Chapter II

REVIEW OF LITERATURE

This chapter deals with the literature review of the pertinent sources related to the study. With regard to this study, the retrieval of relevant literature was done from published articles, research articles from journals, books, and the other related materials.

Family planning includes access to modern contraceptive, informed and voluntary choice of family planning methods. In many countries women carry the burden of contraceptives use. Many literatures support that men believe that responsibility for contraceptive should be shared by men and women and that decision making should involve both partners with the assistance of health care providers.

The obtained literature reviews were categorized and presented in the following sections:

Section I  :  Population explosion.
Section II :  Unmet needs in family planning.
Section III :  Permanent family planning methods.
Section VI :  Conventional vasectomy.
Section V  :  No Scalpel Vasectomy.
Section VI :  Conventional vasectomy versus No Scalpel Vasectomy.
Section VII :  Knowledge and attitude of men on family planning.
Section VIII :  Promotion of No Scalpel Vasectomy.
Population Explosion

Population explosion is the most serious problem facing our country today. The phenomenal growth rate in population is largely because of the industrial and technological revolutions that had taken place in the recent times. As the 21st century begins, growing number of people and rising levels of consumption per capita are depleting natural resources and degrading the environment. The population rise will increase to such an extent in future that it will cause overall scarcity for resources.

Clark (2012) also stated the recent explosive human population growth has resulted in an excess of rare genetic variants.

Keinan (2012) stated that the human populations have experienced recent explosive growth, expanding by at least three orders of magnitude over the past 400 generations. This departure from equilibrium skews patterns of genetic variation and distorts basic principles of population genetics.

Verma (2012) analysed the various factors responsible to control the population growth. The population explosion is quite pressing for India, as it hampers the country’s growth prospects and leads to sustenance of poverty and unemployment. The study reported the lacuna in the health system as well as the unmet needs and deficiencies at different levels of family welfare service delivery.
According to *Linden (2011)* the first problem caused by population growth is capital dilution. Secondly, population growth also leads to higher total consumption demand for goods and services. Thirdly there is a negative effect of population growth on economic growth and it results in the problem of resource shallow and therefore the natural resources which are finite and cannot be produced for the over populated country.

*Bloom (2011)* the economist stated in his paper that health is believed to drive economic growth for four main reasons. First, a healthier workforce is a more productive workforce. Second, healthier children tend to have better records of school attendance, and stay in school longer, ultimately resulting in a more educated workforce. Healthy children also have better cognitive function, and avoid physical and mental disabilities that may be associated with childhood illness. Thirdly, healthy populations have higher savings rates, as people save more in anticipation of longer lives post-retirement. And finally, healthy populations attract foreign direct investment. In recent years, analyses of the proposition that “healthier means wealthier” have abounded, with the vast majority of them concluding that health is a strong driver of economic growth.

*Verma (2010)* had cited, the need for control of population growth is quite pressing for India, as it hampers the country’s growth prospects and leads to sustenance of poverty, unemployment, etc. Hence, India was the first nation to have officially launched the
family planning programme. However, the health care system created for delivery of various health and family welfare services has not been effective enough to curtail the enormous population growth as well as to improve the general health standards of the common masses.

Hall (2003) discussed the concerns over the possibility that countries with huge land areas may be overpopulated. The environment will not be able to sustain population growth and action needs to be taken either to curtail the population or save the environment.

Lutz (2001) predicted that there will be 60 per cent probability that the world’s population will not exceed 10 billion people before 2100, and around a 15 per cent probability that the world’s population at the end of the century will be lower than it is today. For different regions, the date and size of the peak population will vary considerably.

**Unmet Needs in Family Planning**

Millions of women want to use safe and effective family planning methods, but are unable to do so because they lack access to information and services or the support of their husbands and communities. The need for voluntary family planning is growing fast, and it is estimated that the ‘unmet need’ will grow by 40 per cent during the next 15 years. Funding is decreasing, and the gap between the need and the available resources for family planning is growing.
Fertility levels have declined in many developing countries over the last four decades. The resulting change in demographic patterns has widespread implications for growth rates, dependency ratios, consumer markets, and societal relations (Abbasi-Shavazi, Mohammad, McDonald, and Peter, 2006; Fargues and Philippe, 2005; Demeny and Paul, 2003; Amin, Sajeda and Lloyd, Cynthia, 2002).

