

# **Female sterilization in India**

## **The quality and effect of an observed sterilization camp at The Methodist Public Health Centre, Mursan, India**

Marie Svensk and Pia Wikborg

Supervisor: Professor dr. med. Babill Stray-Pedersen



Photo: Pia Wikborg

Faculty of Medicine  
University of Oslo, Norway  
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## **Abstract**

Population growth is a big challenge for India, and family planning is highly prioritized by the Government of India. Sterilization is the most common voluntary contraceptive method in India and has for many years been performed in camps.

This thesis is based on our observation of a sterilization camp at the Methodist Public Health Centre in Mursan, India and available literature on the subject. We have looked closer at the effect of female sterilization as a method of contraception and the quality of the camp we observed. At the camp the laparoscopic Falope ring method was used. This method is apparently safe, effective and cheap. 167 women were sterilized in 6 hours at a local health clinic.

We evaluated and compared the camp to mandatory guidelines for sterilization issued by the government and existing literature. We found the conditions better than recommended.

Guidelines are necessary to prevent unacceptable conditions – individuals must be properly informed about the risks and benefits and be secured a minimal level of quality.

Statistics from different states in India show a correlation between fertility rate and numbers of sterilized women.

## Table of contents

Abstract .....	2
Table of contents .....	3
1. Preface .....	4
Selecting the topic .....	4
2. Background .....	5
The Methodist Rural Health Program .....	5
Organisation of the clinics.....	5
Family welfare program .....	6
The National Family Health Survey (NFHS) (4) .....	6
Sterilization methods (8;9) .....	7
3. Method .....	9
4. Sterilization camp at the Methodist Primary Health Centre, Mursan (MPHC) .....	10
Recruiting .....	10
Inclusion criteria for surgery at the MPHC: .....	11
Patients arriving.....	11
Organizing .....	11
Infrastructure and equipment: .....	12
Informed consent.....	13
Pre-operative examination.....	13
Laboratory tests .....	13
Medication.....	14
Surgical procedure.....	14
Surgical position.....	14
The procedure:.....	15
Postoperative care .....	17
Complications.....	18
Incentives .....	18
Guidelines.....	19
5. Discussion .....	20
Quality .....	20
Alternatives .....	21
Effect .....	21
Politics .....	22
6. Conclusion.....	23
Reference List .....	24
Appendix 1 .....	26
India.....	26
Healthcare infrastructure .....	26
Use of contraception in India .....	27
Facts about Uttar Pradesh (UP) .....	28
Literate rate in Uttar Pradesh (UP).....	28

## **1. Preface**

We have, as a part of our medical education at the University of Oslo, spent 4 weeks in Mursan, Uttar Pradesh, India. The purpose was to gain experience and write a thesis about a healthcare issue in India in the field of gynaecology in India. Our supervisor, Professor in obstetrics and gynaecology, Babill Stray-Pedersen at Rikshospitalet in Oslo, cooperates with Reidun Refsdal, director of the Methodist Public Health Centre in Mursan, India.

The state Uttar Pradesh (UP) situated north in India is the fifth largest state, one of the poorest and the most populated. For more information about India and UP, see Appendix 1.

We are very grateful for the opportunity to visit Mursan and for the invaluable experience we achieved. Special thanks to Reidun Refsdal for her hospitality and supervision. We also want to thank Dr. Mamta for letting us participate in her daily work at the clinic and for taking us through the obstetrics and gynaecology course.

### **Selecting the topic**

After observing a sterilization camp at the clinic in Mursan, we were concerned and fascinated of sterilization as a fast, effective and cheap method of contraception. Population growth is a big challenge for India and the government put a lot of effort in the family welfare program. With this experience, we look closer into the effect of female sterilization as a method of contraception and the quality of the camp we observed.

## 2. Background

### The Methodist Rural Health Program

This is a program driven by the Methodist church in Norway. Before 1962, the Methodist Hospital in Vrindavan ran an outpatient clinic in Mursan a couple of days a week. Most of the deliveries were performed without trained staff present. In 1962 the Methodist church started a permanent clinic in Mursan driven by Borghild Sørensen from Norway (1;2)

In 1978 a delegation from the Norwegian Agency for Development Cooperation (NORAD) observed the clinic and decided to give annual funding. The same year Reidun Refsdal arrived to Mursan as a missionary. R. Refsdal has stayed there since then. R. Refsdal has a background as nurse anaesthetist in Norway and mid-wife at Stephens Hospital in Delhi.

### Organisation of the clinics

R. Refsdal is the director of the clinics in Mursan, Karhari and Beswan that the health program consists of. R. Refsdal is also in charge of most of the clinical work, especially at the clinic in Mursan.

The aforementioned clinics had about 180 employees at the time of our visit. At the clinic in Mursan, R. Refsdal had finally managed to employ a doctor, Dr Mamta. Dr. Mamta works day-time Monday to Saturday. R. Refsdal lives at the premises, she is always on call and has to make a lot of decisions by herself. The clinic is open 08:00 a.m.-02:00 p.m. six days a week and there are at anytime at least two nurses on call in case of emergencies or deliveries.

The clinic in Mursan treated 15,825 patients in 2004 (3). R. Refsdal is engaged in a number of projects. The most important work is antenatal care, deliveries, HIV projects, vaccinations and poor people's day.



Consultation at the MPHC, to the right R. Refsdal (with laptop) and Pia Wikborg (with camera) Photo: Marie Svensk

**Family welfare program**

In 1951, India launched the national family welfare program in order to "reducing the birth rate to the extent necessary to stabilise the population at a level consistent with the requirement of the National economy." (4)

A new plan with new goals to reduce the birth rate is launched every fifth year. The program is financed by the government. In the beginning there was a focus on decreasing the birth rates by direct methods like sterilization and contraceptive pills. In the later years, the government has also begun to focus on education and information to reduce the fertility rate. If the government manage to reduce the child mortality and maternal death, the need for big families may decrease. Since India started this program in 1951, statistical data has been collected concerning the effects of the program (4).

