) as compared to 6/21 pregnancies (25%) in women with CHD.

## ABSTRACT NO. 31

- Author(s)** : Das, A. G., S. Gopalan, and L. K. Dhaliwal
- Title** : Fetal Growth and Perinatal Outcome of Pregnancies Continuing After Threatened Abortion
- Source** : Australia New Zealand Journal of Obstetrics and Gynaecology, 36(2), 1996, pp. 135-139
- Place of study** : Chandigarh
- Period of study** : Not specified
- Aims and objectives** : To find out the effect of threatened abortion in pregnancy on perinatal outcomes.
- Study conducted by** : Post Graduate Institute of Medical Education and Research, Chandigarh
- Nature of study** : Prospective, hospital-based

### Methodology:

Sixty women who had threatened abortion (vaginal bleeding with or without uterine cramps before 20 weeks of gestation) formed the study group. The control group consisted of 60 women who did not experience threatened abortion. The controls were matched for age, parity and gestation of the study group.

Two women in the study group were lost to follow-up and three had spontaneous abortions within a week of registration and were excluded from the study. For the final analysis 110 women were included, 55 in each group. Foetal growth was monitored by both clinical and ultrasound parameters

### Findings:

- More than half of the patients (54.5%) with threatened abortion presented between 6-12 weeks of pregnancy.
- 94.5% of pregnancies with threatened abortion continued beyond 28 weeks.
- The incidence of low-lying placenta was significantly higher ( $p < 0.05$ ) in women with threatened abortion.
- The mode of delivery was identical among cases and controls.
- No baby had a congenital malformation in either the study or control group, nor was there a statistically significant difference in the incidence of preterm delivery or low birth weight.
- There was a higher incidence of low-lying placentas at the initial scanning in the study group as compared to the control group (12 versus 4). However, at 36 weeks there was no significant difference between the two groups, supporting the concept of conversion of placental location with advancing gestational age.

## ABSTRACT NO. 32

- Author(s)** : Arora, Raksha, Asha P. Rajaram, and Josephine Oumachigui
- Title** : Outcome of Post-Cesarian Pregnancy in a Tertiary Institute in South India
- Source** : Journal of Obstetrics and Gynaecology of India, 42(3), 1992, pp. 334-339
- Place of study** : Pondicherry, South India
- Period of study** : 1989-91
- Aims and objectives** : To study the outcome of post-cesarian pregnancies.
- Study conducted by** : Jawaharlal Nehru Institute of Post Graduate Medical Education and Research, Pondicherry
- Nature of study** : Prospective, hospital-based

### Methodology:

The study selected 700 pregnant women with a history of previous cesarian section and investigated their detailed obstetric history. On admission X-ray pelvimetry was done and ultrasound taken.

### Findings:

- In 60% of the cases there was repeat cesarian section.
- Cephalo-pelvic disproportion (CPD) and malpresentation were the main causes.
- Placenta previa was present in 19 cases.
- Rupture of the scar occurred in 0.3% of women who had abdominal delivery as compared with 1.3% of women who had vaginal delivery.

## ABSTRACT NO. 33

- Author(s)** : Verma I. C., A. Prema, and R. K. Puri
- Title** : Health Effects of Consanguinity in Pondicherry
- Source** : Indian Paediatrics 29(3), June 1992, pp. 685-692
- Place of study** : Pondicherry, South India
- Period of study** : 1978
- Aims and objectives** : To determine the prevalence and type of consanguinity in Pondicherry, and its effect on neonatal and infant mortality and morbidity.
- Study conducted by** : Jawaharlal Nehru Institute of Post Graduate Medical Education and Research
- Nature of study** : Prospective, hospital-based

**Methodology:**

The sample included 1,000 pregnant women admitted for delivery consecutively at the maternity ward during 1978. Marriages were classified as 1) first cousin marriages, 2) closer than first cousin, 3) others (beyond first cousin), and 4) non-consanguineous. The obstetric history of the mother was obtained. The newborn was examined after delivery for maturity and congenital malformations, and all were followed up postnatally for 6-7 days for immediate neonatal morbidity and mortality. 360 were followed up for 3 months.

**Findings:**

The difference was statistically significant for infant mortality rates (97.8 per 1,000 versus 59.7 per 1,000 live births,  $p < 0.05$ ) between offspring of consanguineous and non-consanguineous marriages, but not for neonatal mortality rates. The frequency of illnesses was significantly higher in offspring of consanguineous marriages as compared to non-consanguineous marriages (176.1/1,000 versus 67.2/1,000,  $p < 0.001$ ). However differences in both groups with respect to most other aspects like obstetric complications, foetal losses and congenital malformations were not statistically significant.

**ABSTRACT NO. 34**

- Author(s)** : Pawar, Pratiksha A., and Aparna Shrotri
- Title** : Maternal Morbidity Due to Massive Obstetric Haemorrhage
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 236-239
- Place of study** : Pune, Maharashtra
- Period of study** : 1 January 1993 - 30 June 1994
- Aims and objectives** : To study morbidity due to massive obstetric haemorrhage.
- Study conducted by** : Sassoon General Hospital, Pune
- Nature of study** : Prospective, hospital-based study

**Methodology:**

A blood loss of more than one litre was treated as massive obstetric haemorrhage in the study. The sample included 100 cases that required 3 or more blood transfusions during the study period

**Findings:**

- In 66% of the cases massive obstetric haemorrhage occurred in late pregnancy, 18% in early pregnancy, and 16% after delivery.
- In 43% (43/100) of the cases there were major complications. Hypovolemic shock was the most important complication and occurred in 23 cases (53.5 %).
- Four women with abruptio placentae developed disseminated intravascular coagulation (DIC), a syndrome that may occur where there is a failure in the normal clotting mechanism. One woman with abruptio placentae developed acute renal failure, and one woman had both of the above conditions.
- In a number of instances, massive obstetric haemorrhage was associated with surgical interventions: accidental injury to the bladder during c-section in two cases, bowel injury to two women, one during suction of vesicular mole and one during medical termination of pregnancy (MTP); and perforation of the uterus in four instances (three cases of MTP and one case of suction of vesicular mole).

- Ten women died following the massive haemorrhage. Of these, four women died of antepartum haemorrhage owing to placenta praevia. One woman with perforated uterus died despite emergency hysterectomy. Two women with abruptio placentae who developed DIC died, and three deaths were attributable to postpartum haemorrhage that did not respond to blood transfusion and other interventions.
- The following factors were identified as indicative of massive obstetric haemorrhage:
  - ectopic pregnancy where the isthmic region is involved
  - vesicular mole when the gestation is more than 20 weeks
  - medical termination of pregnancy when gestation is of more than 12 weeks duration
  - abruptio placentae with abruption-delivery interval > than 8 hours
  - where weight of the clot is up to 600gms

### ABSTRACT NO. 35

- Author(s)** : Desai, Pankaj, Malini Desai, and Dipti Modi
- Title** : Pre-Eclampsia of Early Onset: Recurrence Risk and Long-Term Effects
- Source** : Journal of Obstetrics and Gynaecology of India, 1994, pp. 855-859
- Place of study** : Baroda, Gujarat
- Period of study** : January 1985 - December 1993
- Aims and objectives** : To identify the recurrence risk and long-term effects in pregnant women who had developed pre-eclampsia of early onset.
- Study conducted by** : Medical College and S.S.G. Hospital, Baroda
- Nature of study** : Prospective, hospital-based study

#### Methodology:

Eighty women who developed pre-eclampsia before 28 weeks of gestation were followed up over an average period of 7.3 years through subsequent pregnancies to evaluate their obstetric outcomes and significant morbidity or mortality. Of the 80 women, 11 did not have a subsequent pregnancy. The remaining 69 women had 107 subsequent pregnancies. This constitutes the study sample.

#### Findings:

- 43/107 (40.1%) pregnancies were normo-tensive and 64/107 (59.8%) developed pre-eclampsia. Of these there were 22/64 cases (34.4%) of severe pre-eclampsia and 42/64 (65.6%) cases of mild to moderate eclampsia.
- Of the 64 pregnancies in which women developed pre-eclampsia, in about a third (20/64 or 31.25%) this occurred before 28 weeks of gestation, and roughly a third each (22/64 cases) developed pre-eclampsia during 28-37 weeks and above 37 weeks of gestation, respectively.
- Twelve of the 22 cases of severe pre-eclampsia occurred in less than 28 weeks of pregnancy. However, the numbers developing severe pre-eclampsia declined among those who developed pre-eclampsia later in pregnancy: 7 among the 22 between 28-37 weeks of gestation, and only 3 among the 22 developing pre-eclampsia after 37 weeks of gestation.

- Pre-eclampsia, whether severe or mild/moderate, was associated with poorer pregnancy outcomes when the onset was before 28 weeks of gestation. Of the 20 pregnancies in this category, 13 ended in spontaneous abortion and 7 instances of intra-uterine growth retardation, of which 4 ended in perinatal loss.
- Of those who developed pre-eclampsia later in pregnancy (44), there were none that resulted in spontaneous abortions. There were 26 instances of intra-uterine growth retardation, and 26 cases of perinatal losses. Most of the perinatal deaths (17/26) occurred among those between 28-37 weeks of pregnancy.
- Among normo-tensive women, the rates of spontaneous abortion was 9.3% (of perinatal loss 2.3% and of IUGR, 7%). Thus, pre-eclampsia, especially in early pregnancy, considerably elevates the possibility of pregnancy and perinatal loss.
- Of the 69 women who were followed up, 37.5% (24/69) developed chronic hypertension. Among those who developed severe pre-eclampsia in the early weeks in the subsequent pregnancies (12 women), 91.7% (11/12) developed chronic hypertension.

### ABSTRACT NO. 36

- Author(s)** : Sambarey, Pradip, Gururaj Kulkarni, and Santhosh Sidid
- Title** : Maternal Morbidity after Emergency Caesarian Sections
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 510-515
- Place of study** : Pune, Maharashtra
- Period of study** : 1992-93
- Aims and objectives** : To analyse maternal morbidity after emergency caesarian section.
- Study conducted by** : Department of Obstetrics and Gynaecology, B. J. Medical College, Pune
- Nature of study** : Prospective, hospital-based study

#### Methodology:

The study sample included 1,029 cases (1,029 caesarian sections out of 5,901 deliveries - 17.43%) of all c-sections during the one-year period under study.

#### Findings:

- Emergency c-sections accounted for 83.76% (862/1,029) and 14.24% (167/1,029) were elective.
- Foetal distress (26.9%) and previous caesarian section (22.1%) were the main indications for an emergency caesarian followed by cephalopelvic disproportion and malpresentation/malposition.
- The main associated risk factors for morbidity were anaemia (163/1,029 - 15.84%) and pregnancy-induced hypertension and eclampsia (143/1,029 - 13.88%). Other major factors included prolonged labour (82/1,029), premature rupture of membranes (74/1,029), medical disorders such as diabetes, heart disease, respiratory infections (44/1,029 - 4.21%) and antepartum haemorrhage (32/1,029 - 3.1%).
- Of the 862 cases of emergency c-section, post-operative morbidity was recorded in 27.5% of the cases, as compared to only 15.5% among elective c-section. Pyrexia (80/862), wound infection (60/862), endometritis (23/862) and UTI (22/862) were the most common post-operative complications among those undergoing emergency c-section.

- The main intra-operative risk factors associated with post-operative morbidity were use of general anaesthesia (24.01% - 207/862), difficult extraction of baby (6.96% - 60/862) and excessive haemorrhage (6.38% - 55/862).
- Of 163 women who had a combination of anaemia, poor socio-economic status and poor nutritional status, 44 percent developed pyrexia and wound infection.

### ABSTRACT NO. 37

- Author(s)** : Koen, M. C., M. S. Lemson, Kumar V. Sampath, et al.
- Title** : Prevalence of Anaemia among Pregnant Mothers in a Rural South Indian Population
- Source** : Journal of Obstetrics and Gynaecology of India, 42(3), 1992, pp. 283-287
- Place of study** : Vellore, Tamil Nadu
- Period of study** : April 1990 - March 1991
- Aims and objectives** : To determine the prevalence of anaemia among pregnant women.
- Study conducted by** : R.U.H.S.A. Department, Christian Medical College, Vellore
- Nature of study** : Community survey

**Methodology:**

Haemoglobin levels and haematocrit were measured in a sample of 315 pregnant women. Stool specimens were collected from 130 subjects and observed microscopically.

**Findings:**

- 76% of the women had a haemoglobin level of less than 11g/dL, and may be classified as anaemic according to international definitions. Severe anaemia of haemoglobin levels less than 8g/dL was observed in 11%.
- Prevalence of hookworm infestation in the subsample of 130 women was 62%.

### ABSTRACT NO. 38

- Author(s)** : Barua, Alka
- Title** : Reproductive Health Needs of Married Adolescent Girls in Rural Maharashtra
- Source** : Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India, 28 February - 1 March 2000
- Place of study** : Parner block, Ahmednagar, Maharashtra

**Period of study** : Not stated  
**Aims and objectives** : To understand the reproductive health needs of married adolescent girls.  
**Study conducted by** : Institute for Health Management  
**Nature of study** : Community-based, cross-sectional survey

**Methodology:**

Sample selection was purposive, and information was collected through in-depth interviews. A variety of subjects were interviewed including the married adolescent girls (74), husbands (37), mothers-in-law (53), medical officers (7) and 37 auxiliary nurse midwives (ANMs). Twenty private doctors were also interviewed. In addition to the qualitative survey, a quantitative survey was carried out on a sample of 302 married adolescent girls.

**Findings:**

- Sixty-seven percent (202/302) of the girls had experienced at least one pregnancy. And the average age of conception was 16.5 years. Of these ever-pregnant girls, 14% reported at least one pregnancy ending in abortion, 5% in stillbirths and 4% in infant deaths.
- Almost 29% of the girls were pregnant at the time of the survey, which was well above the 10 percent prevalence of pregnancy among women of all childbearing years (15-45 years). 23% of the girls (n=153) reported complications during the delivery such as excessive bleeding, vaginal discharge and fever.

**ABSTRACT NO. 39**

**Author(s)** : Ramakrishna, J., S. Ganapathy, Z. Matthews, et al.  
**Title** : Health, Illness and Care in the Obstetric Period: A Prospective Study of Women in Rural Karnataka  
**Source** : Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India, 28 February - 1 March 2000  
**Place of study** : Eleven villages about 60km from Bangalore, Karnataka  
**Period of study** : Started in August 1996  
**Aims and objectives** : To establish the type and extent of obstetric morbidities, explore health seeking behaviours and factors affecting service uptake during this period.  
**Study conducted by** : The authors  
**Nature of study** : Prospective study of women followed through pregnancy, delivery and traditional postpartum

**Methodology:**

The final sample consisted of 388 women of 535 women registered that were in the age group of 18-24 years. Information was collected through questionnaires administered during pregnancy, immediately

after delivery and three months postpartum. Socio-economic characteristics and symptoms of post-delivery illness were collected as a part of the overall information. Qualitative data pertaining to perceptions of morbidities and process of care seeking were done with a subset of the women.

**Findings:**

- 96.8% of the women (279/282) reported some contact, either for routine antenatal care, a problem or both. The auxiliary nurse midwife (ANM) was the most common person seen.
- 56% of the women had their first contact in the first trimester, while delayed contact was more common among women who were poorly educated, of higher gravidity, and had less possessions.
- Despite high contact rates, less than half the women had their urine examined, blood pressure recorded, haemoglobin or weight checked. Hardly any counselling was given and only perfunctory dietary advice was given.
- Only a fifth of the women utilised the ICDS (Integrated Child Development Scheme) food supplement scheme.
- Most women reported carrying out some heavy activity until late pregnancy.
- Weights were recorded in the first trimester for 54 women and their mean increase in weight by the end of the pregnancy was only 5.2 kg.
- 62.4% of the women (176/282) reported some form of obstetric morbidity. A total of 361 episodes of morbidity were reported by 176 women, of which anaemia followed by abdominal pain were the most common.
- The level of unplanned institutional care seeking during the intrapartum period was high, increasing from 11% planning institutional deliveries to an eventual 35% actually delivering at a hospital.
- The proportion of women who planned for an ANM to assist was 49%, but only less than half actually used this assistance.
- Women who experienced inadequate progression of labour were most likely to proceed unexpectedly to a hospital delivery.
- In the postpartum 37% of women reported some morbidity and 15% severe to moderate morbidity within 42 days of the delivery.
- Contact with the services during postnatal period, instead of for routine care, was for tubectomy advice, immunisation of newborn or for a specific problem.

**ABSTRACT NO. 40**

- Author(s)** : Bhatia, J. C., and John Cleland
- Title** : Obstetric Morbidity in South India: Results from a Community Survey
- Source** : Social Science and Medicine, 43(10), 1996, pp. 1506-1516
- Place of study** : A sub-district of Karnataka
- Period of study** : Not stated
- Aims and objectives** : To examine the prevalence and causes of obstetric morbidity in a community.
- Study conducted by** : The authors
- Nature of study** : Retrospective data from cross-sectional community survey



### Methodology:

The sample consisted of 3,600 women (2,400 rural and 1,200 urban) below 35 years of age and having at least one child younger than five. Information was collected through pre-tested questionnaires. Sequential administration was done, starting with symptoms during pregnancy, proceeding to those during delivery and ending with the postpartum period. The recall period ranged between 2 and 60 months. Obstetric morbidity is described by frequency distributions and then cross-tabulated by duration and treatment sought.

### Findings:

- 18% of the women reported at least one problem during the antenatal period; about 8% experienced a problem during delivery and another 23% indicated problems during the postpartum period.
- 2,305 abnormalities were reported: 0.64 episodes on an average for the entire sample and about 1.6 episodes each for those reporting at least one morbid condition.
- A total of 485 adverse conditions during pregnancy were reported. Altogether 10.2% of the women reported potentially life threatening conditions including swelling of the hands and face (4.3%), hypertension (3.7%) and fever for 3 or more days (2.9%). About 10% reported severe vomiting.
- 7.7% reported symptoms of potentially life threatening conditions during labour or delivery, most notably prolonged labour over 18 hours (5.7%). Excessive bleeding and loss of consciousness was each reported by 1% of the sample.
- Nearly one-quarter (23%) of the women reported an adverse condition during the postpartum period. A total of 390 women (10.8%) reported potentially life threatening conditions, excessive bleeding (10%) being the most common such condition. Five hundred and ninety-six women (16.6%) reported at least one symptom indicative of infection: fever, discharge, lower abdominal or pelvic pain.
- For many conditions, the relatively privileged sectors of the population reported more problems: high caste Hindus and non-Hindus (Muslims) were more likely to report an antenatal problem than middle and lower caste Hindus. Similarly, there was a positive relationship between reporting of antenatal problems and educational level, and greater reported morbidity in urban than in rural areas. For postnatal problems, however, the socio-economic differences were smaller and in the opposite direction. Women from poorer households reported a higher incidence of symptoms of infection than those from more affluent households, and there was a parallel difference between low and high caste Hindus for both infections and for potentially life threatening conditions. There were no significant socio-economic difference in the incidence of reported symptoms during labour and delivery.
- The level of medical consultation during pregnancy was relatively high (80-100%). The prevalence of health-seeking for postnatal conditions tended to be lower. Only 70% sought advice or treatment for symptoms of infection and the percentage was even lower (57%) in the case of excessive postpartum bleeding. In the case of high fever, loss of consciousness or painful urination, on the other hand, a much higher proportion of women sought treatment (92.5%, 87.8% and 85.9%, respectively). Data on treatment of problems during labour and delivery are difficult to interpret. There were several life threatening conditions reported (e.g., ruptured uterus) for which no medical help had been sought, which calls to question the reliability of the reporting. On the other hand, there is some indication that emergency admissions for excessive bleeding, prolonged labour and loss of consciousness were relatively common.

### ABSTRACT NO. 41

**Author(s)** : Srinivasa, D. K., K. A. Narayan, Asha Oumagachi, et al.

**Title** : Prevalence of Maternal Morbidity in a South Indian Community

**Source** : Jawaharlal Nehru Institute of Post Graduate Medical Education and Research, Pondicherry, unpublished report

**Place of study** : South Arcot District, Tamil Nadu

**Period of study** : 1992-95

**Aims and objectives** : To estimate the prevalence of specific obstetric morbidities.

**Study conducted by** : Jawaharlal Nehru Institute of Post Graduate Medical Education and Research, Pondicherry

**Nature of study** : Retrospective data from cross-sectional community survey

#### **Methodology:**

From a sample frame of 13,245 households (61% rural and 39% urban), 3,686 women who had been pregnant in the previous two years were identified, without respect to the outcome of pregnancy. A total of 3,339 interviews were completed, covering 3,844 pregnancies in all.