Alkema, Kantorova, Menozzi and Biddlecom (2013) obtained data from nationally representative surveys for women aged 15-49 years who were married or in a union. Estimates were based on 930 observations of contraceptive prevalence between 1950 and 2011 from 194 countries or areas, and 306 observations of unmet need for family planning from 111 countries or areas and reported the following findings. Worldwide, contraceptive prevalence increased from 54.8% (95% uncertainty interval 52.3-57.1) in 1990, to 63.3% (60.4-66.0) in 2010, and unmet need for family planning decreased from 15.4% (14.1-16.9) in 1990, to 12.3% (10.9-13.9) in 2010. Almost in all subregions, except for those where contraceptive prevalence was already high in 1990, had an increase in contraceptive prevalence and a decrease in unmet need for family planning between 1990 and 2010, although the pace of change over time varied between countries and subregions. In 2010, 146 million (130-166 million) women worldwide aged 15-49 years who were married or in a union had an unmet need for family planning. The absolute number of married women who either use contraception or who have
an unmet need for family planning is projected to grow from 900 million (876-922 million) in 2010 to 962 million (927-992 million) in 2015, and will increase in most developing countries.

_Aziem and Okud (2013)_ in the study enrolled 812 married women in Eastern Sudan. Unmet need for spacing was 15.1% while unmet need for limiting was 0.7%. The total unmet need was estimated as 44.8%. The total demand for family planning was 71%.

_Speizer (2013)_ collected longitudinal data from four cities in Uttar Pradesh. Ninety-two percent of pregnancies/ births over the follow-up period were considered “wanted then”, suggesting post-hoc rationalization of the pregnancy/birth even among those women who reported a desire to stop childbearing 2 years earlier.

_Biradar (2013)_ conducted a study to assess the epidemiological correlates of unmet need for family planning. Prevalence of unmet need for family planning was 8.3% of which 2.6% were limiters and 5.7% were spacers. With the advancement of age, prevalence of unmet need decreased significantly. The unmet need decreases with increase in number of living children and male children in family.

_Elizabeth Futrell (2012)_ stated the number of women in the developing world using modern contraceptive methods rose from 603 million to 645 million between 2008 and 2012, this increase is due to
population growth rather than to a higher Contraceptive Prevalence Rate (CPR).

**Hailemariam and Haddis (2011)** in the survey report of 2,133 currently married women aged 15–49. The results indicated unmet need for contraception increased from 35.1% in 2000 to 37.4% in 2005. Unmet need for spacing remained constant at about 25%, while unmet need for limiting increased by 20% between 2000 and 2005.

**Ferdousi et al., (2010)** conducted a cross-sectional descriptive study at Sreepur Upazila in Gazipur district. The study revealed that unmet need was (22.4%). Most of the respondents (72.1%) were using contraceptive methods. Among those who used contraceptives, Oral Contraceptive Pills (OCP) was the most commonly used method (61.7%). About 28% were not using any method. The main reason was fear of side effects (46.1%).

A study conducted by **Salah Mawajdeh (2007)** in Jorden among 2406 women revealed the overall prevalence of unmet need to be 16.3%, comprising 6.8% of women who wanted to limit births and 9.5% who wanted to space births.

**Permanent Family Planning Methods**

Both women and men are more aware of female sterilization rather than male sterilization due to the vast number of campaigning for female sterilization. In India the figure is 2%, in Nepal 6% and in
China 8% (Population Reports, 2003), even though earlier reports showed that vasectomy was growing popularity in India, China and South Korea (Population Reports, 1992).

In spite of the fact that vasectomy is safer and easier method of permanent contraception, female sterilization is being performed 4 times more commonly throughout the world.

Female sterilization is the most popular method adopted by Indian population throughout the country. In 1992 - 93 National Family Health Survey (NFHS) found that of the 36.2 percent of eligible couples using any modern method, 30.7 percent had been sterilized and only 5.5 percent were using temporary methods thus sterilization is six times more common than all other methods combined. Female sterilization has increased over the period compared to male sterilizations. However, a low use of temporary methods and male sterilization remains a matter of concern.

Bertotti (2013) in his study findings found that White and socio economically privileged women are more likely to have vasectomized partners than disadvantaged women. Male partners' characteristics were more closely associated with sterilization type than women's characteristics, lending greater support for the gender-based hypotheses.

Parmar (2013) conducted a cross-sectional study to understand socio demographic profile of couples who adopted
permanent sterilization in urban slums of Surat city and the study results indicated female sterilization was more common in families with low socio economic status, low literacy and Muslim families. While male sterilization was more common in Hindu families and where husbands have high literacy levels.

**Ranjan (2013)** presented the data of 93,089 currently married women aged 15-49 years. A multistage sampling design was followed to select the women for the survey. The survey results indicated that even after six decades of implementation, Indian family welfare program seem to be dominated by female sterilization. Informed choice has found to be very poor among female sterilization users.