**The National Family Health Survey (NFHS) (4)**

The Ministry of Health and Family Welfare within the Government of India, conducted three national health surveys in 1992, 1998 and 2005 (5-7). The purpose of the surveys is to provide indicators of population, health and nutrition. Women between ages 13-49 were interviewed about their number of children, contraception, antenatal care, vaccinations, awareness of contraception etc. About 90 000 married women were interviewed in the first survey. In the second survey the same questions were asked again and that made it possible to see trends in the material. At the end of 2006, results from the third NFHS were published. In this survey 230,000 women and men were interviewed. The statistics from these surveys is used to evaluate and form the five year plans in the family welfare program.

## Sterilization methods (8;9)

The easiest sterilization method is male sterilization, vasectomy. It can be done under local anaesthesia in an office setting called no scalpel vasectomy, or as a more traditional vasectomy as an outpatient surgical procedure. There are no long-term hormonal, metabolic or autoimmune complications. Reversibility rates can approach 60 % but decline over time.

Surgical female sterilization is an effective and permanent contraceptive method. Most patients prefer a laparoscopic procedure.

### Laparoscopy

The most used sterilization method is laparoscopy, mostly due to the fact that it can be performed in an outpatients setting were patient experience a rapid recovery. Different methods to block the fallopian tube are in use. The most common are Hulka clips, The Falope ring and electrocoagulation.

In all laparoscopy procedures the woman is placed in the lithotomy position, the bladder is emptied and a speculum is placed in the vagina. Cervix is washed with a povidone-iodine solution. A hulka uterine manipulator is inserted in the vagina and attached to the anterior part of the cervix. A pneumoperitoneum is created by inserting a needle into the peritoneal cavity, and insufflation with gas is begun. The tocar and surrounding sheath are then inserted through a small subumbilical incision.

Electrocoagulation	Use of electricity to burn of the adjacent segments of the fallopian tube. With or without transection.
Hulka clips	Plastic clips is placed around the fallopian tube, not around a loop. A steel spring makes sure the clips stays in place.
The Falope ring	The method used at the camp we observed. The fallopian tube is grasped with a laparoscopic forceps and pulled in to the instrument. With a squeeze on the handle the ring is pushed over the tubal segment and creates a loop. This loop necrotises and the tubal segments separate.

#### Pitfalls:

- transection of the tube can occur
- the ring may fall off the applicator
- large tubes may not be complete occluded

**Laparotomy:** Open surgery. Often used in combination with another surgical intervention in the abdomen. Different methods can be used to interrupt the fallopian tube. Most common is to make an excision in the fallopian tube and ligate the two ends. This gives an opportunity to take out part of the fallopian tube and make sure that the transection is complete.

**Minilaparotomy:** Used for post-partum sterilization. A small subumbilical incision made immediate after birth, when fundus lies under umbilicus. Different methods of interrupting the fallopian tubes can be used.

### Complications to sterilization:

Mortality is 1 to 4 per 100 000 sterilizations in the USA. In developing countries the mortality rate is higher. A study from India reveals a mortality rate of 4.8 per 100 000 (10). Mortality is mostly due to anaesthetic complications. Complications such as infections, haematomas, perforation of uterus, bladder or bowel occurs in 0.4 to 1% of all sterilizations.

Pregnancy is uncommon after tubal sterilization. The risk depends of the age of the women and type of method that has been used. In a large, long-term study of 10,685 women who underwent tubal sterilization and were followed for 8 to 14 years, 143 sterilization failures were identified. 10 years probability of pregnancy was 18.5 per 1000. The risk of getting pregnant after sterilization were highest among women under age 28 sterilized with bipolar electrocoagulation or clips. The risk of an ectopic pregnancy is increased after sterilization. One-third of all pregnancies after sterilizations are ectopic. The risk persists for many years after the initial procedure (9).

Failure rates after female sterilization, vasectomy and hormonal IUD is similar, however female sterilization has a higher morbidity and mortality (9).

### **3. Method**

During our stay in Mursan we attended a local sterilization camp for women. The thesis is based on this observation. To get a sufficient background we combined this observation study with a literature search of the existing knowledge on the subject.

In December 2005 the Methodist Public Health Centre in Mursan (MPHC) arranged a sterilization camp for local women. The clinic is situated in a rural area in Hathras district one hour's drive from Mathura, Uttar Pradesh. More than 200 women signed up for sterilization, of which 167 were sterilized. We contributed by examining the women pre-operatively, beyond that we were encouraged to observe the different parts of the camp. The two surgeons and the nurses spoke English and they let us participate in their work.

We used these search criteria in Pubmed; female and (sterilization or sterilisation) and India. Limits: female, English, humans, core clinical journals. Exclusion criteria: medical sterilization and vasectomy. That left us with 13 articles. The second search: female and (sterilization or sterilisation) and India. Limits: female, English, humans, published the last 5 years. That left us with 10 articles.

We compared our observations with the results from the articles and guidelines from the government of India. India has a tradition of national surveys. We have used the National Family Health Survey from 1992-1993 (NFHS-1), 1998-1999 (NFHS-2) and 2005-2006 (NFHS-3) to evaluate the development of fertility and population growth.

#### 4. Sterilization camp at the Methodist Primary Health Centre, Mursan (MPHC)

During our stay at the MPHC, a sterilization camp for local women was arranged. These kinds of camps have been arranged several times a year at the MPHC since 2002.

**Table 1 Number of sterilized patients at the MPHC 2002-2005 (11)**

Year	Month	Number of patients
2002	February	49
	April	27
	September	53
	November	45
Total no of patients		<b>174</b>
2003	February	61
	April	8
	November	86
Total no of patients		<b>155</b>
2004	January	80
	December	97
Total no of patients		<b>177</b>
2005	February	104
	October	56
	December	167 (Our experience)
Total no of patients		<b>327</b>

Most sterilization services in UP are performed by surgeons from the government in local hospitals and clinics. At the camp we observed, two surgeons employed by the government carried out the sterilization procedures. They brought with them two nurses, one assisting the procedures and the other responsible for the anaesthesia. The government was also responsible for the equipment needed for the laparoscopic procedure and they brought with them incentives.