The survey was conducted in two stages. Trained women investigators interviewed eligible women. In-depth interviews were conducted on a subset of 220 respondents who had suffered either chronic, serious or life threatening morbidities to capture their perceptions of seriousness. Clinical examinations were scheduled for 268 women with severe morbidities, of whom only 136 women reported for and underwent the examination.

#### **Findings:**

- The majority of the women (76.2%) were between 20-30 years of age. The mean number of pregnancies was  $2.6 \pm 1.5$ . A quarter of the women (25.6%) were primiparous. A majority of the women (81%) belonged to low or middle socio-economic status households. Almost half of the women (49.7%) worked for wages outside their homes.
- 98% of the women had antenatal check-ups from a government health centre (average of 3.2 visits). Of these, 44% of the women had their first visit in the first trimester.
- 88% of the 3,844 pregnancies resulted in live births, 2% in stillbirths and 6.8% in abortion. The proportion of pregnancies medically terminated was 3.5%.
- 90% of the deliveries were normal, 5.5% were delivered by caesarean section and for the remaining forceps had to be applied or vacuum extraction done.
- 60% of the deliveries were institutional.
- In 56% of the pregnancies one or more morbidities were reported: 39% in the antenatal period, 18.7% in the intrapartum and 24.6% during the postpartum period. Life threatening morbidity occurred in the antepartum period in 1.3% of the pregnancies, and in 2% each during intrapartum and postpartum periods. As for serious morbidities, the prevalence was 41% overall for all three phases combined, and 24%, 13% and 11% during the ante-, intra- and postpartum periods, respectively.
- Antepartum period: The most common life-threatening morbidities were antepartum bleeding (6/1,000), malaria (4/1,000) and fits/convulsions (2.6/1,000). Serious morbidities were severe vomiting, severe oedema of the hands and feet, fever of more than 3 days duration and pregnancy induced hypertension. Pre-existing risk conditions included heart disease, pulmonary tuberculosis, jaundice and diabetes mellitus.
- Only 4 of 48 women with a life threatening antepartum morbidity did not seek any treatment, and of these, 3 did not seek any help for antepartum bleeding. Of the severe morbidities, about a quarter of the women affected did not seek treatment for severe vomiting, fever lasting for more than 3 days and for symptoms indicative of pregnancy-induced hypertension, and about 14% did not seek treatment for swelling of the hands and face. This indicates a lack of awareness of the seriousness of these conditions.

- Intrapartum period: 17% of women reported morbidity of which 2% were potentially life threatening and about 9% were serious morbidities. Among the life threatening conditions, excessive bleeding was the most common (10/1,000), followed by loss of consciousness (9/1,000) and fits/convulsions (3/1,000). The three most common serious morbidities reported were early rupture of the membrane (34/1,000), abnormal position of the foetus (28/1,000) and labour more than 18 hours (14 per 1,000).
- Life threatening morbidities were slightly higher (23/1,000) among home deliveries compared to hospital deliveries (20/1,000). A larger proportion of women (87/1,000) delivering in hospitals reported genital tears, as compared to women delivering at home (30/1,000), indicating the poor quality of delivery care in hospital.
- Six percent of the women delivering in hospital had a c-section, and 4.2% of the deliveries were done by forceps or vacuum extraction.
- Postpartum period: Overall, women reported illnesses during the postpartum period in 23% of the pregnancies. Potentially life threatening conditions were reported in 3% of the pregnancies - excessive bleeding (18.3/1,000), fainting or unconsciousness (8.7/1,000) and fits (3.8/1,000). Fever of more than 3 days duration was reported by 43.8/1,000 pregnancies and pelvic pain in 35.4 per 1,000. Only a small proportion reported puerperal sepsis (7.2/1,000). Infection of the perineal tear, breast, incision of puerperal sterilisation and urinary infections were common.
- Ninety percent of the women with infective conditions sought treatment, with the exception of foul smelling lochia, for which only 56% sought medical help.
- Uterine prolapse was the most frequent condition reported in long-term morbidities, by about 3% of the women. Another 3% reported urinary incontinence, and about 1.6% had dyspareunia. Less than 20% of the women reporting these conditions sought medical help.
- Two women had recto-vaginal prolapse. Both had had obstructed labour, delivered in hospital and the fistula occurred after application of forceps. The fistula was subsequently repaired by surgery.
- For every maternal death there were 478.4 morbidities and there were 328.3 serious or life threatening morbidities.
- Two hundred and forty-five of the 3,844 pregnancies or 6.4% ended in a spontaneous abortion (miscarriage). Ninety-three percent of these women reported some morbidity following the miscarriage, and including excessive bleeding (81%), pain in the abdomen (79%) and fever (29%). About two-thirds of the women (68.7%) sought medical help, 27% in a government facility and 41.7% in a private facility. About 29% of them had to be admitted to hospital.

## ABSTRACT NO. 42

- Author(s)** : Chakraborty, S. C., N. P. Gupta, and S. N. Wadhwa
- Title** : Uretero-Vaginal Fistula Following Obstetric and Gynaecological Surgery
- Source** : Journal of Obstetrics and Gynaecology of India, 1993, pp. 285-288
- Place of study** : New Delhi, North India
- Period of study** : 1984-91
- Aim and objectives** : To review 12 cases of uretero-vaginal fistula.
- Study conducted by** : All India Institute of Medical Sciences, New Delhi
- Nature of study** : Retrospective, hospital-based

**Methodology:**

The sample consisted of 12 women referred to the hospital with a presentation of paradoxical urinary incontinence during the seven-year period of study.

**Findings:**

- 9/12 patients developed fistula due to total abdominal hysterectomy for benign disease of the uterus. 2/12 were due to cesarian section and 1/12 due to radical abdominal hysterectomy for carcinoma of the cervix.
- Paradoxical urinary incontinence was a constant symptom in all the patients.
- Per vaginal leak started 3 to 21 days after the surgery.
- Time interval between development of incontinence and definitive surgery of fistula varied from 4 days to 25 months.
- Uretero vaginal fistula was repaired successfully in all the cases in the first attempt. Four women developed urinary tract infection after surgery for fistula and were treated with specific antimicrobial therapy. One woman had infection, septicaemia and needed secondary sutures.

**ABSTRACT NO. 43**

**Author(s)** : Kansaria, J. J., Madhuri Patel, C. N. Purandare, et al.

**Title** : Review of Ten Cases of Vesico-Vaginal Fistulae

**Source** : Journal of Obstetrics and Gynaecology of India, 1995, pp. 910-912

**Place of study** : Mumbai (Bombay), Maharashtra

**Period of study** : Not specified

**Aims and objectives** : To review cases of vesico-vaginal fistulae to understand the etiology of the condition.

**Study conducted by** : J. J. Hospital, Mumbai (Bombay)

**Nature of study** : Case review, hospital-based

**Methodology:**

Ten cases of vesico-vaginal fistulae were reviewed. These patients had been referred with complaints of leaking of urine per vaginum. Routine speculum examination, swab test and cystoscopy were used to confirm the diagnosis, size and number of the fistulae. Urine culture sensitivity and excretory urography were also carried out. Repair of the fistula was carried out.

**Findings:**

- The fistula was caused in four patients following gynaecological surgery. Among six patients the fistula had followed obstetric trauma. All the cases resulted from prolonged obstructed labour. Four had had vaginal deliveries while two had had lower section c-section.

**ABSTRACT NO. 44**

- Author(s)** : Jacob, Molly, G. Wilfred, A. S. Kanagasabapathy, et al.
- Title** : Urinary N-Acetyl- $\beta$ -D-Glucosaminidase in the Prediction of Preeclampsia and Pregnancy-Induced Hypertension
- Source** : Australia New Zealand Journal of Obstetrics and Gynaecology, 33(4), 1993, pp. 395-397
- Place of study** : Vellore, Tamil Nadu
- Period of study** : Not specified
- Aims and objectives** : To study whether the elevation of Urinary N-Acetyl- $\beta$ -D-Glucosaminidase is apparent even before the onset of clinical signs and symptoms of pre-eclampsia and to ascertain whether this enzyme can act as a predictor of the disease.
- Study conducted by** : Christian Medical College, Vellore
- Nature of study** : Prospective, hospital-based

**Methodology:**

109 primigravidae between 24-34 weeks gestation with no history or evidence of hypertension, diabetes mellitus or renal disease formed the sample. They were enrolled after obtaining informed consent. A first morning fasting sample of urine was collected and N-Acetyl- $\beta$ -D-Glucosaminidase (NAG) was estimated spectrophotometrically. Urinary creatinine was measured based on the Jaffe method. Following this the women were reviewed at the time of delivery to detect the development of pre-eclampsia or pregnancy-induced hypertension. The results were correlated with the initial values and analysed using Chi-square and Student-tests.

**Findings:**

- 23/109 (25%) of the women developed pregnancy-induced hypertension while 5/109 (5.4%) qualified for the diagnosis of pre-eclampsia.
- Urinary NAG was found to be higher in the pregnancy-induced hypertension group when compared to the normo-tensive group, but the difference did not reach statistical significance.
- NAG levels were significantly higher in the pre-eclamptic group ( $p < 0.05$ ). The positive predictive value was low (21%), but the negative predictive value was as high as 98%. This test may thus be used to identify the group of women not likely to develop pre-eclampsia.

**ABSTRACT NO. 45**

- Author(s)** : Bhalla, A. K., G. I. Dhall, and K. Dhall
- Title** : A Safer and More Effective Treatment Regimen for Eclampsia
- Source** : Australia New Zealand Journal of Obstetrics and Gynaecology, 34(2), 1994, pp. 144-148

**Place of study** : Chandigarh, North India  
**Period of study** : October 1990 - February 1992  
**Aims and objectives** : To find out whether the synergistic action of magnesium sulphate and nifedipine could be used to reduce maternal and perinatal mortality and morbidity in patients with eclampsia.  
**Study conducted by** : Post Graduate Institute of Medical Education and Research, Chandigarh  
**Nature of study** : Prospective, hospital-based

**Methodology:**

Ninety-one consecutive patients with eclampsia were included in this study, and were randomly allocated either to a magnesium sulphate and nifedipine regime or to a lytic cocktail and nifedipine regime. The exclusion criteria were uncertain diagnosis and renal shutdown. Patients with postpartum eclampsia or with intra-uterine foetal death on admission were only considered for maternal outcome. Results were analysed by the Chi-square method. The relative risks and 95% confidence intervals were also calculated.

**Findings:**

- The recurrence rate of convulsions was 24.4% with the lytic cocktail and nifedipine regimen and 2.2% with the magnesium sulphate and nifedipine regimen (probably by increasing cerebral blood flow).
- Sudden hypotension was observed when nifedipine was used with lytic cocktail but not with magnesium sulphate.
- 8.8% of the patients treated with lytic cocktail regimen had respiratory depression and there were two maternal deaths, giving a maternal mortality rate of 4.4%. No such effect was observed in the magnesium sulphate regimen, and there were no maternal deaths in this group.
- 17.8% of the women treated with lytic cocktail regimen had aspiration pneumonia.

**Reviewer's note:**

The magnesium sulphate and nifedipine regimen for eclampsia in pregnancy has been in use in most developing countries since as early as the mid-1940s. Dr. Ronald Rome of Royal Women's Hospital, Melbourne introduced this regimen in 1947, and there are reports of its use even earlier in Jerusalem. It is surprising that this regimen was only being clinically tested in a medical institute of excellence in India as late as 1990.

**ABSTRACT NO. 46**

**Author(s)** : Misra, Madhusmita, and Sulabha Vavre  
**Title** : Labour Induction with Intracervical Prostaglandin E 2 Gel and Intravenous Oxytocin in Women with a Very Unfavourable Cervix  
**Source** : Australia New Zealand Journal of Obstetrics and Gynaecology, 34(5), 1994, pp. 511-515  
**Place of study** : Bhilai, Madhya Pradesh

**Period of study** : August 1992 - January 1994

**Aims and objectives** : To compare the efficacy of an escalating oxytocin infusion with a single dose of intracervical prostaglandin E2 Gel (PEG) application in inducing labour in women having an unfavorable cervix.

**Study conducted by** : Jawaharlal Nehru Hospital Research Centre, Bhilai

**Nature of study** : Prospective, hospital-based

**Methodology:**

263 consecutive women having an unfavourable cervix (modified Bishop score 0-3) and requiring induction of labour were randomly assigned to 2 groups. Group A was administered a single dose of intracervical prostaglandin E2 gel, while group B was administered oxytocin infusion for inducing labour. Group A had 136 women, and group B had 127. The women ranged from 28-42 weeks gestation. Those with premature rupture of the membranes, major degrees of cephalopelvic disproportion, malpresentations, intrauterine deaths, congenital anomalies not compatible with life were excluded from the study.

Uterine contractions of good intensity numbering 304 every 10 minutes and lasting 40-50 seconds were taken to indicate established labour. Induction was considered to have failed if the patients did not go into established labour even after receiving 64mU/min of oxytocin. For statistical analysis of results, the Student 't' test was used for comparison of means and Chi-square test for the comparison of proportions.

**Findings:**

- In primigravidas, labour was successfully established in 75% of the group A (n=60) and 77.8% group B (n=56). 21/60 group A women required further augmentation with oxytocin.
- The incidence of cesarian deliveries was high in primigravidas induced with oxytocin (47.2%), while in those receiving intracervical PEG2 the incidence was much lower (26.2%).
- At the end of 24 hours a significantly higher proportion of group A (73.8%) primigravidas had delivered vaginally compared to group B (52.8%) patients.
- Intracervical PGE appears to be more effective than oxytocin in inducing labour in primigravidas having an unfavourable cervix, while in multigravidas both methods are equally effective.

**ABSTRACT NO. 47**

**Author** : Mathews, J. E., Susan George, Prasad Mathews, et al.

**Title** : The Griess Test: An Inexpensive Screening Test for Asymptomatic Bacteriuria in Pregnancy

**Source** : Australia New Zealand Journal of Obstetrics and Gynaecology, 38(4), 1998, pp. 407-410

**Place of study** : Vellore, Tamilnadu

**Period of study** : Not specified

**Aims and objectives** : To compare urine microscopy and the Griess test as a screening test for asymptomatic bacteriuria in pregnancy.

**Study conducted by** : Christian Medical College, Vellore

**Nature of study** : Prospective, hospital-based

**Methodology:**

483 pregnant women booked for antenatal care formed the sample. Urine microscopy and urine culture were done on a random sample of urine. Griess test was done for all the women on the first voided sample or on a sample that had been in the urinary bladder for at least 16 hours. The test was done immediately after the patient voided.

**Findings:**

- 30/438 (6.8%) positive urine cultures were obtained of whom 23 were caused by gram negative bacilli.
- The Griess test detected 18/23 infections caused by gram negative bacilli and 1/2 caused by staphylococci.
- Eight women had significant growth on culture not detected by either of the tests.
- The sensitivity of the Griess test was 63.3%, specificity 99.5%, +ve predictive value 90.5% and -ve predictive value 97.4%. When only gram -ve infections were considered the sensitivity was 78%.
- The sensitivity of urine microscopy was 60%, specificity 85.6%, +ve predictive value 21.1% and -ve predictive value 96.6%.
- The Griess test is a simple and inexpensive test that has the same sensitivity as urine microscopy, but greater specificity and positive predictive value for the detection of asymptomatic bacteriuria in pregnancy than urine microscopy.

**Reviewer's note:**

Asymptomatic bacteriuria in pregnancy can have potentially serious consequences such as intrauterine growth retardation of the foetus and preterm labour. The Griess test is a relatively well known test used in many developed countries to detect this condition. In recent years this test can be performed with commercially available dipsticks without necessity for preparation of the Griess reagent.

**ABSTRACT NO. 48**

**Author** : Bharadwaj, Neelam, J. A. Kukade, Savita Patil, et al.

**Title** : Randomised Controlled Trial on Modified Squatting Position of Delivery

**Source** : Indian Journal of Maternal and Child Health, 6(2), 1995, pp. 33-39

**Place of study** : Latur, Maharashtra

**Period of study** : 01 January 1992 to 30 September 1992 (9 months)

**Aims and objectives** : To compare whether there is any advantage in using a modified squatting position over the lithotomy position practiced in the hospitals.

**Study conducted by** : Vivekananda Medical Foundation and Research Centre, Latur

**Nature of study** : Prospective, hospital-based



### Methodology:

Criteria for inclusion of pregnant women was 'completed 37 weeks of gestation,' vertex presentation and no antenatal risk factor. Exclusion criteria were all the women who were high-risk pregnancies. All presentations other than vertex, antepartum haemorrhage, severe anaemia, women with cephalopelvic disproportion, premature labour and those who refused to squat were excluded from the trial. Statistical analysis was done applying Chi-square test, Mann-Whitney test and 't' tests for distribution of continuous variables.

412 women registered for labour. Of these, 79 did not meet the inclusion criteria. The remaining 326 women were part of the trial. By a method of randomisation (odd numbers were to squat and even numbered had to have lithotomy), 145 women used the modified squatting position as compared to 181 women who used the lithotomy position.

### Findings:

*Total mean time spent during second stage of labour*

- Modified squatting position (MSP) 34.13 ± 18.29 minutes
- Lithotomy position (LP) 39.92 ± 15.75 minutes

*Primigravida (second stage of labour)*

- Modified squatting position 47.07 ± 11.58 minutes
- Lithotomy position 50.46 ± 18.39 minutes

*Second and above gravida (second stage of labour)*

- Modified squatting position 21.20 ± 12.95 minutes
- Lithotomy position 28.18 ± 19.83 minutes

*Complications*

- Postpartum haemorrhage: MSP- 3/145 (2.07%); LP - 6/181 (3.31%)
- Foetal distress: MSP - 5/145 (3.44%); LP - 14/181 (7.73%)
- Perineal tears:
  - First degree perineal tears: MSP - 12/145 (8.28%); LP - 7/181 (3.87%)
  - Second degree perineal tears: MSP - 5/145 (3.44%); LP - 10/181 (5.52%)
  - Third degree perineal tears: MSP - 1/145 (0.68%); LP - 1/181 (0.55%)
- Postpartum vulval oedema was observed only among women in squatting position.
- Among the women (145) who used the modified squatting position, around 87% women said that the position was convenient and 67% said they would like to adopt this position in their next labour.

## ABSTRACT NO. 49

<b>Author</b>	: Kaur, Harveen, Ashi R. Sarin, and Ravinder P. Kaur
<b>Title</b>	: Role of Sonography in Placenta Previa
<b>Source</b>	: Indian Journal of Maternal and Child Health, 4(4), 1993, pp. 111-113
<b>Place of study</b>	: Patiala, Punjab
<b>Period of study</b>	: Not specified
<b>Aims and objectives</b>	: To assess the accuracy of placental localisation to detect placenta previa using sonography.
<b>Study conducted by</b>	: Government Medical College, Patiala

**Nature of study** : Prospective, hospital-based

**Methodology:**

The study enrolled 100 women (50 with clinically suspected placenta previa presenting with antepartum haemorrhage, and 50 control or non-bleeding cases) after 28 weeks of pregnancy. Women with other medical or obstetric problems (except previous cesarian section) were excluded. Sonography was done using a sonoline SL2 real time B-mode scanner using a 3.5 Mhz abdominal transducer.

**Findings:**

- On sonography it was found that only 27/50 previously diagnosed as having placenta previa actually had the condition. Six cases of asymptomatic previa from the control group were detected by ultrasound. The sensitivity and specificity of ultrasound in detecting placenta previa was 96.8% and 98.8%, respectively.

**ABSTRACT NO. 50**

**Author(s)** : Vijaykumar, K., V. Ramankutty, and C. R. Soman

**Title** : Iron Supplementation During Pregnancy: How Effective Is the Policy in Kerala?

**Source** : Health Action by People, Thiruvananthapuram, unpublished report (year not stated)

**Place of study** : Rural and Urban Thiruvananthapuram, Kerala

**Period of study** : Not specified

**Aims and objectives** : To assess whether the distribution of iron and folic acid tablets through primary health centres has had a positive impact on the haemoglobin status of women using antenatal services at these centres.

**Study conducted by** : Health Action by People, Thiruvananthapuram, Kerala

**Nature of study** : Prospective, health facility based interviews and clinical/laboratory investigation

**Methodology:**

A sample of pregnant women reporting to outpatient departments of government health centres and hospitals in and around Thiruvananthapuram city were interviewed using a structured questionnaire. This was followed by estimation of their haemoglobin level by cyan-methemoglobin method. (Sample size is not mentioned.)