**Gunenc et al., (2012)** stated that female sterilization is far more common than male sterilization, vasectomy is safer, simpler, about half the cost of female sterilization, and is more effective.

**Jayaraman (2008)** stated male and female sterilization is used in many countries worldwide as a permanent method of contraception. Failure rates for female sterilization are affected by age at sterilization and by the method of tubal occlusion. Laparoscopic sterilization has low complication rates but is not available in parts of the developing world due to the lack of facilities, equipment and expertise. Failure rates for vasectomy are 10 times lower than those for female sterilization.
**Smith (2004)** conducted longitudinal study of 20,629 eligible couples undertaken by the Post Partum Programme Centre, Regional Institute of Medical Sciences, Imphal during the period from 1989 to 2000. The results showed that the percentage of acceptance to vasectomy had increased upto 35-39 years of age of wife and then tapered thereafter. Similar trend was also found in tubectomy too in the years 1989 to 1993. From 1995 to 2000 there was a gradual rise in tubectomy acceptance.

**Rich (2001)** different cultures have various approaches to vasectomy. It is illegal in Frame. In Sweden a man only qualifies for a vasectomy when he has a minimum of four children and is over 40 years of age, or runs the risk of transmitting a serious inheritable disease.

**Thompson, MacGillivray and Fraser (1991)** stated out of 84 men and 167 women interviewed in the study, only 19% of couples felt that they had a real choice between male and female sterilization.

**Smith (1985)** in the study stated male sterilization procedures were found to have zero attributable deaths and significantly less major complications when compared to female sterilization procedures. No less than 14 deaths a year can be attributed to female sterilization procedures in the US. Male and female sterilization procedures have efficacy rates that are not significantly
different from each other. The short-term costs of female sterilization are 3.0 to 4.1 times that of vasectomy.

**Conventional Vasectomy**

The practice of contraception is as old as human existence. Although medical history has documented the desire to control fertility since ancient times, safe and effective contraception did not exist until the beginning of the 20th century. The condom was the oldest and most widely used birth control for the men in the world. The earliest known illustration of a man using a condom was 12,000 to 15,000 years old. Throughout history, sterilization of men was involuntary and usually associated with violent castration. For thousands of years, castrated men and eunuchs were used as guards by Emperors and Kings to protect their women (Mandakini, Bhalerao Ashwini and Gandhi, 2006).

Vasectomy is a surgical procedure for male sterilization /or permanent birth control. During the procedure, the vas deferens of a man are severed, and then tied /sealed in a manner such to prevent sperm from entering into the seminal stream (ejaculate)

Vasectomy is the most effective permanent form of birth control available for men. In nearly every way vasectomy can be compared to tubal ligation, it has a more positive outlook: vasectomy is more cost effective, less invasive, has techniques that are emerging that may facilitate easier reversal, and has a much lower risk of post-operative complications. Despite this, in the United States vasectomy
is utilized at less than half the rate of the alternative female "tubal ligation’ Shih (2011).

Historically the first known vasectomy was carried out in 1832 by Sir Astley Cooper on his pet dog Leavesley (1980). During Hitler's chancellorship, it was made compulsory for men to obtain a "Fitness to marry" certificate those who failed the test were made to undergo vasectomy for sterilization. The first vasectomy on a man was performed in Britain in 1894, to relieve a swollen prostate gland. In 1916, Viennese Surgeon Eugen Steinoch began performing vasectomies for thousands of men, in an attempt to restrict the production of hormones that cause aging, but discontinued in the 1940s when his theory was discredited. In the year 1928 an American Surgeon performed vasectomy for treating impotence (Peter and Goldstein, 2006). In the beginning of the 20th century, vasectomy for birth control was usually eugenic. The imprisoned, mentally ill, retarded and men with hereditary diseases were sterilized to keep them from committing sex crimes or to prevent the genetic transmission of a myriad diseases and conditions (Parihar and Bhalerao 2006). Until 1948, vasectomy was primarily used for preventing criminals or those in penal institutions from fathering children. The first vasectomy operation in India was recorded officially in the year 1956 – 1957 and during that year 22 operations were performed (Patnaik, 2005). Vasectomy surgery reached its climax between 1965 and 1977. Then this method declined gradually due to
aftermath of the coercive drives earlier from double figures to current figures of acceptance of 2 percent.

Vasectomy is a very effective and permanent means of preventing pregnancy. It is estimated that only one out of every 2,000 men who receive a vasectomy will impregnate a woman during their lives Eisenberg (2010). Vasectomy is the most common non-diagnostic operation performed by urologists in the United States. Estimates of the number of vasectomies performed annually in the US vary depending on survey type. Data from the National Study of Family Growth in which only married couples were polled indicated a range from 175,000 to 354,000. In a physician survey, an estimated 526,501 vasectomies were performed in the US in 2002. This number has been approximately stable for the previous decade Barone (2002) and Haws (1998).