It is common in India that the government pays for the surgeons and the equipment, while local primary health centres are responsible for the buildings and other staff.

Collected numbers from the MPHC in 2003 and 2004 show the women's mean age to be 27.7 years and their average number of living children were 2.5 males and 1.0 female. The mean age of the last child was 2 years (2).

The sterilization camp we observed was run by the government on a local PHC. About 35 % of the sterilizations are done like this, and the others are mostly done at hospitals (12). All the staff at the clinic was dedicated different tasks. From cleaning personnel to guards, and also the doctor participated in helping the surgeons.

#### **Recruiting**

The main target population for a camp like this is poor local families with many children. There is no easy way to inform all the local women in the area about the camp, but they tell each other and the message spreads. The date was set long time ahead and everyone visiting the clinic got the information and brought it back to their villages. A lot of different factors are important when the women make their decision as time of year, weather, family situation, diseases etc.

Theoretically a nurse-midwife and the male multipurpose worker have responsibility for recruiting sterilization cases at the village level. In some cases they also have motivational conversations at the clinic after the women have given birth or visited the clinic on other occasions. Since little counselling is provided in the camps themselves, camp administrators assume that the patients have got the information needed for making an informed choice. However most patients are less likely to have undergone adequate screening and counselling (12).

### **Inclusion criteria for surgery at the MPHC:**

These criteria must be fulfilled to undergo sterilization:

- wanting family limitation
- at least two living children
- not pregnant
- HIV negative
- no serious heart- or lung disease
- normal gynaecological examination
- good general condition
- age between 22 and 45 years

### **Patients arriving**

We had no idea how many patients that would turn up. The principle was first come, first served. Already before 08:00 a.m. the first patients started to rush in and before 10 o'clock it was really crowded, more like a fan club waiting for their big idol. People were pushed against the walls. The women often brought with them their husband or mother in law, and this made it even more crowded. Throughout the day more than 200 women came for voluntary sterilization.



The crowd outside Photo: Pia Wikborg

### **Organizing**

The clinic had in advance got hold of a lot of mattresses, for the patient's post-operative care. Mattresses were placed everywhere, the floor and corridors were covered. The usual delivery room with two delivery benches was changed to an operating theatre with three parallel procedures. The three tables were placed in a semi-circle so the surgeons did not have to move far between the tables. The room was approximately 25 m<sup>2</sup>.

### Infrastructure and equipment:

Table 2 Our observation from the MPHC (Methodist Public Health Centre, Mursan) compared to a PHC (Public Health Centre), a CHC (Community Health Centre) and a PPC (PostPartum Centre) observed in Sitapur District, UP 1995 (12)

Infra-structure or equipment	Condition recommended	Condition observed			
		MPHC	PHC	CHC	PPC
<b>Space</b>	At least 3mx3m with one entrance and one exit	Small, adequate condition	Small, inadequate	Fairly adequate	adequate
<b>Lights</b>	Non-reflecting focus lamps; working generator	Fairly good power source, lamps could have been better	Inadequate regular power source, available generator	Adequate	Adequate
<b>Water</b>	Running water available and basin present	Running water and basins present	No running water, basins present	No running water, basins present	Running water available
<b>Equipment</b>	BP, D&C set, uterine elevator, scissors, scalpels, retractors, clamps, bowls, trolleys, stand and suction apparatus	All recommended equipment	BP, D&C set, bowl, trolleys (in poor conditions); rusting	BP, D&C set, bowl, trolleys	BP, D&C set, bowl, trolleys, suction apparatus
<b>Anaesthesia</b>	Anaesthesia trolley or anaesthetist with endotracheal tubes and O2	Anaesthetist present with trolley	Trolley not present; instead oxygen cylinder plus key	Respirator bag, laryngoscope and oxygen cylinders	Boyles apparatus present
<b>Hygiene</b>	Clean toilets with running water	Clean toilets with running water	Toilets without water	Dirty toilets, no water	Dirty toilets
<b>Gloves</b>	100-200 pairs of sterile gloves	Present	Present	Present	Present
<b>Staff for assisting in ligation</b>	Trained staff	Not trained	Not trained	Trained	Trained

BP= BloodPressure, D&C=Dilation and Curettage

Compared to other observed camps the MPHC was well equipped with electricity, water, clean toilets etc. At the MPHC the staff did not have any special training, but they had participated in these camps before and knew quite well what was expected. The lack of consistent hygienic standards at sterilization camps is a general problem compared with the mandatory guidelines, however at the MPHC these standards were approved.

### **Informed consent**

The patients had to register when they arrived. In India the population does not have any personal number or similar, so they are identified with their name and their husband/fathers name. Many of the women did not know their exact age. After registration the women got a tape around their wrist with a unique number. The nurses asked every patient about age, previous medical history, number and health of children and social situation. The patients received little information and reassurance about what to expect before, during and after the procedure. The only thing they knew for sure was that they could not have any more children. They are merely instructed to do as they are told.

Nothing further was documented after the registration. There existed no written record from the examination, procedure or postoperative status on any patient.

All the patients had at least two children and they wanted family limitation. Due to cultural circumstances all families wanted at least one boy (13), so we assume this was true for most of the patients. The staff did not control this any further. In most cases the family was in a difficult economical situation and could not afford to have any more children. In these cases the incentives was a significant factor. But we have the impression that wanting family limitation was the main issue for the women and the incentives were probably more important for their husband and family.

In UP 43 % of the women are illiterate and even higher in rural areas (14). Most of the patients signed the consent form with a fingerprint. We were in doubt if they really understood what they were signing. An informed consent did not have high priority, neither for the women nor the medical personnel.