**Findings:**

- The mean haemoglobin level in these subjects was 11.8 + /-1.6gms/dL. The prevalence of anaemia as defined by a haemoglobin level below 11.0gms/L was 29.6%. 11.2% had a haemoglobin level below 10.0gms/L.

- Factors such as age, socio-economic stratum, parity and presence of complications had little influence on prevalence of anaemia. Women presenting to rural institutions had a higher prevalence of anaemia (39.1%) as compared with women presenting to urban institutions (23.2%). This difference may be explained by the higher percentage of urban women in the earlier trimesters of pregnancy who report for antenatal check-up.
- In Kerala, in spite of the universality of antenatal services, promotion of early registration during pregnancy may help in bringing the prevalence of anaemia among pregnant women further down.

## ABSTRACT NO. 51

- Author(s)** : Suresh, Sarada
- Title** : Interventions to Reduce Maternal Anaemia among the Urban Poor in Tamil Nadu: Baseline Survey in Two Towns in Tamil Nadu, Tirupur and Dindigul
- Source** : Epidemiological Report of UNICEF Sponsored Operations Research Project, Clinical Epidemiology Unit, Madras Medical College and Research Institute, Chennai 3, 1997-98
- Place of study** : Tirupur and Dindigul, Tamil Nadu
- Period of study** : 1997-98
- Aims and objectives** : To evaluate the prevalence of anaemia and assess associated risk factors.
- Study conducted by** : Clinical Epidemiology Unit, Madras Medical College and Research Institute, Chennai 3
- Nature of study** : Community-based operations research study

### Methodology:

It was proposed to compare the performance of the existing government delivery system with two alternate approaches. In the first, the most peripheral field level functionaries were empowered to analyse the problem of maternal anaemia and decide on interventions and methods of implementation with support from the supervisory system. In the second approach, local community members, particularly women's groups, were empowered to assess and analyse the problem of maternal anaemia and to design and implement interventions in partnership with local field functionaries.

The study was conducted in two towns in Tamil Nadu. Each intervention was studied in both the towns. A baseline evaluation was done at the beginning of study by an external team who also collected demographic and socio-economic data from all women. The questionnaires included risk factors for anaemia, as well as obstetric history and outcomes.

Based on an assumption of 20% prevalence of anaemia in women aged 15-45 years, 862 women needed to be sampled in four areas, two of which were study areas and two were control areas. The following 12 factors were included for calculation of socio-economic status (SES) scores to study association with risk of anaemia: SC/ST, uneducated, children under five years, no food for two meals/day, no income or one income family, alcoholism, presence of a disabled person in the household, presence of child labour in the household, no toilet, no drinking water, dilapidated house and female headed family.

This report presents the results of the baseline evaluation.

**Findings:**

- Anaemia was widely prevalent, with the median level being 9gms/L in all four areas of Dindigul, and 11gms/L in Tirupur.
- Less than 50% of currently pregnant women were found to be taking iron supplements in any form, and postnatal supplementation was almost nonexistent.
- Low socio-economic status, large family size, poor weight (<40 kgs) were significantly associated in risk factors for acute anaemia (<7gm) in both towns. Age of women was not found to be associated with anaemia.

**ABSTRACT NO. 52**

- Author(s)** : Rajarathinam, Jolly, Kumar Sampath, and Abel Rajarathinam
- Title** : Qualitative Research on Maternal Anaemia: Provider and Client Perspectives and Applications
- Source** : R.U.H.S.A. Department, Christian Medical College, Vellore, Tamil Nadu, report of a project supported by USAID and John Snow, Inc., 1996
- Place of study** : Vellore, Tamil Nadu
- Period of study** : November-December 1996
- Aims and objectives** : This is a qualitative study and part of a larger operations research project to prevent and control anaemia among pregnant women. The objectives of the present study are to know the perceptions, knowledge, beliefs and practices related to maternal anaemia, iron and folic acid supplementation, and food consumption during pregnancy, knowledge of symptoms and causes of maternal anaemia.
- Study conducted by** : R.U.H.S.A. Department, Christian Medical College, Vellore, Tamil Nadu
- Nature of study** : Prospective, community-based, qualitative study

**Methodology:**

Two key informant interviews, 11 focus group discussions, 6 seasonality analyses, 2 narratives and 2 scenarios were carried out in the project areas. Pregnant women, farmers, family care volunteers, health aides, Rural Community Officers, a doctor from an NGO and government health functionaries were interviewed.

**Findings:**

- Recognition of maternal problems associated with maternal anaemia was negligible. This was the case also among many health providers.
- Pregnant women perceived low level of blood in the body to be maternal anaemia, and knew that it resulted in weakness and paleness. Pregnant women did not know the word 'Ratha Sogai' (Tamil word for maternal anaemia).
- Both pregnant women and health care providers related angular stomatitis with anaemia.
- Both the general public interviewed and traditional leaders assumed jaundice and anaemia to be related diseases due to commonality of term.

- Counselling given on iron and folic acid supplementation was neither comprehensive nor uniform. Counselling was on dietary intake and iron rich food, but not specific and often unrelated to maternal anaemia and the way it was perceived in the community.
- The belief that "eating more food will result in a big baby" was prevalent in the community. The hot and cold foods avoided by pregnant women included green leafy vegetables.
- Specific information on consuming iron rich food, on levels of iron absorption and enhancers/inhibitors of iron absorption was not known in the community or among health care providers.

### ABSTRACT NO. 53

- Author(s)** : Ramasubban, Radhika, and Bhanwar Singh
- Title** : Gender, Reproductive Health and Weakness Experiences of Slum Dwelling Women in Bombay, India"
- Source** : A paper presented at the seminar on 'Cultural Perspectives on Reproductive Health," IUSSP Committee on Reproductive Health and Department of Community Health, University of Witwatersand, Rustenburg, South Africa, 16-19 June 1997.
- Place of study** : Mumbai (Bombay), Maharashtra
- Period of study** : Not specified
- Aims and objectives** : To delineate the experiences of slum dwelling women regarding 'weakness' and explore its linkages to reproductive health problems.
- Study conducted by** : Centre for Social and Technological Change, Mumbai
- Nature of study** : Community-based study, exploratory

#### Methodology:

The sample consisted of 60 ever-married women, randomly selected from a list of around 300 women in the age group of 20-45 years. The sample was drawn from two wards with the highest concentration of poor scheduled caste population.

Data were collected through intensive qualitative investigation.

1st round interviews: collection of life histories, pregnancy and obstetric histories, health service use patterns and support systems.

2nd round interviews: detailed probe into specific illnesses and morbidities related to vaginal discharge, menstruation, urinary problems, prolapse, back pain, weakness, sexual problems and mental tensions.

The interviews were followed by clinical investigations to meet ethical considerations of providing treatment and gain further insight into health seeking behaviour and family dynamics. There were also key informant interviews with local health care providers, men, older menopausal women and adolescent girls.

#### Findings:

The study was still in progress when the paper was written, hence the observations are tentative and not comprehensive.

- 58/60 women reported 'weakness.' Local expressions were used to convey weakness associated with particular symptoms and mental states and are very specific in their connotations. The most common description was that of feeling physically ill all the time, and of wanting to lie down and sleep never to get up.
- Generalised state of helplessness or weakness are expressed as: "*we are a weak household because we are engulfed by poverty;*" "*A woman has reduced herself to a position of weakness by not being able to entice her husband into her grip.*"

Causes of weakness as perceived by women:

- *neglect of diet*: Very few women consciously attribute this as a cause, on probing however some admit this as a cause.
- *pregnancy and childbirth*: Women were able to identify which one of their pregnancies that sparked their problems of weakness.
- *experience of sterilisation*: It was an oft-cited cause of weakness, descriptions of symptoms overlap descriptions of reproductive health problems.
- *white discharge*: Around half the women reported problems of white discharge, which was seen as a result of weakness.
- *TB*: None of the women consciously associated this with weakness.
- *excessive housework*: Capacity to do housework was described as being affected by mental distress, leaving no will to work.
- *menstruation*: This was associated with weakness.
- *mental stress*: It was a universally cited cause of weakness.

Weakness as contextualised in pregnancy, reproductive health, life circumstances and health seeking behaviour:

- Very few women mentioned that neglect during childhood and pregnancy could be a deep-rooted cause of their weakness.
- Inability to make a separate dietary provision for oneself during pregnancy, despite problems of vomiting and inability to retain food virtually throughout pregnancy was cited universally (up to 30% reported deficient caloric and protein intake).
- All advice: special foods, reduced housework other than the most minimal medical intervention (anti-vomiting pills) are not acted upon.
- The ideological conditioning (women as providing for men and children's needs first) seemed to render women unable to surmount the health education argument that a woman has a responsibility to herself for her own health.

Weakness relating to pregnancy and childbirth: problems during delivery, post delivery/postabortion/post-child loss:

- Those who had experienced spontaneous abortions or perinatal child loss (50% of women experienced either of these conditions) strongly associated problems of pregnancies and onset of chronic feeling of weakness.
- Cleaning of the 'bag' or uterus (the local description for dilation and curettage or D and C) resorted to as a fertility inducing measure led to successive spontaneous abortions, and perinatal deaths with attendant physical disability and mental trauma in some cases.
- Post-delivery/postabortion/post-child loss weakness was associated with lack of blood, TB, mental tension, etc. The period following foetal loss was associated with severe physical and mental trauma (including violent assaults by the spouse).

Weakness after sterilisation:

- An overwhelming majority of the women were sterilised. It was resorted to as early as 23-25 years. There was a strong association between weakness and sterilisation even though the women opted for it.

Health seeking behaviour for weakness:

- Health seeking behaviour is haphazard, visits are kept to a minimum and take place only when distress is so acute that housework is not possible.

## ABSTRACT NO. 54

- Author(s)** : Ooman, Nandini
- Title** : Poverty and Pathology: Rajasthani Women's Perceptions of Gynaecological Morbidity and Their Implications for Research and Intervention
- Source** : Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India, 28 February - 1 March 2000
- Place of study** : Bikaner District, Rajasthan
- Period of study** : May 1993 - April 1994
- Aims and objectives** : To study the determinants of morbidity as perceived by women in relation to their socio-economic context.
- Study conducted by** : Author
- Nature of study** : Cross-sectional, community-based survey, qualitative ethnographic and clinical

### Methodology:

The quantitative survey included 250 women. The study was carried out in three phases: ethnographic, survey and clinical. To collect information multiple ethnographic methods were used. Key informant interviews (16 informants), focus groups (3), body mapping (2 sessions), participant observation (5), direct observation (6), free listing (3), past illness narratives (10) and semi-structured interviews (4).

### Findings:

- 47.9% of the women (n=240) reported menstrual problems. The causes as described ranged from weakness, worry, abortions, problems in delivery, eating hot foods, drinking too much tea, wearing a Copper-T and men sleeping with other women.
- 20% of the women (n=250) reported prolapse although they could not distinguish between vaginal and uterine prolapse.
- Weakness in the house (economic hardship) is considered the significant underlying cause of all women's illnesses. The pathway charted by the women was that economic hardship led to physiological weakness (although the author gives no clear pathways or explanations).
- In case of illness the most frequently informed person was the husband. This was seen across all ages.
- The majority of the women did not seek any treatment for discharge, menstrual problems or prolapse.

## ABSTRACT NO. 55

- Author(s)** : Visaria, Leela
- Title** : Gynaecological Morbidity in Rural Gujarat: Some Preliminary Findings
- Source** : Ford Foundation, New Delhi, unpublished monograph
- Place of study** : Kheda District (rural), Gujarat

**Period of study** : 1995-96

**Aims and objectives** : To estimate the level of gynaecological morbidity among different socio-economic groups and to assess the extent of medical care sought by women.

**Study conducted by** : Gujarat Institute of Development Research, Ahmedabad

**Nature of study** : Cross-sectional community-based

#### **Methodology:**

The sample included 800 women (16-60 years) from five contiguous villages in Kheda district, representing nearly half of all ever-married women in the five villages. Field work was done in four rounds:

1st round: Five group discussions were held to understand descriptions and terminologies in the local language. After the discussions, the interview schedule was prepared.

2nd round: Canvassing of the schedule among the 800 women, for self-reported morbidity.

3rd round: Clinical examination of the women.

4th round: Results were shared with the women from the villages and women undergoing treatment were followed up.

#### **Findings:**

- 75% of the women reported some disorder or problem with their reproductive functions. The average number of episodes of illness was 3.6.
- 51.6% reported backache before or during menses of whom 4.9% sought treatment. 22% described menstrual periods as painful (having to lie down or take rest for a few hours).
- 35.7% reported excessive vaginal discharge (excessive when petticoat/sari was soiled). 14% each complained of itching sensation in the vaginal area and painful sexual intercourse. Incontinence and genital prolapse were reported by 8% and 3%, respectively.
- Only about a third of the women discussed their problems with their family members. The majority of these discussed the problem with their husbands.
- Among those who reported illnesses, 88-98% had not sought any treatment. Reasons given included high cost of treatment since government health facilities did not provide any treatment for these reproductive health problems. Also, private practitioners often asked the women to bring their husbands, which was rarely possible.
- 97% of those who reported painful sexual intercourse did not seek any medical treatment, although a third had conveyed their problem to their husbands. As for vaginal discharges, it appeared that the more severe the problem, the less likely the women were to seek treatment until it reached beyond their endurance limits.
- Although not statistically significant, a greater proportion of scheduled caste women discussed problems related to vaginal discharge or sensation of itching and bad odour and painful sexual intercourse with other members of the household than women from other groups (other Hindus and Muslims).
- A higher proportion of better educated women tended to talk about their problems (mainly to their husbands) as compared to those with no education. Treatment seeking behaviour did not indicate any clear pattern related to the women's level of education.



- Author(s)** : Bhatia, J. C., and John Cleland
- Title** : Self-Reported Symptoms of Gynaecological Morbidity and Their Treatment in South India
- Source** : Studies in Family Planning, 26(4), 1995, pp. 203-216
- Place of study** : One sub-district of Karnataka
- Period of study** : Not specified
- Aims and objectives** : To analyse self-reported symptoms of gynaecological problems among women and women's treatment seeking behaviour for these problems.
- Study conducted by** : The authors
- Nature of study** : Cross-sectional community survey

**Methodology:**

The sample consisted of 3,600 women (2,400 rural and 1,200 urban) below 35 years and having at least one child younger than five. Information was collected through pre-tested questionnaires. Prevalence is described by frequency distributions and then cross-tabulated by duration and treatment sought. Four symptom groups most commonly reported were selected for further analysis.

**Findings:**

- Anaemia (23.4%) and lower reproductive tract infections (16.9%) followed by menstrual problems (7.3%) and acute pelvic inflammatory diseases (5.2%) were the most frequently reported conditions.
- 20-50% of these women reported that their symptoms lasted for more than one year. The mean duration was between 12 months for symptoms associated with prolapse and 26 months for vaginal/coloured vaginal discharge.
- With the exception of infertility, the proportions who had sought treatment were constant for all other conditions and ranged from 43%-55%.
- Women from households of lower economic status, who had fewer than six years of schooling and lower caste backgrounds were more likely to report symptoms of illness than are other women. Urban/rural differences were, however, inconsistent with this pattern, with a greater proportion of urban women reporting problems.
- Higher caste Hindus were less likely to report symptoms suggestive of acute PID and anaemia than non-Hindu women.
- Reporting of all symptom categories except menstrual problems was significantly higher among women who had undergone tubectomy than among those not using a method or were using a reversible method.

- Author(s)** : Bhatia, J. C., John Cleland, Leela Bhagavan, et al.
- Title** : Levels and Determinants of Gynaecological Morbidity in a District of South India
- Source** : Studies in Family Planning, 28(2), June 1997, pp. 95-103
- Place of study** : One sub-district of Karnataka
- Period of study** : 1993
- Aims and objectives** : To determine the levels and determinants of gynaecological morbidity and other related conditions among currently married women below 35 years of age.
- Study conducted by** : The authors
- Nature of study** : Cross-sectional, community survey

**Methodology:**

385 women having children between 6-12 months, married and younger than 35 years formed the study sample. The original sample consisted of 440 women, of whom 23 were lost to follow-up, 11 refused to participate in clinical examination, 17 could not be examined because they were menstruating at the time, and 4 women's specimens were rejected by the laboratory.

The women were interviewed at monthly intervals for one year and then invited to undergo a medical examination. A gynaecologist took menstrual histories, anthropometric measurements, conducted a general medical examination, and carried out speculum examination. Specimens were taken from the cervix and posterior fornix. After removal of the speculum a bimanual examination was performed to determine if tenderness was present. Five (5ml) of venous blood was collected for haemoglobin and VDRL assessments. A mid-stream urine sample was taken to assess urinary tract infections.

**Findings:**

- 152/385 women reported 226 gynaecological complaints. The average number of complaints was 1.5. Excessive weakness (23%), vaginal discharge with bad odour, itching or irritation (22%), lower abdominal pain or vaginal discharge with fever (16%), menstrual bleeding disorders or painful menstruation/spotting (15%).
- Approximately one-tenth of the women suffered from STDs: trichomonal vaginalis (8%), gonorrhoea (1%), chlamydia trachomatis (1%) and syphilis (2%).
- More than one-half of the women were found to have endogenous infections: bacterial vaginosis (18.2%), mucopurulent cervicitis (36.6%), candida albicans (5.2%) and cervical cell changes (1%).
- Clinical examination revealed vaginitis (13.4%), cervicitis (23.9%), cervical ectopy (10%), pelvic inflammatory disease (PID) (10.7%), genital prolapse (3.4%), fistula (0.3%) and dyspareunia (1.5%).
- Severe anaemia was found in 17% of women while 67% of women were mildly anaemic.
- Severe chronic energy deficiency (CED) was found in 12% of women, moderate (16%) and mild (29%).
- Severe CED was observed to be significantly related to clinically diagnosed RTIs. Women with grade III CED were two times more likely to have a clinically diagnosed RTI than those not having this condition.
- Women with clinically diagnosed PID were three times more likely than those who are not so diagnosed to report menstrual problems. Also women with laboratory detected STDs had a three times greater risk of having PID than do women with no detected STDs.

## ABSTRACT NO. 58

- Author(s)** : Shenoy, K. T., Sheela Shenoy, and Kaveri Gopalakrishnan
- Title** : Reproductive Health and Gynaecological Morbidity in Kerala
- Source** : Discussion paper series 21, Studies on Human Development in India, UNDP project, Centre for Development Studies, Thiruvananthapuram, January 1997
- Place of study** : Thiruvananthapuram, Kerala
- Period of study** : 1995-96
- Aims and objectives** : To study the reported and clinically manifest gynaecological morbidity and to assess the sensitivity and specificity of reported symptoms as against clinical and cytological examination.
- Study conducted by** : UNDP Project on Human Development in India, Centre for Development Studies, Thiruvananthapuram
- Nature of study** : Cross-sectional community health interview survey with clinical and cytological examinations

### Methodology:

1,383 women (age 13-68 years) were selected from five panchayats of Thiruvananthapuram district by cluster sampling. Data on demographic variables and reported gynaecological morbidity were collected through a structured interview. Clinical examination was carried out, and the cytological smear was analysed in a laboratory.

### Findings:

- Of 1,383 women, 30% had had a prior gynaecological consultation. Reported morbidity included vaginal itching (10.8%), discharge per vaginum (26.8%), lower abdominal pain (27.5%) and back pain (50.4%). Vaginal discharge, dyspareunia, menstrual problems and lower abdominal pain and backpain were significantly higher in the age group 20-39 years ( $p < 0.001$ ).
- Sensitivity of clinically diagnosed vaginitis with reported vaginal discharge was 75%, and specificity, 76%. The sensitivity and specificity of reported vaginal discharge with abnormal cytology were 69% and 68%, respectively.
- Genital prolapse and parity  $\geq 3$  were associated ( $p = 0.0001$ ).
- On multivariate analysis for disease, women who had postpartum sterilisation had 26 times (95% CI 13.3-50.9;  $p < 0.001$ ) higher risk for gynaecological morbidity. Women who had parity 3 or more had 2.1 times higher risk for illness (95% CI 1.1-3.5;  $p < 0.003$ ).