Shih (2011) stated according to the research, vasectomy is least utilized among black and Latino populations and the United States have the highest rates of female sterilization.

Terry (2011) in research based on 16 New Zealand men (chosen for their enthusiasm on the topic of vasectomy), researchers extracted primary themes from their interviews of "taking responsibility" and "vasectomy as an act of minor heroism’

Okunlola, et al., (2009) conducted a cross-sectional study with an objective to determine the awareness and practice of
vasectomy among 250 married male health workers of the University college hospital in Ibadan, Nigeria. It revealed that (58%) of the respondents were unwilling to accept sterilization as a contraceptive procedure while (19.2%) were willing to accept it and the remaining (22.8%) were uncertain. However none of the respondents ever had vasectomy done.

**Goldstuck. England. and Dukes, (2008)** conducted a study to assess the Attitude to vasectomy among 79 rural and 62 urban African men. The urban workers were significantly higher educated than those in the rural areas. Both the urban and rural men feared loss of manhood following the procedure and feared that their wives would become unfaithful to them and that they would lose dominance over their families. Both groups believed that a pregnant wife was more likely to remain faithful to them.

**Kola (2006)** cited the reasons for counselling potential vasectomy clients firstly vasectomy is a surgical method and vasectomy is intended to be a permanent method secondly family planning counselling helps clients make free and informed decision about reproduction and contraception. Unbiased complete information helps client consider a choice of contraceptive in relation to his needs and circumstances.

**Awsare (2005)** stated early complications include haematoma, wound and genito-urinary infections, and traumatic fistulae. Vasectomy failure occurs in 0-2% of patients. Late recanalisation
causes failure in 0.2% of vasectomies. Significant chronic orchalgia may occur in up to 15% of men after vasectomy, and may require epididyectomy or vasectomy reversal. Antisperm antibodies develop in a significant proportion of men post-vasectomy, but do not increase the risk of immune-complex or atherosclerotic heart disease. Similarly, vasectomy does not enhance risk of testicular or prostate cancer. Vasectomy has a lower mortality as compared to tubal occlusion, but is still significantly high in non-industrialised countries because of infections.

**Griffin (2005)** systematic review of 28 studies including both early failures and late failures described a total of 183 failures or recanalizations from approximately 43,642 vasectomy patients (0.4%), and 20 studies in the same review described 60 pregnancies after 92,184 vasectomies (0.07%).

**Sokal (2003)**, reported that vasectomy is not 100% effect as judged by semen analysis or by occurrence of pregnancy. The method of occlusion of the vas is important to make vasectomy more effective.

**Kaza (2001)** cited the reasons for unacceptability of vasectomy (UNFPA studies) as per the view of men on vasectomy family planning is women’s responsibility, fear of complications, non availability of services, no IEC (Information, Education and Communication) is done to attract them, not enough cases to keep surgeons in practice, fear of coercion, adultery, impotency. As per the
view of women on vasectomy fear of complication with vasectomy, loss of physical strength and wages of bread earner of the family—the male, fear of failure of the operation, fear that man will commit adultery after vasectomy, parents prevent sons from undergoing vasectomy. As per the view of on vasectomy service provider’s personal experiences in the field make doctors and administrators resistant to reintroduce vasectomy, genuine lack of skills to perform the procedure since vasectomy cases are so few. However the reality is absence of information men say that they would get operated if they have enough information and that health personnel do not educate them. The Government and service providers can work together to change the situation. Gender issues, atbtudinal problems and technical issues need to be addressed. Long-term studies have failed to show relationship of vasectomy to cardiovascular disease, testicular cancer and prostate cancer.

Sneyd (2001) reported New Zealand, in contrast to the US, has higher levels of vasectomy than tubal ligation uptake. 18% of all men, and 25% of all married men have had a vasectomy. The age cohort with the highest level of vasectomy was 40-49 where 57% of men had taken it up Canada, the UK, Bhutan and the Netherlands all have similar levels of uptake Pile (2009).

Speroff and Darney (2000) reported the reviews of 6 cohort studies and 5 case-control studies which concluded that there is no increased risk of cancer of the testis following vasectomy. A meta-
analysis of the literature concluded there is no increased risk of prostate cancer in men who have undergone vasectomy.