### **Pre-operative examination**

The local doctor, Dr. Mamta, along with us medical students examined all the patients before the procedure. First the nurses informed them and took the pulse and blood pressure. We then did a quick general examination with auscultation of heart and lungs to exclude patients with heart murmur or added breath sounds. Simultaneously Dr. Mamta did a pelvic examination. We used only a couple of minutes on each patient, but only women free of systemic disease and palpable pelvic abnormalities were accepted.

### **Laboratory tests**

The following laboratory tests were run on every patient: Hb, HIV, hepatitis B, venerology and pregnancy test. Some patients were already pregnant and therefore denied sterilization. We had no positive HIV tests and one patient was positive for hepatitis B. We do not know the limits they followed for Hb, but many women in India are anaemic so it is a possibility they did not emphasize this. Guidelines from the government have a Hb limit on 8 g/dl (15). Another survey shows a Hb limit on 7 g/dl (16). These preoperative tests were very quickly performed, and seems to be the same, however more thoroughly, compared to other camps (12).

## Medication

The patients got local anaesthesia around umbilicus together with some sedatives intramuscular. The patients were awake and hazy during the procedure. They probably did not remember much afterwards, but most were in pain. The women wore their own underwear during the surgery.



Administration of pre-medication. Photo: Pia Wikborg

## Surgical procedure

The two female surgeons arrived at the clinic about noon and started operating from 01:00 p.m. They were very competent and had carried out similar camps many times before both at the MPHCC and other clinics. They worked side by side in the semi-circle with three patients parallel. The operating nurse prepared the equipment and disinfected/cleaned it.

## Surgical position

They built up the ordinary examining tables on one end by raising two feet of the table on wooden blocks or bricks. Consequently the women lay with their bottoms on the elevation to give a 15-20 degree head-down tilt. The legs of the patients were held in position by assistants to get as much stretch as possible on their abdomens to decrease the risk for perforating the bowels.

The operation theatre Photo: Pia Wikborg



### **The procedure:**

1. The surgeon made an incision just beneath the umbilicus and used a trocar to get through the peritoneum. They used only single-puncture method.
2. One of the staff filled the abdomen with air, by connecting a hand air pump made of rubber to the trocar. The surgeons went on with the next patient.
3. The surgeon placed the laparoscope through the trocar and detected the tubes and placed a ring over each fallopian tube.
4. The surgeon removed the laparoscope and as much intraabdominal air as possible. Afterwards she dried of the wound with a shared towel. They used the same towel for everyone!
5. One of the assistants carried the woman over to another table and a nurse made one stitch.
6. At last they placed a big bandage on the abdomen with the patient's number.

If they had problems locating the fallopian tubes, one of the untrained staff put on some extra pressure through vagina with a uterine manipulator. This was very painful for the patients, but they managed to operate all the patients. They were hazy because of the pre-medication and probably did not remember much afterwards.

Each procedure lasted only 2-4 minutes. As medical students we were allowed to participate and look through the laparoscope on the last patients. The surgeons worked from 01:00 p.m. to 07:00 p.m. with only a small tea break and the efficiency was high. The camp was organized after the principal of mass production. The two surgeons performed 167 sterilizations this day, and they had to turn down the rest of the patients because of limited time. A date for the next camp was set to operate these women. There were still a lot of people everywhere when we left the clinic. We were exhausted!



A patient in pain. Photo: Pia Wikborg

**Table 3 Mandated (from the Ministry of health) versus observed operative procedures for sterilization at one camp at the MPHC, Hathras district, UP (12;15)**

<b>Operative procedure</b>	<b>Mandated</b>	<b>Observed/MPHC</b>
Fumigation of OT (POT)	Weekly cleaned with 0.5 % chlorine	Washed everyday, unclear if fumigated
Instruction to patients	Preoperative instruction	Some information, but little support
Physical examination and lab test	Pulse, blood pressure, resp. rate, temp, weight, general condition, auscultation, pelvic exam, blood, urine	Completed
Sterilization of reusable needles	10 minutes in 0.5 % chlorine	The needles were sterile in the beginning, but were not kept sterile during the day.
Time between injection of anaesthetics and sterilization	30-60 minutes	Variable, about 15 minutes, sometimes hurried
Disinfection of laparoscope	10 minutes in 0.5 % chlorine	Shorter, maybe about 2-5 minutes
Postoperative care	Discharge after 6 hours; medicines, instructions	Discharge after 2-4 hours; some painkillers, limited instruction and advice
Follow-up	In 7-30 days	No follow up

In the camp we observed a lot of elements that could be improved. Most of the matters that could be improved depended on routines and equipment from the government. The surgery was not performed in an operating theatre, just in the delivery room and of course things had been different in a hospital. The room was washed after every delivery, but it is unclear if it was fumigated.

The examination and labs were all done as required or more, effecting that several patients were denied sterilization. They were not supposed to operate on hepatitis B positive patients, however they did an exception. The infected woman was the last one sterilized to avoid contamination. Another woman they operated was mentally handicapped and it was clear that she did not know what was happening.

The needles for suturing were sterile and lay on a sterile towel. On one occasion we observed a patient's dirty feet were dropped on this towel. They just moved it and did not sterilize the needles again, after this they were definitely not sterile.

The time between pre-medication and surgery varied a lot. Some patients were less sedated than others and many experienced a lot of pain during the procedure.

Disinfection of the laparoscope was done by the assisting nurse. Because the surgeons worked really fast, the laparoscope stood in the disinfection agent just for a couple of minutes. They used only 2-4 min per patient. They had three laparoscopes whereby one was always in cleaning, this had low priority. Neither the surgeons nor the nurse used gloves consistent. They changed gloves only if they were soiled. Often they used only one glove and they did not wear gowns.

In the guidelines for sterilization from the Government of India there is supposed to be a follow-up between 7 and 30 days after the procedure. This is very difficult to fulfil with poor patients from a large district with bad communication.