## ABSTRACT NO. 59

- Author(s)** : Prasad H. J., V. George, K. M. Lalitha, et al.
- Title** : Prevalence of Reproductive Tract Infections among Adolescents in a Rural Community in Tamil Nadu

**Source** : Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India, 28 February - 1 March 2000

**Place of study** : Kaniyambadi block, Vellore, Tamil Nadu

**Period of study** : June 1996 - November 1996

**Aims and objectives** : To determine the nature and extent of gynaecological morbidity including reproductive tract infections in young married women.

**Study conducted by** : Christian Medical College, Vellore

**Nature of study** : Community survey with clinical and laboratory investigation

**Methodology:**

Thirteen villages in the block (purposive sampling) and 451 married women in the age group of 16-22 years formed the study sample. Information was collected from the women on their menstrual and sexual history, obstetric history and perceived gynaecological symptoms. Mid-stream urine samples were obtained using aseptic precautions for culture. A 5ml blood sample was obtained for doing serological tests. A speculum examination was done and three vaginal swabs were taken. After sufficient cleaning of the ectocervix, three endocervical swabs were also taken, and a clinical diagnosis of vaginitis/vaginosis /cervicitis was made by the investigator.

**Findings:**

- 59% (265/415) reported one or more gynaecological problems. 48.5% had reproductive tract infections (as diagnosed by clinical/laboratory examination), 8% had a history of menorrhagia, 9% infertility, 7% urinary tract infections and 0.7% history of genital prolapse.
- Among the reproductive tract infections, bacterial vaginosis was seen in 18% and trichomoniasis in 13% of women. 10% were considered to have invasive type of candidiasis. 1.8% of the women were positive for Hepatitis B.
- Prevalence of reproductive tract infections in symptomatic women was 58% and 38% in asymptomatic women.
- Only 35% of the women had sought treatment, a majority of whom approached unqualified/traditional practitioners.

**ABSTRACT NO. 60**

**Author(s)** : Jaswal, Surinder

**Title** : Gynaecological Morbidity among Urban Thane Slum Women

**Source** : Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India, 28 February - 1 March 2000

**Place of study** : Thane, Mumbai, Maharashtra

**Period of study** : Not stated

**Aims and objectives** : To study the experience of low income urban women's experiences of gynaecological morbidity and common mental disorders.

**Study conducted by** : Author

**Nature of study** : Cross-sectional, community survey and qualitative in-depth interviews

**Methodology:**

The sample consisted of 660 women from three contiguous low income communities. Thirty-six of these women were taken for in-depth interviews (purposive sampling). Rapid assessment procedures of free listing, ranking and body mapping were used to aid data collection during the in-depth interviews. Inclusion criteria were used for selection: residing in the community, ever married in the reproductive age group (16-45 years), married for at least two years, not currently pregnant, not menopausal, not postnatal amenorrhoea and no history of severe mental illness were eligible for the study.

**Findings:**

- 33% (n=660) of the women reported reproductive tract infections, 26.4% menstrual problems, 13.9% urinary infections, 12.1% utero-vaginal prolapse and 5.3% infertility.
- Breakdown by age showed that those in the 26-35 age group reported the highest percent of morbidities. (Note: this is difficult to ascertain because the total number of women in this age group who are a part of the sample is not mentioned anywhere.)
- Women described symptoms and morbidities as women's illnesses and this was irrespective of ethnic groups or religious beliefs. For example, white discharge was perceived as a result of frequent intercourse, and lower abdominal pain as a consequence of heavy work.

**ABSTRACT NO. 61**

**Author(s)** : Char, Arundati, and Shilpa Vaidya

**Title** : Gynaecological Morbidity among Women Seeking Sterilisation Services in Rural Maharashtra

**Source** : Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India, 28 February - 1 March 2000

**Place of study** : Palghar, Thane, Maharashtra

**Period of study** : March 1997 - June 1998

**Aims and objectives** : To ascertain the extent of gynaecological morbidity among currently married women before and after undergoing sterilisation.

**Study conducted by** : Authors

**Nature of study** : Prospective, health-interview survey and clinical investigation

**Methodology:**

The sample included 511 women. In all, four types of interviews were conducted - first prior to sterilisation, the second a week later, the third a month later and finally six months following sterilisation. A control group of women who had undergone sterilisation at the same primary health centre at a later date were also interviewed at six months post-sterilisation to assess differences in perceived morbidity. Information was collected mainly through a semi-structured questionnaire. A medical checklist was used to collect and compile the information based on the clinician's clinical examination.

**Findings:**

- 37% of the women reported the occurrence of at least one problem during the three months prior to sterilisation. Of these, 17% reported painful periods, 13% menorrhagia (defined as more than six days of bleeding), 12% irregular periods and 5.3% of flow with clots.
- Around 7% of those who reported a problem reported abnormal discharge (excessive) and 5.3% reported lower backache.
- Clinically diagnosed morbidity revealed that 29% of the women had at least one morbidity. More than one-fourth (26%, 133/511) were found to suffer from vaginal prolapse. First degree uterine prolapse was found in 9.4%, abnormal discharge in 19.6% and vulva vagina abnormal in 10.5%. Pelvic inflammatory disease was seen in 5.3%, vaginal infection in 8.6% and cervical infection in 4.1%.
- Laboratory tests revealed that 7% of the women suffered from syphilis and 6.6% from bacterial vaginosis.

**Reviewer's note:**

No information from the post-sterilisation interviews on both the study and control group has been provided. Ethical considerations did play a major role in this study where all those diagnosed were given treatment and in some cases the sterilisation procedure deferred to a later date.

**ABSTRACT NO. 62**

- Author(s)** : Ramasubban, Radhika, and Bhanwar Rishyasringa
- Title** : Treatment Seeking by Women in Mumbai Slums
- Source** : Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India, 28 February - 1 March 2000
- Place of study** : Mumbai, Maharashtra
- Period of study** : Not specified
- Aims and objectives** : To gain insights into health seeking behaviour among poor urban women.
- Study conducted by** : Authors
- Nature of study** : Community-based, qualitative investigation

**Methodology:**

The sample included 60 ever-married women. The sampling procedure was not stated.

**Findings:**

- One-third of the women reported problems in relation to the menstrual cycle. The most common complaint (50%) was of irregular periods, both in duration and interval. The main cause of the problem as perceived by the women was due to excess consumption of pickles, jaggery, fruits such as papaya, and chillies. Only about 40% of those with this problem sought medical care.
- 50% of the women reported white discharge of whom 40% felt it was serious enough to be seen as a problem, while among the remaining treatment was rarely sought.
- One-third of the women also reported other problems such as boils and painful intercourse, and 15% of them had sought treatment but were not satisfied with the treatment because the cure was not permanent.
- A third of the women reported burning during micturition and urinary stress incontinence.

## ABSTRACT NO. 63

- Author(s)** : Joshi, Archana, Mrinalika Dhapola, and J. Pertti Pelto
- Title** : Gynaecological Problems: Perceptions and Treatment Seeking Behaviours of Rural Gujarati Women
- Source** : Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India, 28 February - 1 March 2000
- Place of study** : Vadodara district, Gujarat
- Period of study** : Not specified
- Aims and objectives** : To study women's perceptions and understanding of reproductive health problems.
- Study conducted by** : Operations Research Group, Centre for Social Research
- Nature of study** : Ethnographic study

### Methodology:

The sample included 69 women from eight villages who were successfully contacted at least five times.

### Findings:

- A total of 122 episodes of reproductive health problems were reported.
- Among these episodes, 55 were related to white discharge, 36 to urino-genital problems, 21 to menstrual problems, 7 to infertility and 3 to prolapsed uterus.
- Heat was perceived to be the main underlying cause of the reproductive health problems. The concept of heat and its relation to episodes experienced was as follows: Intake of hot foods (20 episodes), sexual intercourse (11 episodes), high temperature (10 episodes), hot body constitution (5 episodes) and hot medicines (4 episodes).
- 54/69 women had sought some form of treatment including home remedies. The treatment sought was not confined to a particular system of care (traditional, allopathic, homeopathic, and so forth) but were a mix of various systems.

## ABSTRACT NO. 64

- Author(s)** : Koenig, Michael, Shireen Jejeebhoy, Sagri Singh, et al.
- Title** : Investigating Women's Gynaecological Morbidity in India: Not Just Another KAP Survey
- Source** : Reproductive Health Matters, 6(11), 1998
- Place of study** : Maharashtra, West Bengal, Gujarat, Rajasthan and Karnataka
- Period of study** : 1985-94

**Aims and objectives** : To review seven community-based studies on gynaecological morbidity in women of reproductive age.

**Study conducted by** : The review covers seven studies conducted by the Indian Institute of Management, Bangalore (Karnataka, 1992); SEARCH (Maharashtra, 1989); CINI (West Bengal, 1990-91); Baroda Citizens Council (Baroda, 1988-89); SEWA-Rural (Gujarat, 1988-89); Streehitkarini (Bombay, 1988-89); and URMUL Trust (Rajasthan, 1994).

**Nature of study** : Review

### **Methodology:**

All of the seven studies investigated self-reported morbidity and undertook clinical examination, while five of them carried out laboratory investigations in addition to these. Since the laboratory investigation procedures varied widely across the studies, they were the least comparable data.

Sampling designs and procedures varied widely: three rural studies (Maharashtra, Gujarat, Rajasthan) enumerated and sought to obtain information on all eligible women in a limited number of villages. The West Bengal study adopted a quota sampling approach until the requisite number was reached. The Bombay, Baroda and Karnataka studies used representative sampling procedures.

The study population also varied widely. The study population included ever-married women aged 15 years and above in three studies (Bombay, Gujarat and Rajasthan), ever-married women between 18-45 years of age in one study (Baroda), ever-married and unmarried women aged 13-45 years in one study (West Bengal), ever-married and unmarried women aged 13 years and above in the Maharashtra study, and currently married women below 35 years of age and with a child below six months old in the Karnataka study.

Study enrolment periods ranged from 2-3 days to 18 months. The studies also differed in terms of their efforts to enrol women who did not originally participate, ranging from limited to very intensive efforts.

The participation rates for the clinical component of these community-based gynaecological morbidity studies were as follows: Karnataka 86%, Bombay 72%, Baroda 65%, Maharashtra 59%, West Bengal 44%, Gujarat 29% and Rajasthan 19%.

### **Findings:**

- There was a marked variation in patterns and levels of both self-reported and clinically diagnosed morbidity across the six studies.
- Prevalence of self-reported and clinically diagnosed gynaecological morbidity in six of these studies, excluding Rajasthan, which did not report the self-reported and clinically diagnosed conditions separately, were as follows:

<b>Women reporting</b>	<b>Percentage</b>
Menstrual problems	33-65
Excessive white discharge	13-57
Lower abdominal pain	9-21
Lower backache	5-39
Dyspareunia	1-7
One or more conditions	55-84

### **Clinically diagnosed conditions**

Vaginitis	4-62
Cervicitis	8-48
Cervical erosion	2-46
Pelvic inflammatory disease	1-24
Prolapse	<1-7
One or more conditions	26-74



**Lessons learned from the studies:**

- Close interaction with the community is an important determinant of the successful completion of the studies.
- Appropriate medical treatment should be provided, as it may be the only opportunity to address women's reproductive health problems.
- It is important to complement quantitative assessments of morbidity with in-depth qualitative research.
- Women may significantly under-report gynaecological problems.
- Specific questions, detailed probing and consideration of severity may improve reporting validity.
- Sample loss and self-selection due to women's unwillingness to undergo clinical examination are serious problems.
- There is significant variation in definition and criteria for gynaecological morbidities across studies.

**Suggestions for further research:**

- The authors stress the need for multiple studies in a country like India whose regions are very diverse, for better estimates of prevalence across the country.
- There is a need to look beyond prevalence and into the causal factors, social and sexual behavioural studies and consequences of morbidity for women's lives. This calls for a more broad-based and multi-disciplinary approach to studies examining gynaecological morbidity in women.

**ABSTRACT NO. 65**

- Author(s)** : Maitra, Nandita, and Maya Hazra
- Title** : Responding to Reproductive Tract Infections in the Context of Family Planning Programs
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 756-761
- Place of study** : Baroda, Gujarat
- Period of study** : Not specified
- Aims and objectives** : To evaluate the prevalence of reproductive tract infections among users and non-users of contraceptive methods.
- Study conducted by** : S.S.G. Medical College and Hospital, Baroda
- Nature of study** : Prospective, hospital-based

**Methodology:**

The sample consisted of 671 women attending the gynaecology outpatient clinic. Detailed clinical history was obtained, pelvic examination was carried out, and cervical smears taken for Pap smear test by a cytopathologist.

**Findings:**

- Overall, 17.9% of the women were non-users, 70.5% had undergone tubectomy, 0.6% had husbands who had undergone vasectomy, 6.9% were users of IUCD, 2.2% used hormonal methods and 1.9% were condom users.

- Of 120 non-users, 45 (37.5%) had normal smears and 59 (49.2%) had atypical cells attributable to infection. Atypical cells attributable to infection was the most common profile also among users. There were 14 cases of malignancy among non-users and 12 cases of malignancy among those who had undergone tubectomy.
- Overall, pelvic inflammation was seen in 126 (18.8%), cervical infection in 90 (13.41%) and vaginal infection in 353 women (52.6%). The remaining women had no clinically diagnosed infection of the reproductive tract.
- Thirty percent (30%) of non-users had a reproductive tract infection as compared to 97.3% of users of contraceptive methods. Of women who were non-users and had an infection (36), 19% had PID, while about 40% each had a cervical or a vaginal infection. Of tubectomy acceptors with an infection (468/473), the vast majority (67.7%) had a vaginal infection and 23.5% had PID. Among IUCD users with an infection (39/46), on the other hand, cervical infections were more common (48.7%), followed by vaginal infections (35.9%).

## ABSTRACT NO. 66

- Author(s)** : Garg, Suneela, Nandini Sharma, Preena Bhalla, et al.
- Title** : Reproductive Morbidity in an Indian Urban Slum: Need for Health Action
- Source** : Workshop on Reproductive Health in India: New Evidence and Issues, Pune, India, 28 February - 1 March 2000
- Place of study** : New Delhi
- Period of study** : Not specified
- Aims and objectives** : To study the prevalence of reproductive tract infections.
- Study conducted by** : Department of Preventive and Social Medicine, Maulana Azad Medical College, New Delhi
- Nature of study** : Cross-sectional, community-based

### Methodology:

446 all ever-married women residing in the slum. Data on socio-demographic characteristics, perceived symptoms of reproductive morbidity, hygiene, care seeking behaviour, obstetric and contraceptive history were obtained through questionnaires. After the questionnaires the women were referred to the clinic established within the community for diagnosis and treatment.

In the clinic a detailed history was taken and a general physical examination done. A female gynaecologist performed a pelvic examination, per speculum and collected relevant samples. The specimens were subjected to multiple diagnostic tests. Samples were collected from 353/446 women in the slum. Infection was considered to be positive in the event of either the laboratory tests being positive.

### Findings:

- Perceived morbidity: 885 of the women reported at least one morbidity. The most frequent was backache (63.9%), followed by vaginal discharge (56.8%) and low abdominal pain (42.1%).

- Overall 72% (n=353) women were found to have one or more infections.
- Detected morbidities were bacterial vaginosis (41.5%), chlamydia (28.7%), candidiasis (18.6%), trichomoniasis (4.3%), syphilis (4.2%), hepatitis B (5.8%), hepatitis C (1.8%), human papilloma virus 16 (11.8%) and human papilloma virus 18 (3.3%).
- Although age-wise breakdown has been given, it is not in the context of total number in that age group (the details of sample distribution by age have not been given).
- Differentials among asymptomatic and symptomatic women (n=286) are as follows: 83.2% of the women were symptomatic and the remaining asymptomatic.
- Among the asymptomatic women, 41.7% had bacterial vaginosis, 22.9% chlamydia, 25% candidiasis and 2.1% trichomoniasis.
- Among the symptomatic women, 40.8% had bacterial vaginosis, 29.8% chlamydia, 17.2% candidiasis and 5% trichomoniasis.
- None of the observed differences between asymptomatic and symptomatic cases was statistically significant.

## ABSTRACT NO. 67

- Author(s)** : Parashari, Aditya, Veena Singh, Pushpa Sodhani, et al.
- Title** : Clinical and Etiological Profile of RTIs among Women Attending Gynaecology Outpatient Department of a Major City Hospital in Delhi
- Source** : Journal of Obstetrics and Gynaecology of India, 1995, pp. 790-797
- Place of study** : Delhi, North India
- Period of study** : Not specified
- Aims and objectives** : To study the clinical presentation and etiologic agents of reproductive tract infections (RTIs) among women attending a gynaecologic outpatient department.
- Study conducted by** : Maulana Azad Medical College, New Delhi
- Nature of study** : Prospective, hospital-based

### Methodology:

144 women attending the outpatient clinic were studied. No information is given on the symptoms with which they presented. A comprehensive gynaecologic examination was performed and clinical signs and symptoms were recorded.

Vaginal secretions were collected using cotton swabs and subjected to recording of pH, dark ground microscopy and amine test.

Endocervix was cleaned using cotton tipped swab and used for endocervical secretions for chlamydial and gonococcal antigens.

Cervical scrapes were collected for Pap smear. 5ml of venous blood was collected for serological assays of HSV, HIV and syphilis.

*Bacterial vaginosis*: diagnosed using 3 of the 5 following criteria: pH of vaginal secretions >4.5, positive KOH test, presence of clue cells in gram or Pap's staining, presence of gardenerella type organisms and low count of lactobacillus.

*Trichomonas vaginalis*: made on wet smear/Pap smear.  
*Candida*: diagnosed in wet smear and gram stain smears.  
*Cytoscreening of cervical smears*: Pap smears were categorised according to WHO criteria.  
*Detection of chlamydial and gonococcal antigens in the endocervical secretions*: commercial kits were used for this purpose.  
*Syphilis*: Treponema pallidum antibodies were detected in the serum using a commercial haemagglutination test kit.  
*HIV virus*: ELISA test.  
*HSV*: IFA test positive at > 1:10 was taken as HSV seropositive.  
*HPV*: deep violet colour stained nucleus was taken to be positive for HPV infection.  
Colposcopic examination was done for all abnormal lesions of cervix, vagina and vulva.

#### **Findings:**

- The mean age of the women was 33.2 years, mean parity 2.7 and mean number of abortions reported were 0.9 (1.18).
- Vaginal discharge was the most common symptom reported (101/144, 70.1%) followed by lower abdominal pain (48/144, 33.3%), irregular bleeding, contact bleeding and dysperunea.
- The median delay in reporting the symptoms varied from 2-21 months.
- In clinical observations, cervical lesions were the most common sign accounting for 93.7% of all clinical signs with or without involvement of other parts of the genitalia. Hypertrophy was the most frequent sign (44.5%) followed by bleeding ectopies and non-bleeding ectopies. Clinically evident cervicitis accounted for 16.7% of the cases.
- Vulvo-vaginal lesions were present in only 23% of cases with vaginitis accounting for most cases.
- PID accounted for 6.2% and uterine disease for 6 cases (4.2%).
- In cyto-diagnosis, a majority of the smears were inflammations with or without specific infections.
- In colposcopic findings, squamous-columnar junction was visible in 98.6% of the women. Atypical colposcopy with or without condylomatous changes was most frequently seen (79/144, 54.9%). 31/144 had metaplasia.
- In laboratory findings, sub-clinical warts as detected through colposcopy and confirmed through biopsy was the leading infection (61/144), 57/144 had chronic cervicitis with condylomatous changes. Bacterial vaginosis was detected in 55/142 women and chlamydial antigen was detected in 45/144 women. One-fourth of the women were positive for antibodies to HSV of class IgM or IgA indicating the subclinical feature of infections.

#### **ABSTRACT NO. 68**

**Author** : Palai, P., Amarjeet Singh, and V. Pillai  
**Title** : Treating Vaginal Discharge in Slum Women  
**Source** : Bulletin of the Post Graduate Institute, no. 28, 1994, pp. 107-110  
**Place of study** : Chandigarh, North India  
**Period of study** : January-February 1992  
**Aims and objectives** : To delineate treatment seeking behaviour of women having vaginal discharge.  
**Study conducted by** : College of Nursing, Post Graduate Institute, Chandigarh.

**Nature of study** : Cross-sectional, community survey

**Methodology:**

The study sample consisted of 1,682 women, married, aged 15-44 years and not pregnant or puerperal. All houses in the slum (Dadu Majra colony) were surveyed ( total of 3,003). Information on the socio-demographic profile, history and treatment seeking for vaginal discharge was asked. Information on vaginal discharge was through self-reporting by women.