We have thought of some possible improvements. Changing gloves and disinfect the laparoscope more thoroughly would increase the hygienic standard and cost. Information should be given under more standardised circumstances so the patients could give a real informed consent. To secure the quality and outcome every patient should be offered a follow-up consultation, but this will demand more administration and cost for all parties.

### **Postoperative care**

The guards that usually worked on the clinic carried the patients around. They moved every patients three times and they had a heavy and tough job. Postoperative care depended on capacity. The patients were placed on mattresses on the floor in different rooms and corridors. They were placed nearly on top of each other. It was really crowded with patients laying everywhere and personnel and other patients waking around. Most patients were at the clinic a couple of hours after the surgery. The last patients had less than 2 hours on a mattress before they had to leave. They had family meeting them and were conveyed home in minibuses. They were still very sleepy and in pain when they left.



Postoperative care Photo: Pia Wikborg

## Complications

There were no follow up on the MPH. Many of the patients had travelled far and did not want to come back. The government did not organize any follow-up, but if they had complications the clinic would take care of them if they called for help. We did not observe any complications under the camp or at the time of our visit. We do not know how many of the patients that actually had complications. The true incidence of failures and late complications is unknown.

A survey from India covering 240,036 sterilizations shows a complication rate less than 2 %, predominantly difficulties during the procedure and about 1 % experienced a wound infection (10). In another survey covering 10,100 patients 78.1 % reported no pain, while less than 4 % had pain after 7 days. Though the surgeon does not have the possibility to change gloves and gowns between the patients they find in this survey only 1% with mild infection. This may be explained by the greater resistance of the sturdy rural folk, the absence of cross-infection from hospitalization, and the absence of resistant strains of micro organisms in villages. Both these surveys and all these 250,136 sterilizations were performed by the same surgeon (16). A survey completed by The Indian Council of Medical Research (1982) shows a mortality rate of 62 of 100,000 one month postoperative (12).

## Incentives

After the surgery the woman/family got incentives from the government. This incentive consisted of about 350 Rs (=55NOK), a blanket and a plate with hot food. Usually the family received this, since the women were still sleeping. All the necessary consent forms had to be signed. This is decided by the Ministry of Health and Welfare and is the same all over India (15). We did not find this as the main reason for the women to undergo surgery.



Signing and incentives Photo: Pia Wikborg

## **Guidelines**

New guidelines for sterilization and incentives after sterilization were ruled by the Supreme Court in India in June 2005 (17). The Court asked the central government to formulate guidelines for empanelment of doctors, to prepare a checklist which should be used during the procedure and that all states should maintain statistics pertaining to various aspects of the sterilizations. This is a crucial step in the strengthening of the health-care rights of marginalised people in India (18). The government made a Family planning insurance scheme in December 2005 (15). This insurance ensures a compensation for failure of sterilization and a indemnity insurance cover for the doctors performing sterilization procedures.

Compensation:

- Rs 100,000 in case of death of the patient in the hospital
- Rs 30,000 for death within 30 days of discharge from hospital
- Rs 20,000 for failure of sterilization
- Rs 20,000 for medical complications.
- Rs 400 for undergoing tubectomy (the procedure carried out at the MPHC)
- Rs 400 for Vasectomy
- Rs 75 for IUD insertion (15).

Only doctors with 5 years of gynaecological training are permitted to carry out sterilization programmes (18). In 2005 there was formed a Quality Assurance Committee to ensure that the standards for female and male sterilization as laid down by the Government of India (GOI) are followed (15).

## 5. Discussion

Our participation at the camp included mostly passive observation. To gain more information we ought to have an interpreter to interview patients systematically. An interpreter could have given us the opportunity to communicate with the patients both before and after the procedure. This would have given us knowledge about the women's reasons to choose sterilization and what complications, if any, the women experienced. To get a more realistic view of the camp situation, it would have been a good idea to observe more than one camp. Attending similar surgical procedures in other parts of the health system would have given us a better basis for evaluating the quality of the camp at the Methodist Primary Health Centre (MPHC). A structured interview with the surgeons would have given us insight into the surgeons experience and understanding of the situation and the effect of sterilization. If we had gained more knowledge about sterilization camps before our participation, the value of our observations had increased. Our observation is confirmed by literature on the subject (10;12;16;19-21).

### Quality

We compared the conditions with the mandatory guidelines from the Government of India and found many elements that could be improved. Most of these matters depended on routines and equipment from the government, but also at MPHC conditions could have been better.

The desire for high efficiency made the time priority important. Improvements have to depend on the purpose of the camp. If the purpose is to sterilize as many women as possible, an important factor is the effectiveness. At the camp in Mursan the efficiency was high with 167 sterilizations in 6-7 hours, which is twice the number of procedures normally performed at a camp at MPHC. Even if this worked well in many aspects, the organizing could have been better to avoid delay and poor timing of pre-medication. There is a fine balance between efficiency, safety and ethics.

If the goal of the sterilization camps is to provide a service where the women have the power to decide by themselves and to give an informed consent, the camp in Mursan has the possibility to improve. Even though we did not speak Hindi, it was obvious that the patients did not receive much information. We would prefer that this was done under more controlled circumstances so that the patients could give a real informed consent. The proposed incentives to poor families for sterilization and rewards to local authorities could encourage coercion (19;22). An informed consent is a fundamental principle in the western societies. In rural areas in India it is not an established custom for the women to make decisions about their own health. However an informed consent is an important way to strengthen the power of the Indian women.

The fallopian ring as a sterilization method is a fast and simple procedure with few complications and no need for advanced equipment. This is suitable in a rural setting with limited supplies and a demand for efficiency. The surgeon needs to be competent in the procedure and able to cope with possible complications. At most camps there is a lack of medical equipment and support allowing no room for failure. A sterilization camp is not a place for teaching and training in laparoscopic surgery (16).

After the camp our main concerns were the outcome. Since there was no follow up after the procedure, we had no idea of the infection- or mortality rates. In spite of the fact that many similar surveys show very low complication rates, the possibilities to improve the hygienic factors are high. The surgeons could have changed gloves consistently and worn sterile gowns. This would increase the cost. With the claimed low mortality rate and few infections, this lack of hygiene does not seem to harm the patients. The mandatory settings

have to be adjusted to the actual facts and the patient's needs. Opponents of sterilization suggests that the low complication rate is not true (23). Since there is no record keeping during the camps (24) and no follow up, no one knows what eventually happens to the women. There is a possibility that the government conceal information about complications and mortality rates to make the procedure more popular. The government is working under the pressure of an increasing population and the problems this causes. If the family planning project is going to continue to suggest sterilization as a way to reduce the population growth, the actual complication- and mortality rates have to be found.

Sterilization is a non-therapeutic procedure and the risk ought to be considerably lower than the risk of having further pregnancies and births (25). In one survey the case-fatality associated with tubal sterilization in India is 4.8/100,000 (10). In turn, 100,000 female sterilizations are estimated to avert over 1000 deaths in the years between operation and the natural end of fertility for the women concerned (26).

### Alternatives

The most realistic alternative for these women is Intra Uterine Device (IUD). The government gives a small incentive for this procedure. IUD is cheap, reversible, with few complications and no need for experienced gynaecologists. It should be replaced after 10 years. IUD would be a good option for family planning in India. Another issue about contraception use is the use of condoms and the spread of HIV. An increased number of sterilized women could decrease the use of condoms; this might increase the spread of HIV.

### Effect

**Table 4 Fertility rate versus female sterilized (7)**

State	Fertility rate (children/woman)	Female sterilized (%)	Unmet need (%)	No education female (%)	No education male (%)
Andhra Pradesh	1.79	62.9	5.0	45	23
Tamil Nadu	1.80	55.0	8.9	22	9
Kerala	1.93	48.7	9.0	4	1
Meghalaya	3.80	9.5	35.1	30	24
Uttar Pradesh	3.82	17.3	21.9	54	21

To find out whether sterilization leads to decreased population growth, we looked at fertility rate and numbers of sterilized women in different states in India. In states with low sterilization rate the fertility rate is high. We have chosen the most illustrative states, but none of the 28 states clearly broke this pattern. In Uttar Pradesh 17.3% of married women age 15-49 are sterilized. The fertility rate is reduced from 4.82 in 1992 to 3.82 in 2006, and this is still the highest in India. Meghalaya shows the same pattern. These two states have a high unmet need for family planning and a low education level.

In general, states with a high sterilization rate have a lower fertility rate than states with few sterilizations. This point is clearly illustrated in Kerala with a sterilization rate of 48.7% and a fertility rate of 1.93. In Tamil Nadu the same tendency is observed. Both these states have few illiterates. This can indicate that education affects the fertility rate. Two matters that make this statement less likely are Andhra Pradesh with many illiterate and low fertility rate and the fact that in nearly all states the least educated has the highest rate of

sterilized women (7). Many other aspects influence the fertility rate and the decision to choose sterilization as a family planning method. A survey from UP states that the use of contraception was significantly associated with female education, socioeconomic status and accessibility (27).

### **Politics**

Some states in India operate with a two child policy (28). Such a programme is expected to worsen the situation for poor people who need the extra hands and protection against high infant mortality that having many children can give. To suggest a permanent method of contraception as sterilization, the women have to be ensured that their children survive. Infant mortality per 1000 live births in India have decreased from 79 in 1992 (5) to 57 in 2005 (7). Neonatal, post neonatal and child mortality rates have also declined. Despite this one in every 15 children still die within the first year of life and one of every 11 children die before reaching age five in India (6).

Is family planning the only way to reduce the population growth? It has been criticised that the Government of India favours family planning instead of healthcare and the fight against poverty (23). To bring the total fertility rate to replacement level, it is important to prioritize general directives such as making school education free and compulsory, promoting delayed marriage for girls, providing contraceptives, improve the health system and decrease the infant mortality (22).

Why do women choose sterilization? Many have asked this question and the opponents of sterilization have argued in favor of using force and incentives. Our observation gave us the impression that the women chose the procedure according to their own wish of limiting the family. They did not convey the impression of being forced. We have no confirmation whether this is true or not. Literature indicates that incentives and poverty is a main reason for choosing sterilization (29). It is important to think about the ethical aspects of sterilization and incentives. Do Indian women have a choice when deciding how to limit their family? In rural areas many poor and illiterate women undergo sterilization as a result of the subtle pressures of health workers and lack of knowledge. The women have the right to be treated with dignity and quality (25).

Is it a Human right to decide how many children one chooses to give birth to?

## 6. Conclusion

After evaluating the camp at the Methodist Public Health Centre in Mursan, we find the conditions better than recommended and the surgeons to be sufficiently skilled. This conclusion is based on the mandatory guidelines issued by the Government of India. The public opinion of good health differs a lot from the situation in western countries. We believe women in western countries would not accept the lack of hygiene, information and documentation. Even though the conditions exceed the recommendations, 167 sterilizations in 6-7 hours do not seem advisable.

Sterilization is in many aspects a good, cheap and effective method of contraception that can be used in the patients own rural setting. If the family planning project is going to continue to recommend sterilization as the main way to reduce the population growth, it is essential to make a study of the actual complication- and mortality rates. By using IUD many practical and ethical issues will be avoided. It is important to strengthen the power of the Indian women so they can make their own decision concerning health and family planning.

If sterilization and sterilization camps are to be recommended for other countries as a method of family planning, it is important to ensure the ethical aspects and maintain the quality at an acceptable level. Guidelines are necessary to prevent unacceptable conditions – individuals must be properly informed about the risks and benefits of sterilization and be secured a minimal level of quality.