**Findings:**

Prevalence of vaginal discharge was found to be 21.6% (364/1682). Consultation rate was 45%, and the remaining did not seek treatment due to shyness (55/200, 27.5%), 26% were not interested, 14% due to high costs, 10% took it as normal and 6.5% felt that it was incurable. Other reasons (32.16%) for not seeking help were no time, no escort, no one to look after children, husband not interested, or did not know where to go. 123/164 (75%) of those who sought treatment did so after one year of onset. Only 1/164 did so within 7 days, 7/164 within 7-15 days, 9/164 within 16-30 days and 24/164 between 30 days and 1 year. 44.5% consulted local practitioners, and a third of them consulted more than one agency. Mean expenditure incurred was Rs 158 per case. In 18/164 cases husbands were advised of treatment but only five complied with it.

**ABSTRACT NO. 69**

**Author** : Parvez, S., I. Walia, K. Dhaliwal, et al.

**Title** : Vaginal Discharge in a Slum

**Source** : Bulletin of the Post Graduate Institute, no. 29, 1995, pp. 72-74

**Place of study** : Chandigarh, North India

**Period of study** : Jan-Feb 1992 - Nov 1993

**Aims and objectives** : To follow up chronic vaginal discharge cases in an urban slum.

**Study conducted by** : Post Graduate Institute of Medical Education and Research, Chandigarh

**Nature of study** : Longitudinal, community-based

**Methodology:**

Of a sample of 364 women who reported vaginal discharge in a baseline survey carried out during January-February 1992, 241 were effectively followed up until November 1993. Only self-reporting by women was considered and clinical examination was done.

**Findings:**

- 169/241 were relieved of their symptoms by the second year, but 72 still had vaginal discharge (30%).
- The 72 women were referred to the Post Graduate Institute located about 5 kms away, for check-up and treatment. Thirty-eight women were unwilling to come to the Institute for treatment. Reasons given were lack of time (5), difficulty to go (24), unsuitable dates (2), fear of multiple follow-up visits (1), nobody to look after children (2), expensive treatment (1) and difficulty in locating outpatient departments in the Institute (1).

- Of the 34 women who were willing to come for treatment, only 11 complied. Reasons for non-compliance were child not well (6), husband busy/refused (2), no escort (3), lack of time (3), menstruation started (1), referral card lost (2), other ailments (1) and no specific reason (5).
- The diagnosis for all of the 11 women who came for check-up was chronic gynaecological morbidity, and included: cervical erosion (3), chronic cervicitis (4), non-specific vaginitis (2) and cervical polyp (2).

## ABSTRACT NO. 70

- Author** : Pandit, D. V., R. R. Bhatt, J. M. Karnad, et al.
- Title** : Microbial Screening of Females with Vaginitis
- Source** : Journal of Obstetrics and Gynaecology of India, 1994, pp. 244-247
- Place of study** : Mumbai, Maharashtra
- Period of study** : Not specified
- Aims and objectives** : To assess microbial flora in women with complaints of vaginitis and to compare it with that of healthy women.
- Study conducted by** : Lokmanya Tilak Medical College Hospital, Mumbai
- Nature of study** : Prospective, hospital-based

### Methodology:

The sample consisted of 300 patients with vaginal discharge, and the control group was 100 women with no genital complaints. They were matched for age and socio-economic status. History was taken and requisite tests done.

### Findings:

- Isolation of *Trachomonas vaginalis* (17.6%), *Mycoplasma hominis* (10.6%), *Ureaplasma urealyticum* (21%), *Gardenerella vaginalis* (22.6%), *candida* (21%) in the study group.
- *Trachomonas vaginalis*, *Mycoplasma hominis* and *Ureaplasma urealyticum* isolation was significantly higher in the study group ( $p < 0.001$ ) as compared to controls, followed by *Gardenerella vaginalis* and *candida* ( $p > 0.01$ ).
- *Bacteriodes* and *peptostreptococci* were isolated in 22.6% and 4.3% study cases, respectively. *Mobiluncus mulieris* species identified in gram stained smears were marginally significant in the study group ( $p > 0.05$ ) as compared to the control group.

**ABSTRACT NO. 71**

- Author** : Roy, Swapan, Meera Sharma, Archana Ayyagari, et al.
- Title** : A Quantitative Microbiological Study of Bacterial Vaginosis
- Source** : Indian Journal of Medical Research, 1994, October, pp. 172-176
- Place of study** : Chandigarh, North India
- Period of study** : Not specified
- Aims and objectives** : To study the spectrum of bacterial flora associated with bacterial vaginosis, and correlate their counts with symptoms in order to assess the magnitude of bacterial vaginosis in the Chandigarh area.
- Study conducted by** : Post Graduate Institute of Medical Education and Research, Chandigarh.
- Nature of study** : Prospective, hospital-based

**Methodology:**

Non-pregnant women of child-bearing age attending the outpatient clinic with complaints of vaginal discharge were screened for bacterial vaginosis (BV). BV was diagnosed if thin/homogenous discharge, pH>4.5, fishy amine odour and presence of clue cells. Women found to harbour yeast were excluded. The sample consisted of 100 women clinically diagnosed as having BV and 50 healthy women (matched for age 16-45 years) with a pH>4.5 formed the control group. None of them had taken any antibiotic at least seven days prior to the study.

Specimen collection and processing: Vaginal discharge was collected from the posterior fornix using sterile disposable 10 µl loops. The specimens were then processed in the lab within 30 minutes of collection.

**Findings:**

- Total isolates: 475 bacteria were isolated (267 from study group and 208 from the control group). Anaerobes were predominant among controls, and among patients aerobes and anaerobes had equal prevalence.
- The increased viable count of all anaerobes ( $> 10^7$  cfu/g) were related with symptoms. Mobiluncus mulieris could be isolated from one patient and chlamydia trachomatis antigens were absent in all samples.
- Bacteroides, Gardnerella vaginalis, and Ureaplasma urealyticum were found to be the most commonly occurring group in women with bacterial vaginosis.
- Lactobacillus and probably coryneforms have a protective role, preventing vaginal infections. Prevalence of these was significantly higher in the control group.

**ABSTRACT NO. 72**

- Author** : Shabnam, Gupta B. K., Kumar Raj, et al.
- Title** : Incidence of Gardnerella Vaginalis in Non-Specific Vaginitis
- Source** : Journal of Obstetrics and Gynaecology of India, 1997, pp. 521-527

**Place of study** : Ludhiana, Punjab  
**Period of study** : Not specified  
**Aims and objectives** : To study the incidence of Gardnerella vaginalis in non-specific vaginitis.  
**Study conducted by** : Dayanand Medical College and Hospital, Ludhiana  
**Nature of study** : Prospective, hospital-based

**Methodology:**

The sample consisted of 500 women attending a gynaecology outpatient clinic, who were suffering from various types of clinical presentations associated with vaginal discharge suggestive of non-specific vaginitis (same as bacterial vaginosis). Fifty healthy women matched for age were used as controls. Patients were divided into four groups:  
G1: having IUCD and suffering from non-specific vaginal discharge (240)  
G2: pregnant with vaginal discharge (100)  
G3: discharge and pruritis vulvae (104)  
G4: discharge associated with low backache/discomfort in the lower abdomen (56)  
High vaginal swabs were taken for investigations. Tests carried out included wet smear, amine test, gram smear and culture.

**Findings:**

- A total of 232 patients tested positive for Gardnerella vaginalis. Of these, 32 had only G. vaginalis, while 200 had G. vaginalis in association with other organisms: E. coli (19%), Klebsiella (18%), Sterpt. faecalis (16.5%), Proteus species (14%), Staphylococcus albus (13.5%) and Candida species (19%).
- Of the four groups of patients, G1, (IUCD patients) had the largest proportion testing positive (26%), followed by pregnant women (10.4%) and women with vaginal pruritis (7.2%). Only 2.8% of women with lower back pain or lower abdominal discomfort tested positive.
- Of three age groups: 18-27, 28-37 and 38-47, those testing positive among cases and controls was as follows: 33.3 % cases versus 28.57 controls; 68.99% cases versus 19.23% controls; and 20.6% cases versus 5.88% controls. Thus, the maximum number of patients in the study as well as control group were in the age group 28-37 years.

**ABSTRACT NO. 73**

**Author(s)** : Pal, Amitava, U. K. Ghosh, Raj Baveja, et al.  
**Title** : Clinical Bacteriological Study of Gardnerella Vaginalis  
**Source** : Journal of Obstetrics and Gynaecology of India, 1994, pp. 385-387  
**Place of study** : Allahabad, Uttar Pradesh  
**Period of study** : Not specified  
**Aims and objectives** : To find out the prevalence of Gardnerella vaginalis infection in patients attending a gynaecology outpatient clinic.



**Study conducted by** : Motilal Nehru Medical College, Allahabad

**Nature of study** : Prospective, hospital-based

**Methodology:**

The sample consisted of 250 non-pregnant women in the age group of 15-40 years. Every sixth patient was examined until 250 cases were seen. A detailed clinical history was taken with reference to vaginal discharge, pruritus vulvae and dyspareunia. General examination was followed by local genital examination without lubricant and wet mount preparation of vaginal discharge for clue cells.

**Findings:**

- The prevalence rate for *G. vaginalis* was 20.4% (51/250). 14.4% (36/250) tested positive for *Trichomonas vaginalis* and 12.8% (32/250) were positive for candida.
- Of those testing positive for *G. vaginalis*, 86.27% (44/51) had vaginal discharge, 21.56% (11/51) had pruritus vulvae, 17.65% (9/51) had dyspareunia and 11.76% (6/51) had dysuria as associated symptoms.
- 94.11% of the *G. vaginalis* cases presented with the sign of vaginal discharge (thin, white, mild to moderate in amount without any offensive odour), 15.68% presented with vaginitis (mild), 9.8% with chronic cervicitis and 7.84% with erosion.

**ABSTRACT NO. 74**

**Author** : Agarwal, Sandhya, B. M. Agarwal, Kusum Gupta, et al.

**Title** : Role of Mycoplasma in Different Types of Abortions

**Source** : Journal of Obstetrics and Gynaecology of India, 1995, pp. 200-204

**Place of study** : Agra, Uttar Pradesh

**Period of study** : 1990-93

**Aims and objectives** : To analyse the role of the microorganism *Mycoplasma hominis* (part of the normal vaginal flora, but at elevated levels, causing bacterial vaginosis) in the pathogenesis of various types of spontaneous abortions.

**Study conducted by** : S.N. Medical College, Agra

**Nature of study** : Prospective, hospital-based

**Methodology:**

The study group consisted of 100 women between 18-32 years of age, pregnant below 20 weeks of gestation, and with threatened or completed spontaneous abortions. The control group was 50 women without a poor obstetric history. All cases tested negative for VDRL and other causes of abortion were excluded. High vaginal swabs were collected and cultured.

**Findings:**

- The 100 study cases were: inevitable - 30, missed - 22, habitual - 13 and threatened - 35.

- The study group had a much greater prevalence of mycoplasma species (31%) as compared to the control group (8%). The difference was statistically significant at the 1% level. Ureaplasma urealyticum was dominant among cases (26 cases, 26%) as compared to the control group (1 case, 2%). Mycoplasma hominis was prevalent in 5% of cases and 6% of controls.
- Further, anaerobic organisms were more frequently isolated in the study group (69 cases, 69%) than in the control group (15 cases, 30%). The association was more consistent in the case of threatened abortion (27/35 cases), inevitable abortion (20/30 cases) and missed abortion (17/22 cases) than in habitual abortions (7/13 cases).
- Mycoplasma was not seen alone in any of the cases of habitual abortion but was usually associated with anaerobic organisms (5/7 cases), aerobic organisms and candida in one case each.

### ABSTRACT NO. 75

- Author** : Choudhury, M. R., M. Mathai, Elizabeth Mathai, et al.
- Title** : Prevalence of Genital Mycoplasma and Ureaplasma Infections in Pregnancy and Their Effect on Pregnancy Outcome
- Source** : Indian Journal of Medical Research, no. 100,1995, pp. 15-18
- Place of study** : Vellore, Tamilnadu
- Period of study** : August 1990 - July 1991
- Aims and objectives** : To determine the prevalence of genital mycoplasma and ureaplasma infections in pregnant women and their relationship to pregnancy outcomes.
- Study conducted by** : Christian Medical College, Vellore
- Nature of study** : Prospective, hospital-based

#### Methodology:

The sample consisted of 200 pregnant women with reliable menstrual history, singleton pregnancies at 26-30 weeks gestation, and booked for delivery. Informed consent was obtained from all participants. A questionnaire was used for collection of demographic, social and medical data.

Endocervical and high vaginal specimens were collected using an unlubricated speculum and sterile cotton swabs for ureaplasma and mycoplasma cultures. A second set of samples was obtained at 36-38 weeks of gestation from 132 of the recruited women.

Findings of mycoplasma cultures were not made available to the obstetricians until after completion of the study. No patients were treated for either of the infections. Infants were weighed within 30 minutes after birth. Statistical methods used included analysis of variance, student 't' test and Chi square test.

#### Findings:

- At 26-30 weeks gestation, 34/200 (17%) were infected with mycoplasma and 66/200 (33%) with ureaplasma. The prevalence remained almost the same at 36-38 weeks gestation: 22/132 (16.7%) were infected with mycoplasma and 43/132 (32.6%) with ureaplasma.
- Among 132 women screened twice, in 30/132 mycoplasma infections were detected and 62/132 ureaplasma at one or both occasions. Of the 68 women screened only once, 10 had mycoplasma and 17 ureaplasma.

- Analysis by socio-demographic variables (age, marital life, nullipara, haemoglobin, residence, using firewood as kitchen fuel and having a poorly ventilated kitchen) showed no statistically significant difference across groups in the prevalence of mycoplasma, ureaplasma or both.
- 167/200 women delivered at the hospital: 162 live births, 5 stillbirths. There was one neonatal death of an infant born to a mother with gestational diabetes. The stillbirths were due to placental abruption (1), placental insufficiency (1) and pre-eclampsia (3). Of the six mothers with a negative outcome, only one had both mycoplasma and ureaplasma infections.
- Median gestation at delivery for both infected and uninfected groups was 39 weeks. Delivery before term occurred in only three women in each group.
- Mean birthweight was comparable among the groups and differences were not statistically significant.
- Even though the infections were frequent, no association was observed between infections and pregnancy outcomes.

### ABSTRACT NO. 76

- Author** : Arora, Usha, and U. Mohan
- Title** : Microbial Profile of Pelvic Inflammatory Disease
- Source** : Indian Journal of Medical Sciences, 1997, pp. 386-389
- Place of study** : Amritsar, Punjab
- Period of study** : 29 March 1993 - 27 March 1994
- Aims and objectives** : To find out the microbial profile of pelvic inflammatory disease (PID).
- Study conducted by** : Government Medical College, Amritsar
- Nature of study** : Prospective, hospital-based

#### Methodology:

The sample consisted of 100 women who had a tubectomy. 200 samples, 100 each of fallopian tubes and high vaginal smears were taken from the women and analysed with requisite cultures and tests.

#### Findings:

- 30% showed bacterial growth from one or both of the fallopian tubes. The high vaginal smears showed growth in 50% of the cases.
- Microorganisms isolated from the upper genital tract (fallopian tubes) were Klebsiella (14), E. coli (9), Ps. aeruginosa (2), Staph. pyogenes (2), Staph. albus (1) and Str. faecalis.
- Microorganisms isolated from the lower genital tract (high vaginal smears) were Klebsiella (13), E. coli (22), Peptostreptococcus (5), Ps. aeruginosa (4), Lactobacilli (4), Bacteriodes fragilis (2), peptococcus (2), Staph. pyogenes (2), Staph. albus (1) and Str. faecalis.
- Isolates from 20 cases of upper and lower tract revealed similar infections. Isolation of similar bacteria suggests the ascent of microorganisms from the lower to the upper genital tract.
- Ciprofloxacin emerged as the most sensitive drug as 94.20% isolates were sensitive to it.

**ABSTRACT NO. 77**

- Author(s)** : Hazari, K. T., J. V. Joshi, M. G. Kulkarni, et al.
- Title** : Sexually Transmitted Diseases: Prevalence in Women Attending Family Welfare Clinics
- Source** : Journal of Obstetrics and Gynaecology of India, 1994, pp. 391-396
- Place of study** : Mumbai, Maharashtra
- Period of study** : Not specified
- Aims and objectives** : To find out the prevalence rates of eight sexually transmitted diseases in women attending a family planning clinic.
- Study conducted by** : Indian Council for Medical Research, Mumbai
- Nature of study** : Prospective, hospital-based

**Methodology:**

A total of 356 women attending the Institute's urban family planning and reproductive endocrine infertility clinics were enrolled in the study. The women were grouped as

Group 1: contraceptive non-users (n = 141)

Group 2: contraceptive users (n= 141)

Group 3: those attending reproductive endocrine infertility clinic (n=75)

Detailed history, general, systematic and gynaecological examinations were carried out. Investigations for STDs included: wet vaginal smear microscopy, swabs from endocervix for bacteriological culture to detect gonococci and other organisms, exocervical smears, and VDRL.

**Findings:**

- 32.6% of women were detected with at least one STD. 15/356 women had one STD, 12 women had 2 types, and 2 women had 3 types of STDs.
- Bacterial vaginosis (7.3%) was the most frequent complaint followed by viral STDs (HSV, HPV) (3.3%), and 0.8% had gonococci.
- Chlamydia was found in 5.4% of women.
- Hepatitis B was detected in 15.9% by the RPHA test and 3.3% by the CeP method (for detecting HBsAg).
- There was no statistically significant difference in the prevalence rates of STDs among the three groups.

**ABSTRACT NO. 78**

- Author(s)** : Pal, Amitava, U. K. Ghosh, Gouri Ganguli, et al.
- Title** : Socio-Demographic Profile of Sexually Transmitted Diseases in Females
- Source** : Journal of Obstetrics and Gynaecology of India, 1994, pp. 388-390
- Place of study** : Allahabad, Uttar Pradesh

**Period of study** : Not specified

**Aims and objectives** : To analyse the socio-demographic characteristics of patients with sexually transmitted diseases (STDs) attending a gynaecological outpatient clinic.

**Study conducted by** : Motilal Nehru Medical College, Allahabad

**Nature of study** : Patient interviews, hospital-based

**Methodology:**

Five hundred women (250 gynaecology patients; 250 antenatal patients) attending the gynaecology outpatient clinic were interviewed and were also given a questionnaire to complete.

**Findings:**

- 138 gynaecology patients (55.2%) and 129 women in the antenatal group (51.6%) were STD positive.
- Of the 138 non-pregnant women who were STD positive, women who were using condoms as the contraceptive method had the least prevalence of STD (9.8%), those on the oral pill (59.1%), those using copper T (71.2%), women who have undergone tubectomy (63.6%) and non-users (61.5%).
- The distribution of STD positive cases according to pathology was as follows:

<u>Pathology</u>	<u>Non-pregnant: Number (%)</u>	<u>Pregnant: Number (%)</u>
Trichomonas	36 (26.1)	23 (17.8)
Candida	32 (23.2)	48 (37.2)
Syphilis	6 (4.4)	8 (6.2)
Chlamydia	4 (2.9)	3 (2.3)
H. vaginalis	51 (37.0)	40 (31.0)
Others	9 (6.5)	7 (5.4)

**Reviewer's note:**

The study provides tables on distribution of cases according to social class, parity and so on. However, these are not prevalence rates because the denominators are 'total number of STD positive cases,' and not 'total number of women in parity group xx,' as should be. What we therefore have in the paper is the distribution of STD positive women by parity, social class, and so forth.

**ABSTRACT NO. 79**

**Author** : Thakur, S. T., A. Goyal, and V. K. Sharma

**Title** : Sero-Epidemiology of Syphilis in Patients Attending STD Clinics of Himachal Pradesh

**Source** : Indian Journal of Community Medicine, XVII(4), 1992, pp. 151-154

**Place of study** : Shimla, Himachal Pradesh

**Period of study** : November 1987 - November 1989

**Aims and objectives** : To screen for VDRL reactivity of samples collected from different parts of Himachal Pradesh.

**Study conducted by** : Indira Gandhi Medical College, Shimla

**Nature of study** : Hospital-based (but samples were collected from different parts of the state, all 12 districts)

**Methodology:**

3ml of blood was collected from all patients attending STD clinics in different parts of the state. Serum was separated and sent in iceboxes to the hospital in Shimla, where it was stored and standard VDRL tests were done. The study group consisted of 1,193 blood samples, 883 from males and 309 from females. The control group consisted of 753 blood donors.