To conserve the environment for future generations it will be essential to control the population growth. To achieve these goals, sterilization, as a part of family planning, is a solution. This may be the direction of future development aid to reach sustainable development.

## Reference List

- (1) Moi I, Skarpenland T. En norsk helsestasjon i India, Methodist Rural Public Health Care Center - et observasjonsstudie [Student thesis] 2005.
- (2) Jacobsen S.B., Simensen S. Teleaid - en ny form for samarbeid [Student thesis] 2005.
- (3) Refsdal R. Methodist Rural Public Health Program: Annual report 2004. 2004 Dec 31.
- (4) Government of India MoHaFW. [www.mohfw.nic.in](http://www.mohfw.nic.in). 2007.
- (5) Government of India. NFHS-1, [www.nfhsindia.org](http://www.nfhsindia.org). 1993.
- (6) Government of India. NFHS-2, [www.nfhsindia.org](http://www.nfhsindia.org). 1999.
- (7) Government of India. NFHS-3, [www.nfhsindia.org](http://www.nfhsindia.org). 2006.
- (8) Nelson Anita L. Contraception, Sterilization and Abortion. In: Hacker N.F., Moore J.G., Gambone J.C., editors. Essentials of obstetrics and gynecology. 4 ed. Elsevier Saunders; 2004. p. 347-50.
- (9) Stovall T.G., Mann W.J. Surgical sterilization of women, [www.uptodate.com](http://www.uptodate.com). 2007.
- (10) Mehta PV. A total of 250,136 laparoscopic sterilizations by a single operator. Br J Obstet Gynaecol 1989 Sep;96(9):1024-34.
- (11) Refsdal R. Statistics from MPHC. 2005 Dec 31.
- (12) Townsend John W., Khan M.E., Gupta R.B. The Quality of Care in the Sterilization Camps of Uttar Pradesh. In: Koenig MA, Khan ME, editors. Improving Quality of care in India's Family Welfare Programme: The Challenge Ahead. Churchgate: Population control; 1999. p. 314-30.
- (13) Singh O., Singh A.K. Population Growth and Family Planning in India: An Analysis. In: Singh A.K., Rai V.K., Mishra A.P., editors. Strategies in Development Planning. Churchgate: Deep and Deep; 1997. p. 355-67.
- (14) Government of India. <http://www.upgov.nic.in/upinfo/census01/cen01-5.htm>. 2001.
- (15) Government of India MoHaFW. Manual for family planning insurance scheme, [www.mohfw.nic.in/dofw%20website/Family%20Planning%20Insurance%20Manual.pdf](http://www.mohfw.nic.in/dofw%20website/Family%20Planning%20Insurance%20Manual.pdf). 2005 Dec 1.
- (16) Mehta PV. Laparoscopic sterilization with the Falope ring: experience with 10,100 women in rural camps. Obstet Gynecol 1981 Mar;57(3):345-50.
- (17) Rao M. Supreme Court judgement on sterilisations. Indian J Med Ethics 2005 Apr;2(2):40-1.
- (18) Bansal RK. Guidelines for sterilisation in India. Lancet 2005 Jun 18;365(9477):2090.

- (19) Guillebaud J. Mass laparoscopic sterilizations. Br J Obstet Gynaecol 1989 Sep;96(9):1019-21.
- (20) Sheth S.S., Desai V.J., Pawar A., Pawar V. Laparoscopic female sterilisation camps. Lancet 1988 Dec 17;332(8625):1415-6.
- (21) Kabra SG, Narayanan R. Sterilisation camps in India. Lancet 1990 Jan 27;335(8683):224-5.
- (22) Srinivasan S. National Population Policy, <http://www.ijme.in/082ed039.html>. Indian J Med Ethics 2000 Apr;8(2):Editorial.
- (23) Das A. New govt's population control thrust, [www.indiatogether.org/2004/jun/hlt-poplctr.htm](http://www.indiatogether.org/2004/jun/hlt-poplctr.htm). India together; 2004 Jun 1.
- (24) Bhathena RK. A total of 250 136 laparoscopic sterilizations by a single operator. Br J Obstet Gynaecol 1990 Feb;97(2):194-5.
- (25) Das A. Ensuring quality of care in sterilisation services. Indian J Med Ethics 2004 Jul;1(3):79-80.
- (26) Meeting the need for female sterilisation. Lancet 1989 Nov 18;2(8673):1189-90.
- (27) Bhargava A, Chowdhury S, Singh KK. Healthcare infrastructure, contraceptive use and infant mortality in Uttar Pradesh, India. Econ Hum Biol 2005 Dec;3(3):388-404.
- (28) Government of India. National Commission on Population - Agenda <http://populationcommission.nic.in/>. 2000.
- (29) Dharmalingam A. The Social Context of Family Planning In a South Indian Village. International Family Planning Perspectives 1995 Sep 1;21(3):98-103.
- (30) [www.globalis.no](http://www.globalis.no). 2006.
- (31) Chandhick N, Dhillon BS, Kambo I, Saxena NC. Contraceptive knowledge, practices and utilization of services in the rural areas of India (an ICMR task force study). Indian J Med Sci 2003 Jul;57(7):303-10.
- (32) Government of India. Bulletin on - Rural Health Statistics in India 2006 [www.mohfw.nic.in/dofw%20website/dofw.htm](http://www.mohfw.nic.in/dofw%20website/dofw.htm). 2006 Mar 1.

## Appendix 1

### India

In 1947 India became an independent state after many years under British rule. India became a republic with an own constitution in 1950. The country covers an area of 3287590 km<sup>2</sup> and had in 2005 1,103,371,000 inhabitants (30). 32.1% of India's population is below age 15 and 7.9% is 65 or older (30). This highlights the continued population growth in the country. The sex ratio of the population is 949 females per 1000 males and is similar to the sex ratio from 1992 (6).