**Findings:**

- Of the sera examined, 257/1,193 (21.5%) were reactive: females 94/309 (30.4%), males 162/883 (18.35%). In the control group, 2.9% (21/723) were reactive.
- The highest prevalence was seen in the 21-30 age group (25.8%).
- The prevalence was the highest in Kinnaur (39%), followed by Mandi (37.4%) and Shimla (24.3%).

ABSTRACT NO. 80

**Author** : Kaur, Harinder, Jagdish Saini, and Jasmeen Singh

**Title** : Prevalence of Gonorrhoea in Punjabi Women

**Source** : Journal of Obstetrics and Gynaecology of India, 1995, pp. 100-105

**Place of study** : Amritsar, Punjab

**Period of study** : January 1993 - January 1994

**Aims and objectives** : To find out the magnitude of asymptomatic gonorrhoea in women.

**Study conducted by** : Medical College, Amritsar

**Nature of study** : Prospective, hospital-based

**Methodology:**

The sample consisted of 500 women aged 17-46 years attending the gynaecological skin and STD clinic and suspected of having gonorrhoea. Detailed history was taken, urethral and endocervical swabs were taken for gram staining and culture.

Diagnostic criteria: isolated bacteria must be gram -ve diplococci developing oxidase positive colony, producing acid from glucose and showing +ve superoxol test.

**Findings:**

- 4/500 (0.8%) showed positive gonococci culture.
- Two of the positive cases denied any extramarital contact, one gave a history of multiple partners and one gave a history of husband taking treatment for venereal disease two months prior to the study.

- Author** : Brabin, L., A. Gogate, S. Gogate, et al.
- Title** : Reproductive Tract Infections, Gynaecological Morbidity and HIV Seroprevalence among Women in Mumbai, India
- Source** : Bulletin of the World Health Organization, 76(3), 1998, pp. 277-287
- Place of study** : Mumbai, Maharashtra
- Period of study** : October 1993 - December 1995
- Aims and objectives** : To determine the prevalence of reproductive tract infections (RTIs) and their contribution to pelvic infection including HIV seroprevalence.
- Study conducted by** : Brihan Mumbai Municipal Corporation and Liverpool School of Tropical Medicine
- Nature of study** : Hospital-based

**Methodology:**

Women aged below 35 years were recruited and screened as cases if admitted for gynaecological investigation for suspected PID (n=151) or for infertility (n=295). Controls were healthy fertile women attending for laparoscopic tubal ligation (n=2,433).

Specially trained auxiliary nurse midwives working as part of the municipal corporation's health services administered a social questionnaire. Details included socio-demographic characteristics, contraceptive use and sexual history of partner. A clinical questionnaire was also administered and included questions on reasons for referral, gynaecological, obstetric, medical and surgical histories.

Gynaecological examination, laparoscopy and microbiological assessments were also done. Findings were analysed using STATA software. Differences in proportions between cases and controls were tested for significance. Fisher's exact test was used for small sample sizes.

**Findings:**

- Vaginal discharge and pain during intercourse were registered among 21.7% and 26.4%, respectively of the cases. A history of TB was reported by 7.2% of infertile and 5.3% of suspected PID cases, compared to 1.4% of controls.
- 30.5% of suspected PID cases had previously undergone laparoscopic tubal ligation.
- On gynaecological examination the proportion of women with vaginal discharges as reported by clinicians and the women themselves was comparable.
- Twenty-six women had acute salpingitis and 48 had chronic pelvic infection.
- Bacterial vaginosis was detected in 6% of women suspected with PID.
- *M. hominis* was higher in cases than controls (8.3% versus 5.6%). *U. urealyticum* was higher in controls than in cases (22% versus 15.8%).
- A total of 4.1% of infertile women were positive for syphilis compared to 2.8% of controls.
- The prevalence of HIV1/2 infections in unlinked samples was 1.9%.
- Sexually transmitted diseases were thus not major factors leading to gynaecological morbidity. The gynaecological morbidity detected may be a consequence of widespread use of invasive methods of fertility regulation.

**ABSTRACT NO. 82**

- Author** : Agarwal, Sandhya, B. M. Agarwal, Khalid H. Ansari, et al.
- Title** : Chlamydia Trachomatis and Candida SPS in Sexually Transmitted Disease
- Source** : Journal of Obstetrics and Gynaecology of India, 1997, pp. 672-676
- Place of study** : Agra, Uttar Pradesh
- Period of study** : January 1993 - December 1995
- Aims and objectives** : To review the presence of chlamydia trachomatis and germ tube positive Candida SPS in women with a sexually transmitted disease.
- Study conducted by** : S.N. Medical College, Agra
- Nature of study** : Prospective, hospital-based

**Methodology:**

The study group consisted of 200 sexually active women diagnosed with a sexually transmitted disease. The control group was 100 non-pregnant paramedical workers. All women were aged between 15-30 years. Haemoglobin concentration was estimated and high vaginal swabs were collected for testing.

**Findings:**

- Candida SPS was isolated in 70% of those in the study group as compared to only 6% in the control group. The germ tube test positive cases were 60% in the study sample and only 2% in the control group. The difference in germ positive cases between the study and control groups was statistically significant ( $p < 0.05$ ).
- A significant rise of Chlamydia trachomatis antibody titre (IgG) was seen in 86% cases of the study group, while it was only 6% in the control group.
- The association of germ tube +ve Candida species and CT antibody titre were seen in 77.1% cases of severe anaemia, 55% cases of moderate anaemia as compared to none in the control group. The association was statistically significant. Treatment of anaemia significantly lowered the infection rates.

<u>Haemoglobin conc.</u>	<u>Isolation of Candida SPS</u>		<u>Association of CT Antibody titre (&gt; 1:16)</u>	
	Control group	Study group	Control group	Study group
> 9gms	0	30 (60%)	2 /76	36/50 (72%)
6-9gms	4	50 (62.5%)	2/20	79/80 (87.5%)
< 6gms	2	60 (85.7%)	2 /4	66/70 (94.2%)

**ABSTRACT NO. 83**

- Author(s)** : Tewai, S., V. Setia, N. Gulati, et al.
- Title** : Chlamydia Trachomatis Infection: A Cause for Preterm Birth and High Perinatal Loss
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 762-765



**Place of study** : Rohtak, Haryana  
**Period of study** : Not specified  
**Aims and objectives** : To explore the relationship between chlamydia infection and perinatal outcome.  
**Study conducted by** : Pandit B.D.S. Post Graduate Institute of Medical Sciences, Rohtak  
**Nature of study** : Prospective, hospital-based

**Methodology:**

Sixty-four women with unexplained preterm birth formed the study group, and 20 women with normal term delivery were the control group. Women with an apparent infection or antibiotic therapy in the preceding four weeks were excluded from the study. Women's medical histories were taken, physical examination and routine investigations carried out, as well as high vaginal swab culture and ELISA test to detect antibody titres.

**Findings:**

- 26/64 (40.6%) women in the study group had titres positive for chlamydia infection while in the control group 3/20 (15%) tested positive.
- Of the 26 positive women in the study group, 6 had positive vaginal swab culture while 8/38 negative women also had positive swab culture.
- Of 26 women with chlamydia, 22 (84.6%) delivered prior to 33 weeks of gestation and 21 (80.8%) had babies whose birth weight was less than 1.5kg. In mothers testing negative for chlamydia, the corresponding figures were 65.8% and 42.1%, respectively. The difference was statistically significant.
- 12/26 perinatal deaths were observed among the +ve mothers while this was 4/38 among the negative mothers (perinatal mortality rate 461.5 versus 105.2, overall PNMR - 250). The difference was statistically significant.

**ABSTRACT NO. 84**

**Author** : Avasthi, Kumkum, U. Midha, S. Khurana, et al.  
**Title** : A Study of Aerobic Bacteremia in Cases of Cu-T Insertion  
**Source** : Journal of Obstetrics and Gynaecology of India, 1993, pp. 253-256  
**Place of study** : Ludhiana, Punjab  
**Aims and objectives** : To study the incidence of bacteremia in cases of Cu-T insertion.  
**Study conducted by** : Dayanand Medical College Hospital, Ludhiana  
**Nature of study** : Prospective, hospital-based  
**Period of study** : 1988-89

**Methodology:**

The sample consisted of 125 healthy women, ruled out for any systemic or local disease, attending the hospital for copper T insertion or reinsertion. Copper T was inserted in every case, blood cultures were done on blood agar medium and Mac-cokey's agar medium.

Cases were distributed into various groups: G1 - primary Cu-T insertion (48); Group2 - medical termination of pregnancy with Cu-T (50); Group 3 - Cu-T removal and reinsertion (17); and Group 4 - C-section followed by Cu-T (10).

**Findings:**

- Incidence of bacteremia was 21.5% overall.
- The incidence by groups was: Group 1 - 16.6%; Group 2 - 22.2%; Group 3 - 26.65%; and group 4 - 40%.
- Of those in Group 1, three women already had infection prior to Cu-T insertion and were not included in the study. Of the remaining 45, 7 developed growth five minutes after Cu-T insertion ( $p < 0.001$ ).
- Of those in Group 2, two women already had bacteremia and were excluded. Two women developed the infection after the abortion procedure, while 10 developed growth five minutes after Cu-T insertion ( $p < 0.001$ ).
- In Group 3, one woman already had infection and was excluded. Two became positive after Cu-T removal, and 4 developed growth five minutes after insertion ( $p < 0.05$ ).
- In Group 4, there was no one with bacteremia before the c-section, while 4 developed the infection five minutes following insertion ( $p < 0.001$ ).

**ABSTRACT NO. 85**

- Author** : Aggarwal, K., A. T. Kannan, A. Puri, et al.
- Title** : Dysmenorrhoea in Adolescent Girls in a Rural Area of Delhi: A Community-based Survey
- Source** : Indian Journal of Public Health, 31(3), 1997, pp. 84-85
- Place of study** : New Delhi, North India
- Period of study** : Not specified
- Aims and objectives** : To find out the prevalence of dysmenorrhoea and grade it based on the ability to work.
- Study conducted by** : G.T.B. Hospital, Delhi
- Nature of study** : Cross-sectional, community survey

**Methodology:**

A house-to-house survey was done and adolescent girls aged 11-18 years were interviewed using a pretested proforma. A total of 300 girls were identified, of whom 97 had attained menarche. Questions were asked on duration of menstruation, severity of pain and need for medical attention, ability to work and absenteeism from school or work due to menstrual problems.

*Grading of dysmenorrhoea was done as follows:*

Grade 0 (no pain) - working ability unaffected, analgesic not required.

Grade 1 (menstruation with mild pain) - working ability rarely affected, analgesics rarely required.

Grade 2 - working ability moderately affected, analgesics required.  
Grade 3 - working ability clearly inhibited, analgesics have poor effect.

**Findings:**

- Mean age at menarche: 12.8 years in girls with dysmenorrhoea and 13.3 in those without dysmenorrhoea.
- Prevalence of dysmenorrhoea was 70.8%. However, severe dysmenorrhoea was present in only 17.5% (grade 2 -11.3% and grade 3 - 6.2%), while 52.6% had dysmenorrhoea of grade 1.
- The mean days of menstrual flow significantly correlated with dysmenorrhoea. For girls with no pain or mild pain the mean duration of menstrual flow was 3.5 days  $\pm$  1.5 and 2.6 days  $\pm$  1.5. For those with grade 2 and 3 dysmenorrhoea, the mean duration of menstrual flow was 4.9 days  $\pm$  1.4 and 5.8 days  $\pm$  1.6, respectively.

**ABSTRACT NO. 86**

- Author** : Gokhale, Leela B.
- Title** : Curative Treatment of Primary (Spasmodic) Dysmenorrhoea
- Source** : Indian Journal of Medical Research, 103 (April), 1996, pp. 227-231
- Place of study** : Pune, Maharashtra
- Period of study** : July 1993 - June 1994
- Aim & Objectives** : To prove efficacy of oral Vitamin B1 administration for the treatment of primary dysmenorrhoea.
- Study conducted by** : The author
- Nature of study** : Health facility-based, clinical

**Methodology:**

The study used a randomised, double blind, placebo controlled design. The sample consisted of 556 girls aged 12-21 years from nine schools and five hostels in Pune, having moderate to severe spasmodic dysmenorrhoea. A total of 715 girls were interviewed. The age, weight and menstrual history of all the girls were recorded. Girls with mild dysmenorrhoea were excluded. Written consent was obtained from the guardians. The 556 girls were divided into 3 categories:

*Category 1:* 218 girls with moderate pain relieved by taking analgesics.

*Category 2:* 135 girls with severe pain, very little relief with analgesics and antispasmodics. Often missed school when pain was accompanied by nausea, vomiting and headache.

*Category 3:* 203 girls with very severe pain, no relief with any medicines and always had to miss school for 1 to 3 days for severe pain, headache, nausea, vomiting, and sometimes fainting, rigor and fever.

The sample was divided into two groups. Group 1 was given Thiamine hydrochloride (vitamin B1) in a dose of 100mg orally, daily for 90 days, followed by identical looking placebo capsules for 60 days. Group 2 received the placebo first and the vitamin later.

**Findings:**

- The combined results of both the groups showed that after 150 days 87% were completely cured, 8% relieved (pain almost nil to reduced) and in 5 % there was no change.

- In contrast to the usual treatment regimen which consists of oral contraceptives and non-steroidal anti-inflammatory prostaglandin synthetase inhibitors, which are palliative and suppressive in nature, vitamin B1 is curative, without any side-effects, simple to administer and inexpensive.
- If after the first 90 days of 100mg intake there is complete remission of symptoms, no further treatment is required. If there is partial relief, another three months course with elevated dose may be administered. For those who do not obtain any relief, further clinical investigation is needed.

## ABSTRACT NO. 87

- Author** : Patki, A. S., S. N. Pandit, G. M. Niyogi, et al.
- Title** : Amenorrhoea and Genital Anomalies in Adolescence
- Source** : Journal of Obstetrics and Gynaecology of India, 1993, pp. 234-240
- Place of study** : Mumbai, Maharashtra
- Period of study** : Not specified
- Aim and objectives** : To analyse the association of genital factors with amenorrhoea in adolescent girls.
- Study conducted by** : Lokmanya Tilak General Hospital, Mumbai
- Nature of study** : Prospective, hospital-based

### Methodology:

The sample consisted of 60 girls with amenorrhoea drawn from both inpatients and outpatients of the hospital's gynaecology department. They constituted 10% of all adolescents screened for gynaecological complaints. Primary amenorrhoea was defined as:

- a) no episode of spontaneous uterine bleeding by 16 years of age with secondary sex characteristics absent or by age 18 regardless of secondary sex characteristics.
- b) no episode of spontaneous uterine bleeding despite having attained a sexual maturity rating of 5 or despite the onset of breast development five years previously.
- c) no episode of spontaneous uterine bleeding in any girl with clinical stigmata of Turner's syndrome.

Secondary amenorrhoea was defined as:

No subsequent menstruation after previous bleeding, for a length of time equivalent to three previous cycles. The necessary clinical and laboratory tests were done and ultrasonography carried out.

### Findings:

- 50 girls (83.3%) had primary amenorrhoea and 10 girls (16.7%) had secondary amenorrhoea.
- Among primary amenorrhoea patients, 42 (87.5%) had genital anomalies and 6 (12.5%) had other problems. Mullerian anomalies accounted for 38%, gonadal anomalies for 16.7% and vaginal anomalies for 45.2%.
- Tuberculosis was responsible for 4/10 cases of secondary amenorrhoea and 2/6 cases of primary amenorrhoea not related to genital anomalies. Hyperthyroidism was responsible for 2/10 cases of secondary amenorrhoea. Polycystic ovarian disease accounted for 2/6 cases of primary amenorrhoea and 2/10 cases secondary amenorrhoea and hypogonadotrophic hypogonadism accounted for 2 cases each of primary and secondary amenorrhoea.

**ABSTRACT NO. 88**

- Author(s)** : Das, Purabi
- Title** : Comparative Study of the Menopausal Problems of Working and Non-Working Women
- Source** : MSc. Home Science Dissertation, Department of Human Development, SNDT Women's University, Mumbai
- Place of study** : Mumbai (Bombay), Maharashtra
- Period of study** : Not specified
- Aims and objectives** : To compare the menopausal problems of working and non-working women in relation to their physical, psychological, social/familial and work-related problems, and to study the knowledge and awareness about menopause.
- Study conducted by** : SNDT Women's University, Mumbai (Bombay)
- Nature of study** : Cross-sectional, community survey

**Methodology:**

The sample consisted of 66 married women (33 working and 33 non-working) in the age group 40-55 years and having one or more children, selected purposively from west and north-west Bombay. Data were collected using an interview schedule.

**Findings:**

- There was a significant difference between working and non-working women with regard to physical problems. After controlling for income and education, the differences persisted with regard to their physical, psychological and social/familial problems. There was no significant difference by age.
- There was widespread misinformation and many doubts about menopause. The researcher therefore developed support material explaining menopause and suggesting coping strategies.

**ABSTRACT NO. 89**

- Author** : Maheswari, V., A. K. Chakrabarti, S. P. Tyagi, et al.
- Title** : Endometrial Changes in Abnormal Uterine Bleeding
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 389-394
- Place of study** : Aligarh, Uttar Pradesh
- Period of study** : Not specified
- Aims and objectives** : To find out the incidence of etio-pathological factors in cases of abnormal uterine bleeding.

**Study conducted by** : Medical College, Aligarh

**Nature of study** : Prospective, hospital-based

**Methodology:**

Endometrial specimens in 104 cases of abnormal uterine bleeding were studied, of which 74 had undergone D and C, and 30 had a hysterectomy. This constituted 25.1% of all endometrial samples received. Detailed clinical history and relevant investigations were recorded.

**Findings:**

- Menorrhagia was the most common bleeding pattern (41.35%), followed by metrorrhagia (15.4%), polymenorrhoea (13.5%) and polymenorrhagia (12.5%). Post-menopausal bleeding accounted for 9.6% of the cases and continuous bleeding was reported by 7.7%.
- The majority belonged to the 31-40 years age group.
- Histopathological examination showed proliferative endometrium in 32 (30.8%), secretory endometrium in 26 (25.8%) cases, hyperplastic endometrium in 21 (20.25%) of all the cases, irregular shedding in 8 cases (7.7%), malignant lesion in 6 (5.8%) and tuberculosis in 4 (3.8%) cases.
- Adenomyosis uteri and leiomyoma were seen in 46.7% and 40% of the 30 hysterectomy specimens.

**ABSTRACT NO. 90**

**Author** : Thakur, S., H. K. Premi, I. Randhawa, et al.

**Title** : Epidemiological Evaluation of Excessive and/or Irregular Uterine Bleeding

**Source** : Indian Journal of Public Health, 37(4), 1993, pp. 133-134

**Place of study** : Shimla, Himachal Pradesh

**Period of study** : January 1989 - September 1989

**Aims and objectives** : To determine epidemiological factors in cases of excessive or irregular bleeding.

**Study conducted by** : Indira Gandhi Medical College, Shimla

**Nature of study** : Prospective, hospital-based

**Methodology:**

For the study, 217 consecutive women attending the gynaecology clinic for excessive and/or irregular bleeding (22.7% of a total of 995 gynaecological admissions during the study period) were enlisted. The control group consisted of 50 women with normal menstrual cycles.

**Findings:**

- Mean age in the study group was found to be  $37.1 \pm 9.19$  years while in the control group it was  $31.9 \pm 6.93$  years. The difference was significant at the 10% level. The mean gravidity of patients was  $3.7 \pm 2.2$  as against  $2.7 \pm 1.8$  for controls, a significant difference.
- A significantly higher proportion of those in the study group had had a gynaecological operation in the past as compared to the control group (35% versus 14%,  $p < 0.05$ ), had undergone tubectomy (33.4% versus 14%,  $p < 0.01$ ). The incidence of the use of copper-T was more (13.8%) in the study group as compared to the control group (6%), but the difference was not statistically significant.

## ABSTRACT NO. 91

- Author** : Shah, S. K., and S. K. Bhattacharya
- Title** : Menstrual Disorders in Chronic Arsenicosis
- Source** : Journal of Obstetrics and Gynaecology of India, 1995, pp. 106-109
- Place of study** : Calcutta, West Bengal
- Period of study** : 1992-94
- Aims and objectives** : To study the menstrual patterns of women exposed to chronically high levels of arsenic in drinking water.
- Study conducted by** : Medical College, Calcutta
- Nature of study** : Health facility-based, clinical investigation

### Methodology:

The sample consisted of 100 women with chronic arsenicosis with arsenic in urine and arsenic-induced skin lesions who sought treatment at a sub-centre and 100 women who were normal.

Routine investigations including thyroid function, prolactin assay, endometrial biopsy were done. Twenty-four hour urine samples of affected women showed arsenic values ranging from 20 microgram/L to 40 microgram/L depending on the duration of exposure. The maximum allowable concentration of arsenic in drinking water is 0.05 microgram/L.

### Findings:

- Among the 100 women, 32 had secondary amenorrhoea, 41 suffered from oligomenorrhoea, 10 from menorrhagia and only 17 had a normal menstrual pattern.
- The corresponding figures for women in the control group were normal menstruation (78%), amenorrhoea (2%), oligomenorrhoea (19%) and menorrhagia (1%).
- The proportion of women with menstrual disturbances increased with increased levels of arsenic in urine sample. Of the 30 with high exposure, only 2 (6.7%) had normal menstruation. The figures for those with medium and low exposures were 7/55 (12.7%) and 8/15 (53.4%), respectively.

## ABSTRACT NO. 92

- Author(s)** : Devi, Drakshyani K., and P. Venkataramiah
- Title** : A Study of Menstrual Hygiene among Rural Adolescent Girls
- Source** : Indian Journal of Medical Sciences, 48(6), 1994, pp. 139-142
- Place of study** : Guntur, Andhra Pradesh
- Period of study** : January 1986 - July 1990
- Aims and objectives** : To study knowledge and practices of school-going girls about menstruation.

**Study conducted by** : Home Science College, Andhra Pradesh Agricultural University

**Nature of study** : Interviews conducted with girls in a rural high school

**Methodology:**

65 girls who had attained menarche and were studying in classes 8, 9 and 10 in a rural high school were administered an interview schedule asking for details about their menstrual periods, and on their knowledge of and practices related to menstruation.

**Findings:**

- The majority of the girls (43/65) said that menstruation was a physiological process but 12 said that it was a curse of god, 4 said that it was due to sin, 5 believed that it was a disease and 1 girl did not respond.
- Thirty-three girls said that menstruation was due to a hormonal process, while 18 said it was due to weight gain in the body, and 14 did not respond.
- A large number (51/65) could say that the origin of menstrual bleeding was the uterus. Seven said that the bleeding came from the abdomen, 4 said intestines, and 1 said the kidney. Two did not respond.
- Almost all (64/65) girls used old cloth as menstrual absorbent, and 1 used cotton. Fifty-one said they used clean cloth, 10 used boiled and dried cloth and 4 gave no response. 25 of 65 reused the cloth for more than one menstrual cycle.
- Disposal of the material was through the washerman (16/65), throwing in the canal (13/65), burying (4), throwing in the fields, drainage or dustbin (4, 1 and 1 each). There was no response from a significant number: 26/65 or 40%.
- There were a number of restrictions on the girls' activities during menstruation. The vast majority (56/65) were forbidden from religious activities, attending marriages (51/65) and from playing (49/65). Other restrictions included not being allowed to perform household work (36), not permitted to move around freely in the house (30/65) and not allowed to enter the kitchen (27/65).

**ABSTRACT NO. 93**

**Author** : Rajaram, Shalini, Amita Suneja, and Agarwal Neera Mahishi

**Title** : How Alarming Is Post-Coital Bleeding: A Cytologic, Colposcopic and Histopathologic Evaluation

**Source** : Gynaecologic and Obstetric Investigation, vol. 45, 1998, pp. 205-208

**Place of study** : New Delhi, North India

**Period of study** : March 1994 - February 1996

**Aim and objectives** : To evaluate post-coital bleeding by cytology, colposcopy and histopathology and to assess risk factors.

**Study conducted by** : Guru Teg Bahadur Hospital, New Delhi

**Nature of study** : Retrospective, hospital-based

**Methodology:**

The charts of 121 patients with post-coital bleeding presenting to the colposcopy clinic of Guru Teg



Bahadur Hospital and University College of Medical Sciences, and 110 women were enrolled in the study. All patients were evaluated by cytology (Pap smears) and colposcopy. Colposcopy positive patients underwent a directed biopsy. Patients with an unsatisfactory colposcopy had endocervical sampling. Age, parity and duration of post-coital bleeding were correlated with histopathologic findings for risk assessments. Statistical analysis was done using one-way ANOVA.

**Findings:**

- Two-thirds of the patients reported the symptom within six months of onset, and 16% waited for a year.
- Benign lesions of the cervix accounted for 85.5% of the cases. *Trichomonas vaginalis* was seen in seven smears while the rest had non-specific inflammation.
- In 5.6% of the cases, viral HPV infection and cervical intraepithelial neoplasia (CIN) 1 was found. CIN 2-3 was found in 3.6% and invasive cancer in 5.5%.
- The mean age of patients with invasive cancer was 41.3 years as compared to 32.9 years in patients with benign pathology ( $p < 0.05$ ). Mean parity was 4.2 in patients as compared to 2.8 in benign cases (difference not significant).
- There was no correlation between duration of bleeding and pathology.

**ABSTRACT NO. 94**

**Author** : Chhabra, S., and Neenu Ohri  
**Title** : Leiomyomas of Uterus: A Clinical Study  
**Source** : Journal of Obstetrics and Gynaecology of India, 1993, pp. 436-439  
**Place of study** : Wardha, Maharashtra  
**Period of study** : January 1988 - January 1991  
**Aim and objectives** : To study cases of leiomyomas of the uterus, the most common pelvic tumour in women, occurring in one of every four or five women in the reproductive age group.  
**Study conducted by** : Mahatma Gandhi Institute of Medical Sciences, Sevagram, Wardha  
**Nature of study** : Hospital-based, clinical evaluation

**Methodology:**

The sample consisted of 200 cases of leiomyomas of the uterus managed by hysterectomy.

**Findings:**

- The most common presentation was abnormal uterine bleeding (63.5%).
- 20% of women had submucous, and 22.50% had subserous leiomyomas, while 47.5% had intramural fibroids.
- In 29.5% of cases, the uterus was enlarged to more than 12 weeks size of pregnant uterus, and in 8%, to more than 20 weeks pregnant size.
- Menorrhagia was the most common indication for surgical intervention.
- Endometrial hyperplasia was associated with 8% of cases and endometrial carcinoma 0.58%. But endometrial patterns were proliferative in 40% of the cases.

**ABSTRACT NO. 95**

- Author** : Chhabra, S., and Meenakshi Jaiswal
- Title** : Vaginal Management of Uterocervical Myomas
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 260-263
- Place of study** : Wardha, Maharashtra
- Period of study** : Not specified
- Aims and objectives** : To study the outcome of vaginal management of cases of leiomyomas of the uterus.
- Study conducted by** : Mahatma Gandhi Institute of Medical Sciences, Sevagram, Wardha
- Nature of study** : Hospital-based

**Methodology:**

The sample consisted of 100 cases of uterine myomas seen in the health facility.

*Definition:* Uterine myomas are tumours that usually cause excessive bleeding during menstruation or bleeding in between menstruation. Sometimes they are pushed down towards the dilating cervix during uterine contractions in labour. They may then remain in the cervical canal or get prolapsed through it, partially or completely. Sometimes they arise from the cervical wall, either remaining within the cervix or prolapsed.

**Findings:**

- The most common mode of presentation was intermittent bleeding (42%), followed by excessive bleeding during the menstrual period (35%). However, women came with multiple complaints including pain in the abdomen (26%), something coming out of the vagina (20%), backache (20%), frequent heavy cycles (20%), post-coital bleeding (15%) and white discharge (23%).
- Fifty-three were cervical tumours, 47 were uterine tumours, 31 were sessile and 69 pedunculated.
- Fifty percent of the women were managed through vaginal surgical procedures. In the remaining 50%, abdominal procedure was carried out, of which 40% had to have a hysterectomy later because they continued to have symptoms or had other myomas.

**ABSTRACT NO. 96**

- Author** : Kaur, Daljit, I. Walia, and Amarjeet Singh
- Title** : Prevalence of Infertility in a Chandigarh Resettled Colony
- Source** : Bulletin of the Post Graduate Institute, vol. 31, 1997, pp. 81-83
- Place of study** : Chandigarh, North India
- Period of study** : January - February 1996

**Aims and objectives** : To determine prevalence of infertility in a community sample.

**Study conducted by** : Post Graduate Institute of Medical Education and Research, Chandigarh

**Nature of study** : Cross-sectional, community survey

**Methodology:**

A house-to-house survey was carried out in a resettlement colony to enlist women who had experienced two years of childlessness despite exposure to pregnancy. 2,282 women were listed in all.

**Findings:**

- 145/2,282 were found to be infertile (6.4%). 63/145 were experiencing primary infertility and 82/145 were experiencing secondary infertility. Of these, 38 women could not be interviewed: 14 cases of primary infertility who had gone to their mothers' house and 24 cases of secondary infertility who did not wish to be interviewed.
- The majority of the cases of primary infertility were in the age group of 20-24 years (23/63) followed by 25-29 years (17/63). In the case of secondary infertility, the largest proportion of cases was in the 25-29 age group (26/82) followed by the 30-34 age group (13/82). The mean age of infertile women was  $29.8 \pm 6.87$ . Highest age specific prevalence of overall infertility was in the 25-29 age group. The difference in age specific infertility was statistically significant ( $p < 0.05$ ).
- Of the 107 women who could be interviewed, the duration of infertility was 2-6 years in 57 cases, 7-11 years in 30 cases and 12 years or more in 20 cases.

**ABSTRACT NO. 97**

**Author** : Singh, A. J., and L. K. Dhaliwal

**Title** : Identification of Infertile Couples in a Rural Area of Northern India

**Source** : Indian Journal of Medical Research, vol. 98, 1993, pp. 206-208

**Place of study** : Ambala, Haryana

**Period of study** : 1991-92

**Aims and objectives** : To explore the operational aspects of identifying infertile couples utilising the existing information structure within the primary health care set-up.

**Study conducted by** : Postgraduate Institute of Medical Education and Research, Chandigarh

**Nature of study** : Community survey

**Methodology:**

A total catchment population of 28,839 serviced by a PHC was surveyed by a female social worker. Eligible couples' registers maintained by the health workers at the sub-centre were used to prepare a village-wise list of childless couples. Following this the villages were surveyed. The key informants, including anganwadi workers/helpers and traditional birth attendants, were used to verify the cases as well as to seek information on additional cases. This led to the exclusion of many cases from the original list. Cases from this updated list were then contacted individually and details recorded on a pre-tested proforma. Infertility was defined according to WHO guidelines.

**Findings:**

- Of a total of 4,453 eligible couples, 298 were listed as infertile. However, verification from key informants led to the exclusion of 169 of these. This gave a total prevalence of 129/4,453 or 2.9%.
- 60/129 (46.5%) cases were classified as primary infertility (prevalence 1.35%); 69/129 (53.5%) cases were classified as secondary infertility (prevalence 1.55%). Forty of the secondary infertility cases had one living child, one had two children, 28 were childless.
- Of the total number of cases identified correctly, health workers were responsible for identifying 33% of the cases, while key informants helped identify 93%. Thus, key informants and the existing information structure can together be utilised to identify conditions such as infertility in rural areas, provided care is taken to verify the details.

**ABSTRACT NO. 98**

- Author** : Kaur, Kanwaljit, I. Gupta, and L. K. Dhaliwal
- Title** : Evaluation of Hysteroscopy in the Diagnosis of Uterine Abnormalities in Infertile Women
- Source** : Bulletin of the Post Graduate Institute, vol. 30, 1996, pp. 69-71
- Place of study** : Chandigarh, North India
- Period of study** : January-February 1992 - November 1993
- Aims and objectives** : To evaluate the place of hysteroscopy in the investigation of infertility.
- Study conducted by** : Post Graduate Institute of Medical Education and Research, Chandigarh
- Nature of study** : Prospective, hospital-based

**Methodology:**

The sample consisted of 60 consecutive infertile women attending the infertility clinic of the Institute. All women underwent both hysteroscopy and hystereography. Hysteroscopy was done prior to hystereography in the same menstrual cycle or the immediately next cycle and in consecutive cases.

**Findings:**

- 43/60 (71.7%) women were experiencing primary infertility (PI) and 17/60 (28.3%) were experiencing secondary infertility (SI).
- In 13 cases (10 cases of primary and 3 cases of secondary infertility) intrauterine abnormality was detected by hysteroscopy: endometrial polyps (4, all PI), intrauterine adhesions (4: 2 PI and 2 SI), uterine malformations (2: both PI) and cervical stenosis (3: 2 PI and 1 SI).
- In 15 cases abnormalities were detected by hystereography, with more than one condition coexisting: endometrial polyps (7), intrauterine adhesions (4), uterine malformations (3), cervical stenosis (3) and artefacts (7).
- There was 75% agreement between the two methods. Thirty-six (36) women had normal findings on both hysteroscopy and hystereography, 6 had abnormal findings in both. Nine women with apparently abnormal uterine cavity on hystereography had normal hysteroscopy, and in 7 women, hystereography could not detect abnormalities seen on hysteroscopy.

- Thus, hystereography tended to over-diagnose uterine abnormalities. Hysteroscopy is more reliable and accurate than hystereography and was also able to reveal uterine pathologies that hystereography was unable to detect. The two techniques should be used complementarily for best results.

**Reviewer's note:**

Hysteroscopy and hystereography are both procedures currently utilised in the diagnosis of uterine abnormalities that cause infertility. The diagnostic reliability of both procedures is a subject of much controversy.

**ABSTRACT NO. 99**

- Author(s)** : Rameshkumar, K., and J. A. Thomas
- Title** : Endometrial Biopsy in Women with Primary Infertility
- Source** : Indian Journal of Medical Research, vol. 94, 1991, pp. 20-23
- Place of study** : Bangalore, Karnataka
- Period of study** : January 1985 - June 1989
- Aims and objectives** : To study specimens of endometrial biopsies in women experiencing primary infertility to determine the cause of infertility.
- Study conducted by** : St. John's Medical College, Bangalore
- Nature of study** : Retrospective, hospital-based

**Methodology:**

A sample of 2,616 endometrial biopsies were studied, of which 1,022 were from women experiencing primary infertility (39.1%). Standard features for diagnosing estrogen phase and dating progesterone phase were used.

**Findings:**

- Of the 1,022 patients, 238 had definite hormonal derangements as assessed by morphological means on endometrial biopsy. In 109 (10.75%) a dominant estrogen effect was manifested morphologically as hyperplastic endometrium or adenomatous hyperplasia or cystic hyperplasia.
- Anovulation as assessed by glandular stromal dissociation and as a cause of infertility was noted in 12.6% of patients.
- The incidence of anovulation increased over the age group 20-25 years, with a peak at 25 years.
- Inflammatory cause for the infertility appeared to be negligible.

**ABSTRACT NO. 100**

**Author** : Jayakrishnan, K., Sheila Balakrishnan, and K. Radhakumari  
**Title** : Endometriosis and Infertility: An Overview  
**Source** : Journal of Obstetrics and Gynaecology of India, 1993, pp. 67-71  
**Place of study** : Trivandrum, Kerala  
**Period of study** : Not specified  
**Aims and objectives** : To examine the relationship between endometriosis and infertility.  
**Study conducted by** : Sri Avittom Tirunal Hospital, Trivandrum  
**Nature of study** : Prospective, hospital-based

**Methodology:**

The study sample consisted of 238 cases of laparoscopy carried out in women reporting infertility.

**Findings:**

- Incidence of endometriosis was 21.4% (51/238). Of these, 15 were mild cases, 12 were moderate and 24 were severe cases of endometriosis.
- 37.2% of the patients did not have any symptoms associated with endometriosis.
- Of the 51 endometriosis cases, 26 did not have any positive pelvic findings. The diagnosis was possible only through laparoscopy.
- Surgical pelviscopy was done, and this yielded a 36.3% pregnancy rate in mild cases of endometriosis and 30% pregnancy rate in moderate cases.
- Conservative laparotomy done in severe endometriosis yielded pregnancy in 4.2% of the cases.

**ABSTRACT NO. 101**

**Author** : Mookherjee, Neelofer, Alka Gogate, and P. K. Shah  
**Title** : Microbiological Evaluation of Women with Bad Obstetrics History  
**Source** : Indian Journal of Medical Research, 1995, pp. 103-107  
**Place of study** : Mumbai, Maharashtra  
**Period of study** : Not specified  
**Aims and objectives** : To carry out a microbiological evaluation of women with bad obstetrics histories to find infections associated with foetal and neonatal morbidity and mortality.  
**Study conducted by** : Lokmanya Tilak Medical College, Mumbai

**Nature of study** : Prospective, hospital-based

**Methodology:**

The study group consisted of 200 pregnant women with a bad obstetrics history, and 100 pregnant women who were evaluated as clinically normal with at least one previous full-term normal delivery formed the control group. All were from the same socio-economic strata and similar age range.

All 300 women were subjected to speculum examination and four cervical swabs were collected for further testing. One swab was used for preparing smears for microscopic examination using routine staining technique; the second was used for isolation of genital mycoplasmas. 5ml venous blood was collected for serological evaluation. Statistical analysis was done employing the Chi-square test.

**Findings:**

- In women with a bad obstetric history, prevalence of toxoplasma gondii was 34.5%, genital mycoplasmas (28%), chlamydia (24.5%), cytomegalovirus (CMV) (8%), Herpes Simplex Virus (HSV) (3%) and N. gonorrhoea (1.5%).
- The percentage isolation of genital mycoplasmas ( $p < 0.025$ ), Toxoplasma gondii ( $p < 0.001$ ), chlamydia ( $p < 0.01$ ) in women with bad obstetric history was found to be higher than in the control group.
- Mixed infections were in 63/200 patients of the study group. T. gondii was found most often (34/63, 54%) in association with mycoplasma, chlamydia, HSV, CMV, and candida. Ureaplasma urealyticum was seen in association with other infections in 27 of the 63 patients (42.85%).
- Pregnancy outcomes were studied in 50/69 patients positive for T. gondii, 12/16 patients positive for CMV and 20/39 patients positive for ureaplasma in the study group.
- Toxoplasmosis was associated with complete abortion (38%), stillbirths (6%), pre-term delivery (16%) and congenital anomalies (6%). Only 34% of the births were full-term with delivery of a clinically normal infant.
- CMV infection was associated with complete abortion (41.66%), preterm delivery (33.33%) and congenital anomalies (8.33%). Only 16.67% of the women had normal full-term deliveries.
- Urea plasma infection in women who formed the study group resulted in preterm delivery with premature rupture of membranes in 45% of women and complete abortion in 35%. Normal full-term delivery occurred in only 20% of the cases.

**Reviewer's note:**

The study does not present information on pregnancy outcomes in the control group, although the rates of pregnancy loss in the study group are clearly far higher than expected normal rates.

**ABSTRACT NO. 102**

**Author(s)** : Gupta, P. L., and Maya Jethani

**Title** : Endometrial Glycogen: An Important Parameter of Infertility

**Source** : Journal of Obstetrics and Gynaecology of India, 1995, pp. 804-807

**Place of study** : Ajmer, Rajasthan

**Period of study** : Not specified

**Aims and objectives** : To ascertain if endometrial glycogen is an important parameter of infertility.

**Study conducted by** : J.L.N. Medical College, Ajmer

**Nature of study** : Prospective, hospital-based, clinical investigation

**Methodology:**

150 cases of infertility and 50 of proven fertility were selected from among women attending the gynaecology department of the hospital. Among women experiencing infertility, 120 were cases of primary infertility, and 30 were cases of secondary infertility.

Endometrial biopsies were taken for all of the 200 women. In the case of those with infertility, pre-menstrual biopsies were taken in 125 and post-menstrual biopsies in 25. Among women with proven fertility, 25 each were taken in the pre- and post-menstrual period. Samples were stained with H and E and PAS reagent with or without digestion with saliva for histochemical study of glycogen. Glycogen was graded as mild, moderate, heavy or intense:

*mild* - Small amount of glycogen in the early and mid-proliferative phase. Distribution is perinuclear and particles are small.

*moderate* - In early secretory phase; glycogen particles are supranuclear; mild to moderate PAS positive material around blood vessels.

*heavy* - In late secretory phase, large amount of glycogen in the lumen of the glands.

*intense* - Predecidual cells also showed moderate amount of glycogen.