The household conditions are very different in India depending on urban and rural areas and the wealth of the family. The casting system is prohibited by law, but still it is an important part of the culture. The low cast people are often very poor and are not educated.

The eldest son in the family usually takes care of his parents, and his wife moves in with them. Most Indian people live in extended families. The son's wife does not have high status in the family and usually does as she is told. Her most important task is to deliver the family a healthy boy. If she cannot do this, she is unsuccessful and her husband can take a second wife. When a young woman is going to deliver, she usually brings her mother in law.

In rural areas they still have traditional pattern of sex roles, the women usually work at home with the house, children and agriculture. They often participate in decisions about what to cook, but only about half participate in decisions about their own health (6). Most need permission to go to the market and to visit friends or relatives. Marriage is early and almost universal in India. Nearly 50 % of women aged 20-24 are married by age 18 (7). The average age at marriage for males is five years later than the average marriage age for women (6). The mean age at marriage is about two and a half years lower in rural areas than in urban areas for both males and females.

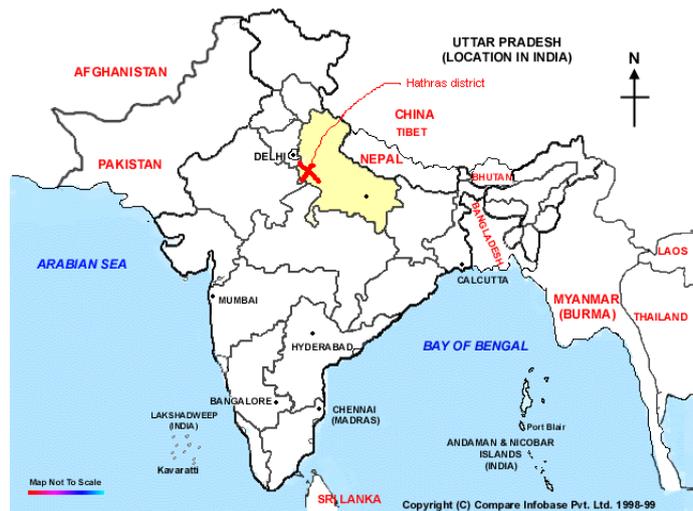


Mursan, India. Photo: Pia Wikborg

### Healthcare infrastructure

The healthcare system is administrated from government on a central and a state level, and they share all the expenses. Central government influences the public health through five year plans. State government has the responsibility for the public health services, nutrition and health information.

In India, the healthcare infrastructure has evolved gradually over time and comprises of public facilities, private providers and non governmental organisations (NGO). Initially, healthcare was available mainly in urban areas via government facilities and from private practitioners offering services to those who could afford them. Doctors employed in public facilities are often engaged in private practice outside the working hours. Because life in urban areas affords opportunities such as education for children, urban areas are attractive



venues for medical personnel and their families. A concentration of public and private facilities staffed by qualified personnel is likely to increase competition among providers thereby enhancing the quality of services (27). In the absence of major public investment, healthcare infrastructure in rural areas is likely to evolve very slowly. While governments often mandate placement of hospitals or community health centres based on population, quality of services is likely to depend on the allocated resources and on the willingness of qualified personnel to serve in remote areas. Low purchasing power of households in under-developed areas reduces incentives for private providers to set up facilities. To fill the healthcare gaps, NGO's supported by government and external agencies often deliver basic services.

Public healthcare in India is designed to be a cascading system. Each district, containing about three million people, is served by a district hospital and a network of Community Health Centres (CHC) and Primary Health Centres (PHC). All over India there is small outpatient clinics called Sub Centres (SC), but these often lack doctors. A CHC is a small hospital with inpatient facilities designed to serve a population of about 100,000. A PHC is a primary care facility with physicians and several nurses meant to serve a population of about 30000. They usually have about 4-6 beds (12).

### **Use of contraception in India**

Voluntary sterilization is the single most common form of fertility control world wide (26). This is true also for India at large and in Uttar Pradesh (UP). In India 48.5% of couples between ages 15 and 49 use some kind of contraception method. Sterilization was used by 37.3 % of the women and 1.0 % (2005-2006) of the men (7).

A survey carried out in January 1996 to February 1997 interviewed 117 465 women from rural areas in 28 districts about their knowledge and use of contraception. 70.5% used contraception only after the family were complete and not as a spacing method. Only a few used contraception to postpone the first child after marriage or to increase the time between child one and two.

The most common reasons for not using any form of contraception were:

- not complete family (34.6%)
- worried of side-effects (10.1%)
- use of natural family planning method (9.7%)
- just married (9.3%)
- not acceptable to husband/mother in law (7.1%)

Of couples using family planning methods half of the women had received information and counselling. Most of the women expressed satisfaction with the method, provider and services. These figures varied a lot between different districts (31).

## Facts about Uttar Pradesh (UP)

Uttar Pradesh is situated in the north of India, covering a large part of the highly fertile and densely populated upper Gangetic plain. UP shares border with Nepal. Official languages are Hindi and Urdu. UP is the fifth largest state in India, one of the poorest and the most populated. In 2006 166 mill people lived in UP, and of these 74.7 % live in rural areas (7).

More than 70 % of the people in UP works in the agriculture sector. UP has over a long period had a lower economical growth than the rest of India. It also has the highest score in many negative factors like poor health, high infant mortality, low literate rate and many poor people.

In the district of Hathras where we observed there were 147 Sub Centres, 52 PHCs and 4 CHCs (32).



## Literate rate in Uttar Pradesh (UP)

In 1991 40 % of the population in UP were literate. Ten years later, in 2001, the literate rate increased to 57 %. 70% of men and 43 % of women were able to read and write. The part of women going to school were in 1991 as low as 25 %, among women living in rural areas only 19 % attended school. As few as 8 % of the out cast women were literate. The school system in UP mainly consists of private schools and many European churches have schools in UP. The political effort to create a school for everyone has been disappointingly small. As the situation appears in UP, it is only the rich people who can afford education (14).