**Findings:**

- Duration of infertility varied from 2-11 years. The age distribution of the sample ranged from 17-30 years.
- Menstrual cycles were irregular in 31.34% and 18% in the infertile and fertile groups, respectively.
- Histologically endometrium was in the secretory phase in 48% and 84% in the infertile and fertile groups, respectively.
- In the infertile group, glycogen was mild in 45%, moderate in 43.33%, heavy in 8.33% and intense in 3.33%. While in the fertile group, the trend was the reverse where glycogen was moderate in 14.28%, heavy in 28.57% and intense in 57.14%.
- In the post-menstrual phase, glycogen was mild in 96%, moderate to heavy in 4% in the infertile group as compared to the control, where it was mild in 68% and heavy to intense in 32% of cases.
- The study shows significant decrease in glycogen deposition in the endometrium in infertile women in pre-menstrual as well as post-menstrual periods. Thus, deficiency in glycogen plays an important role in infertility.

**ABSTRACT NO. 103**

**Author(s)** : Jain, M., S. Gupta, and M. Singh, et al.

**Title** : Correlation between Serum Antichlamydial Antibodies and Tubal Factor in Infertility

**Source** : Journal of Obstetrics and Gynaecology of India, 1994, pp. 380-383

**Place of study** : Varanasi, Uttar Pradesh

**Period of study** : April 1990 - March 1992

**Aims and objectives** : To find the correlation if any between antichlamydial antibodies (indicative of chlamydia infection currently or in the past) and tubal causes of infertility.



**Study conducted by** : Sunderlal Hospital Institute of Medical Sciences, Varanasi

**Nature of study** : Prospective, hospital-based, clinical investigation

**Methodology:**

The study group consisted of 57 women presenting with infertility, and 20 women seeking tubal ligation were taken as controls. Detailed clinical examination, pre-menstrual endometrial biopsy, hysterosalpingography and laparoscopy were done on all women. Presence of anti-chlamydial antibodies was ascertained by indirect immunoperoxidase assay. A titre of 1:64 was considered positive.

**Findings:**

- Antichlamydial antibodies were found in 28.07% of infertile and 5% of control cases.
- The majority of women 59.65% (34/57) had had tubal factor infertility.
- 13/34 (38.2%) patients with tubal factor presented chlamydial seropositivity. Ampullary block (11/34) followed by cornual (9/34) and hydrosalpinx (8/34) were the most common blocks found.
- 22/34 infertile cases had a bilateral tubal block followed by bilateral hydrosalpinx (5/34) block. Chlamydial seropositivity was more in bilateral tubal disease (12/27, 44.4%) as compared to unilateral tubal disease (1/7, 14.3%).
- Chlamydial seropositivity was about five times more frequent in infertile women than in controls. The site of the tubal block also determined the incidence of seropositivity. The chlamydial seropositivity in patients with fimbrial block was statistically significant in comparison with controls ( $p < 0.01$ ), whereas this was not so in the case of patients having cornual block.

**ABSTRACT NO. 104**

**Author** : Gogate, A., L. P. Deodhar, P. K. Shah, et al.

**Title** : Detection of Chlamydia Trachomatis Antigen and Toxoplasma Gondii (Igm) and Mycoplasma Hominis (IgG) Antibodies by ELISA in Women with Bad Obstetric History

**Source** : Indian Journal of Medical Research, vol. 100, 1994, pp. 19-22

**Place of study** : Mumbai, Maharashtra

**Period of study** : 1991-93

**Aims and objectives** : To study the incidence of reproductive tract infections in women with a bad obstetric history.

**Study conducted by** : Lokmanya Tilak Medical College, Mumbai

**Nature of study** : Prospective, hospital-based, clinical investigation

**Methodology:**

A sample of 365 non-pregnant women with a bad obstetric history was the study group, and 100 women who had delivered full-term clinically normal infants were the control group. The women in the study group were investigated soon after pregnancy loss or after delivery. Requisite tests were done along with ELISA.

**Findings:**

- *C. trachomatis* antigen was detected in 28.2% of women with a bad obstetric history, and *T. Gondii* and *M. hominis* were found in 43.83% and 27.1%, respectively. The above figures were highly significant ( $p < 0.0001$ ) in comparison to the control group.

**ABSTRACT NO. 105**

- Author** : Tyagi, Poonam, and V. S. Singh
- Title** : Chlamydial and Gonococcal Serology in Women with Tubal Infertility
- Source** : Indian Journal of Medical Sciences, 1998, pp. 231-235
- Place of study** : Meerut, Uttar Pradesh
- Period of study** : Not specified
- Aims and Objectives** : To establish the relative importance of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in the etiology of tubal infertility.
- Study conducted by** : L.L.R.M. Medical College, Meerut
- Nature of study** : Prospective, hospital-based, clinical investigation

**Methodology:**

The sample consisted of 81 women attending the gynaecology clinic for infertility. The control group consisted of 40 pregnant women with no known fertility problems and matched for age. Based on appearance of fallopian tubes, the study population was divided into 2 groups: Group A - 30 cases who had periovarian and/or peritubal adhesions; Group B - 51 cases who had unilateral/bilateral tubal blockage. Blood samples were drawn and requisite tests done.

**Findings:**

- 74.07% of cases of tubal infertility showed positive immunoperoxidase assay for *C. trachomatis* infection. A statistically significant difference was seen in the antibody titres of women with tubal infertility versus controls for chlamydial infection ( $p < 0.001$ ).
- ELISA test for gonococcal antibodies showed only 4/81 cases had these antibodies.
- Tubal infertility therefore appears to be more often sequelae of chlamydia infection than of gonorrhoea.

**ABSTRACT NO. 106**

- Author(s)** : Agarwal, B. M., Sandhya Agarwal, Mukul Chandra, et al.
- Title** : Role of Mycoplasma and Anaerobes in Unexplained Infertility

**Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 654-658

**Place of study** : Agra, Uttar Pradesh

**Period of study** : January 1991 - November 1994

**Aims and objectives** : To explore the possible role of mycoplasma as causative agent in association with anaerobic organisms in infertility.

**Study conducted by** : S. N. Medical College and Hospital, Agra

**Nature of study** : Prospective, hospital-based, clinical investigation

**Methodology:**

The study group consisted of 200 women experiencing unexplained infertility. Of these, 120 were cases of primary infertility and 80 were cases of secondary infertility. Fifty cases of the same age group and confirmed fertility were taken as control.

A woman was defined as experiencing unexplained fertility on normal findings at complete general, physical and systemic examination including semen analysis, cervical mucus examination, endometrial biopsy, hysterosalpingography, laparoscopy and ultrasonography. Cases with any positive abnormality were excluded from the study group.

Semen and high vaginal swabs were taken for the purpose of identifying the strains. Identification of species was based on morphological typing, staining of colonies and their biochemical behaviour.

**Findings:**

- Ureaplasma urealyticum (UU) was consistently high in primary and secondary sterility cases and absent in controls. This difference was statistically highly significant ( $p < 0.001$ ).
- UU in primary infertility cases: 30.8% in high vaginal swab and 12.5% in semen; in secondary infertility cases: 35% in high vaginal swab and 45% in semen.
- Incidence of anerobic organism in primary infertility was 61.6% and secondary infertility, 62.5%. The prevalence in controls was only 22%.

**ABSTRACT NO. 107**

**Author** : Roy, S. K., K. K. Gupta, and P. K. Agarwal

**Title** : To Which Extent Ureaplasma Urealyticum (Mycoplasma) Genital Infection Is Responsible for Male Infertility

**Source** : Indian Journal of Medical Sciences, 1997, pp. 299-301

**Place of study** : Meerut, Uttar Pradesh

**Period of study** : Not specified

**Aims and objectives** : To examine the extent of prevalence of Ureaplasma urealyticum in semen, and its possible role in male infertility.

**Study conducted by** : L.L.R.M. Medical College, Meerut

**Nature of study** : Prospective, hospital-based, clinical investigation

**Methodology:**

The sample consisted of 90 infertile males attending the infertility clinic. The presence of female factor for infertility was excluded by clinical examination and requisite clinical tests. All patients were subjected to detailed semen analysis and culture. Simultaneously 20 healthy fertile male's semen samples were also subjected to mycoplasma culture.

**Findings:**

- 29/90 had a lot of pus cells in their semen.
- 11/29 were azoospermic, 9/11 were severe oligospermic, 4/29 were moderate oligospermic and 5/29 were normospermic.
- Presence of pus cells was found to be associated with significant reduction in sperm motility. Normospermic ( $30.3 \pm 10.6\%$ ), moderate oligospermic ( $25.4 \pm 5.2\%$ ) and severe oligospermic ( $20 \pm 6.2\%$ ).
- Only 7.8% of the 90 showed growth of *U. urealyticum*, but all those who showed growth also had pus cells. None of the controls showed growth of *U. urealyticum*.
- The presence of pus cells in 32.35% vis-a-vis only 7.8% showing growth of *U. urealyticum* indicate that other microorganisms are also responsible for genital infections.

ABSTRACT NO. 108

**Author** : Unisa, Sayeed

**Title** : Childlessness in Andhra Pradesh, India: Treatment Seeking and Consequences

**Source** : Reproductive Health Matters, 7(13), May 1999

**Place of study** : Ranga Reddy district, Andhra Pradesh

**Period of study** : 1998

**Aims and objectives** : Explore treatment seeking behaviour and consequences of childlessness.

**Study conducted by** : The Author

**Nature of study** : Descriptive, community-based

**Methodology:**

The sample consisted of 332 infertile women identified from 30 villages (which were selected by stratified random sampling). 9,298 women who were in the reproductive age group were interviewed for the purpose of identifying childless women. In all, 12 percent of the women were found to be childless. For the study currently married women aged 20-49 years old and who had been married for three or more years without a live birth were included. In this group the rate of childlessness was found to be 5 percent.

Free listing of the types of the treatment available were collected from key informants. Detailed information on household characteristics, marriage, pregnancy history, treatment seeking behaviour, consequences of childlessness, social participation, decision-making about treatment, general health and mental health was collected in face-to-face interviews using a questionnaire.

Clinical examination was done on 332 women and 101 men by a female gynaecologist and male doctor, respectively. Help was offered to try and overcome minor reproductive health problems that might affect fertility and referrals were made where necessary.

In addition, 60 detailed case studies were obtained. Identification of cases included special cases of women who had adopted a child, those whose husbands had taken a second wife and those who had not sought any fertility treatment, those who had visited holy places and those who had sought allopathic treatment. Informal and semi-structured interview methods were used to collect this information.

### **Findings (n=332):**

#### *Profile of childless women:*

- 73% of the 332 women identified were below 30 years of age.
- 52% were married before 15 years of age.
- Single marriages were the norm and a large number were married to close relatives.
- One-third of women belonged to scheduled castes. 43% of the women were agricultural labourers, 33% were housewives, 18% were shopkeepers and 6% were cultivators.
- 70% of the women had never been pregnant and the remaining 30% had either one or more pregnancies, which had resulted in either spontaneous abortions or stillbirths.

#### *Reasons for not seeking infertility treatment:*

- 26% (86/332) did not seek treatment. Of whom 43% stated high cost as the main detrimental factor. 41% felt it was not necessary. 8% reported a lack of information on where to get treatment. 3.5% stated non-availability of treatment nearby as a cause, while 3.5% reported not being able to get permission from elders as their reason.

#### *Initiation and duration of efforts to seek fertility treatment:*

- On an average, after three years of marriage efforts were made to seek treatment or visit holy places. Among those who sought treatment after one year of marriage a combination of pressure and their own impatience to have children were cited as reasons for seeking treatment.
- While infertility was initially considered to be the women's problem and husbands were uncooperative, no matter where the treatment was sought, in 75% of the cases the husband went with his wife for treatment.

#### *Source of information on where to get treatment:*

- Neighbours were the main source of information (35%). In 25% of the cases the couples decided themselves, while among the remaining couples, the parents of the women provided both the information and financial support for treatment.

#### *Sources/number of courses/duration of successive courses of treatment and cost of treatment:*

- 73% of those who sought treatment preferred allopathic treatment (which was private in nature) first followed by religious or traditional sources.
- Around 19.9% of the women tried only one course of treatment and 19.6% tried two courses of treatment and the percentage declined with an increase in the number of courses of treatment.
- There was an increase in the duration of each course of treatment as the number of courses of treatment increased.
- On an average Rs 1500 was spent in case of government services and the cost increased almost one and a half times if the treatment was from a private source.
- Women who had one course of treatment spent Rs 1000 on an average and this was increased by more than 20 for women going for six or more courses of treatment.

#### *Consequence of childlessness:*

- 71.5% stated that they had a harmonious relationship with their husbands. 15.9% stated that their husbands talked about taking on a second wife, while in 11.7% the husband already had another wife. 4.1% said that their husbands were having a relationship with other women and in 3.8% the husband wanted a divorce.
- In a four-point scale used to record the degree of violence, the existence of violence was based on reports of the presence of any of the following conditions: the husband beating the wife, cuts and bruises, bad behaviour of the husband, or the wife being afraid of the husband. The greater the number of indicators, the greater was the degree of violence recorded. 38.9% of the women reported a mild degree of violence while 30.9% reported no violence. 18.4% and 7.4% reported severe to very severe degrees of violence, respectively. 5.4% reported a moderate degree of violence.

- Isolation and stigmatisation were looked at in terms of views and experiences of attending ceremonies (which are social events). 52.1% refused to attend any ceremonies, 18.1% reported that something rude had been said to them at the ceremonies they had attended while 19.4% of the women considered themselves to be inauspicious or a source of bad luck (indicating low self-esteem).

ABSTRACT NO. 109

- Author(s)** : Mishra, J. S., K. Das, and A. Harish
- Title** : Cytological Study of Viral Infections in Carcinoma Cervix
- Source** : Journal of Obstetrics and Gynaecology of India, 1996, pp. 527-531
- Place of study** : Lucknow, Uttar Pradesh
- Period of study** : March 1989 - December 1994
- Study conducted by** : Queen Mary's Hospital, Lucknow
- Nature of study** : Prospective, hospital-based
- Aims and objectives** : To ascertain the probable association of viral infections with dysplasia of the uterine cervix and cervical carcinoma.

**Methodology:**

The sample consisted of 5,278 women attending the gynaecology outpatient clinic. Each of them had a gynaecologic check-up, and scrape and endocervical smears were collected and stained by Papanicolaou's technique. Cytopathological grading was done according to WHO classification (1973).

**Findings:**

- Incidence of herpes simplex was 0.1% (9/5,278) and Condyloma 0.6% (35/5,278).
- Of the 5,278 cases: healthy cervix (2,719/5,278), erosion (653/5,278), cervix bleeding on touch (103/5,278), endocervicitis (69/5,278), hypertrophied cervix (1,452/5,278) and cancer of the cervix (282/5,278).
- Incidence of cervical dysplasia 8.1% (429/5,278), malignant smears 0.9% (49/5,278).
- Of 9 cases with herpes, 6 had cervical dysplasia and 3 had carcinoma cervix. Of 35 patients with condyloma, 16 (45.7%) had dysplasia.
- The maximum number of herpes cases seen in contact bleeding cases was 6.9%, while the incidence of condyloma was highest in women complaining of pain in the lower abdomen (5.1%).
- Gynaecological symptoms were as follows: asymptomatic 4,775/5,278, contact bleeding 29, menorrhagia 114, leucorrhoea 255, post-menopausal bleeding 47, pain in the lower abdomen 58.

**ABSTRACT NO. 110**

- Author(s)** : Sinha, Geeta
- Title** : The Prevalence of Wart Virus Infection and Its Association with Pre-Malignant Lesions of the Cervix
- Source** : Journal of Obstetrics and Gynaecology of India, 1995, pp. 931-934
- Place of study** : Patna, Bihar
- Period of study** : 1986-90
- Aims and objectives** : To find out the prevalence of wart virus infection (WVI) caused by Human Papilloma Virus (HPV) and its association with pre-malignant lesions of the cervix.
- Study conducted by** : Patna Medical College, Patna.
- Nature of study** : Prospective, hospital-based, clinical study

**Methodology:**

Cervical scrape smears of 500 women attending the gynaecology outpatient clinic were taken. Those with a positive smear were subjected to colposcopy and directed biopsy. History of wart infection on the genitalia of their partners was elicited. Incidence of wart viral changes was inferred, as well as studying the association of wart viral changes with various degrees of dyskaryosis.

**Findings:**

- 37% of the women were in the age group 20-30 years and 35.6% were in the age group 30-40 years.
- 76.4% presented with vaginal discharge. 11.8% were asymptomatic, 5.9% were pregnant and 5% had inter-menstrual bleeding.
- 31% (155/500) had normal smears, 42% had inflammatory smears (212/500), 21.2% had dyskaryotic smears (106/500) (mild-7.2%, moderate-4.8%, severe-9.25%) and 5.4% invasive carcinoma (27, squamous carcinoma-5.2%, adeno-carcinoma-0.2%).
- Among the 212 inflammatory smears, 35/212 (16.5%) had trichomonas vaginalis, 19/212 (9%) had monilial infection, 5/212 (2.4%) had mixed infections, 12/212 (5.6%) had HPV infection and 2 (0.9%) had microfilaria infections.
- Among the 106 dyskaryotic smears, 5/106 (4.7%) had trichomonas vaginalis, 2/106 (1.9%) had monilial, 2/106 (1.9%) were mixed, and 22/106 (20.8%) had HPV infection. Thus, prevalence of HPV infection was significantly higher in women with dyskaryotic smears.

**ABSTRACT NO. 111**

- Author(s)** : Chhabra, S., Krishna Aher, P. Narang, et al.
- Title** : Chlamydia Trachomatis Infection and Cervical Intra Epithelial Neoplasia
- Source** : Journal of Obstetrics and Gynaecology of India, 1993, pp. 93-94
- Place of study** : Wardha, Maharashtra
- Period of study** : Not specified
- Aims and objectives** : To find out the correlation between Papanicolou grading in women with cervical erosion and chlamydial infection detected by ELISA.

**Study conducted by** : Mahatma Gandhi Institute of Medical Sciences, Sevagram, Wardha

**Nature of study** : Prospective, hospital-based, clinical

**Methodology:**

100 women with cervical erosion were subjected to Pap smear and ELISA tests.

**Findings:**

- 3% had ELISA positive smears.
- 6.35% had grade I (normal) Pap smears and 90.7% had grade II smears.
- All women with ELISA positive smears had grade III (dysplastic) smears.
- Women with dysplastic smears were between 30-35 years with sexual contact of more than six years.

**ABSTRACT NO. 112**

**Author(s)** : Singh, Veena, L. Satyanarayana, Ashok Sehgal, et al.

**Title** : Influence of Gynaecologic Infections on the Cervical Transformation Zone

**Source** : Journal of Obstetrics and Gynaecology of India, 1997, pp. 822-828

**Place of study** : New Delhi, North India

**Period of study** : Not specified

**Aims and objectives** : To study the association of genital tract infection with abnormalities in the cervical transformation zone.

**Study conducted by** : Maulana Azad Medical College, New Delhi

**Nature of study** : Prospective, hospital-based, clinical

**Methodology:**

A sample of 257 consecutive women attending a major women's hospital was studied. Comprehensive gynaecological examination was performed. Clinical signs and symptoms were collected. Vaginal secretions and endocervical secretions were collected for tests and assays. Cytological, colposcopic, histologic and microbiologic modalities were used for assessing the presence of genital tract infections (GTIs).

**Findings:**

- 207/257 women or 80.5% were infected with 1 or more GTIs; 80/257 (31.1%) were infected with 3 or more infections.
- The following infections were detected: HPV in 127 (49.4%), bacterial vaginosis in 86 women (33.5%), Chlamydia in 60 women (23.3%), Herpes Simplex (HSV) in 53 women (20.6%), gonorrhoea in 14 (6.2%); trichomonas vaginalis in 40 women (15.6%) and candida in 16 (6.2%).
- In terms of colposcopic findings, atypical transformation zone (ATZ) formed the biggest group with 128 women (49.8%), 47 women had immature metaplasia (18.3%), 33 women (12.8%) had mature metaplasia while 47 women had normal colposcopic findings.
- Chlamydial infection was independently and significantly associated with immature metaplasia (OR = 27.2, 95% CI 9.1, 81.4).
- ATZ was independently associated with both chlamydia (OR=74, 95% CI 12.1, 448) and HPV (OR =1212, 95% CI 299, 4,915).
- A very heavy load of GTIs accounts for a high frequency of ATZ and a rather low frequency of mature metaplasia.



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