Maatman, Aldrin and Carothers (1997), studied the patients follow up postoperative instructions. Compliance rate of 1892 patients. The results indicated that (34%) never returned for semen analysis, 33% returned for a single analysis, 33% returned for a second analysis and only 60 men (3%) completed post vasectomy follow up.

Today throughout the world only no scalpel vasectomy procedure is done for male sterilization.

No Scalpel Vasectomy (NSV)

As the name suggests the “No scalpel” method does not involve a scalpel nor a suture but a small opening is still necessary. The key to the NSV is the special instruments that allow the procedure to be done with generally less manipulation of the patients tissues.

In Chinese the original name of NSV was “Shu Jing Guan Zhi Shi Qin Chuan Fa”, or “vasectomy by clamp puncturing under direct vision”.

In 1976, the No Scalpel Vasectomy (NSV) technique was developed by Dr Shun-Qiang Li and associates from the clamping method and the percutaneous vas occlusion technique. Since then, NSV has been widely promulgated and practiced in China as a routine fertility regulation method (Bing and Huang, Wei-Dong, 2000).
This new, ‘minimally invasive, no scalpel, no suture’ (MINS) vasectomy is preferable to the conventional/traditional technique, reducing both patient morbidity and the complication rate. This is attributed to the minimal dissection and reduced tissue handling required to expose and isolate the vas (Holt and Higgins, 1996).

No scalpel vasectomy was developed to increase the acceptability of vasectomy by elimination of the fear of the incision and reduced the morbidity by limiting the extent of dissection (Nirapathapongporn, 1991). It is one of the first in the genre of minimally invasive surgery. As the technique is a delight to both the patient and the physician, this technique is here to stay and will bid a fare well to conventional vasectomy.

In the year 1974, Dr. Li Shung-Qiang first performed NSV in China. It was introduced to the United States in 1985 and after 1986, it was spread to large number of countries in the world. (Chan and Goldstein March, 2006). NSV was introduced to the United States in 1985 and after 1986, it was spread to large number of Countries in the World. In India, NSV was started in 1991 and introduced into the National Family Welfare Programme in 1992 (Patnaik, 2005). The 1st NSV was performed at Moulana Azad Medical College in 1992 (Kaza, 2006).

The Indian Government launched a national No Scalpel Vasectomy project in 1998 in collaboration with the United Nations Population Fund (UNFPA) to promote male participation in
contraception and arrest the declining trend in male sterilization. Under the project, 4000 surgeons were trained, among whom 1300 were certified service providers. There are now 100 no-scalpel vasectomy trainers across various states in the country. The prevalence of vasectomy in the national contraceptive method mix increased from 0.7% in 1997 to about 3% in 2003. Today India is one of the leading nations in the world with regard to the use of No Scalpel Vasectomy, as indicated by a high number of hits on an Indian no-scalpel vasectomy web site called NSV Surgeons India (Kaza, 2006).

The Indian Government launched a national no-scalpel vasectomy project in 1998 in collaboration with the United Nations Population Fund (UNFPA) to promote male participation in contraception and arrest the declining trend in male sterilization.

United States was one of the countries which introduced NSV at an early date. Training courses were held in 1988 in California, Massachusetts and New York (Antarsh L, 1989). It was found that low-income and minority men were willing to choose NSV. In 1995, approximately 494,000 vasectomies have been performed and 29% were of the no-scalpel type (Haws, 1993).

A hospital in India had employed the new vasectomy technique since September 1991. The first training course was organized by that hospital in March 1992, and the NSV procedure was thus officially introduced into India. Based on the data of the hospital,
after the use of NSV, the number of vasectomy increased three times as compared with the corresponding period in 1988-91\cite{3}. The no-scalpel vasectomy attracted more educated and higher income men although in India the acceptability of vasectomy is influenced by religious factors (Nigam, 1994).

Between the year 1990 and 1993, 5726 men and 3320 women were received for counseling service and for vasectomy in hospitals and health centers, and 1203 men underwent no-scalpel vasectomy (Gural, 1993).

A study was conducted by Ministry of Health and family Welfare India (2011) with support of United Nations Fund for Population Activities (UNFPA) with an 14 objective to assess the adoption of no scalpel vasectomy as a method of family planning over a period of four years. 18 states are being covered by No Scalpel Vasectomy Projects, of which Andhra Pradesh is most successful state. During the first year 27,661 males underwent the no scalpel vasectomy operations all over the country. Andhra Pradesh accounts for 25,203 no scalpel vasectomy operations; in Karimnagar district alone 20,926 no scalpel vasectomy operations took place. As compared to the corresponding years the acceptance of No Scalpel Vasectomy was increasing. The results revealed that the higher acceptance of sterilization by males has been proved through the adoption of no-scalpel vasectomy technique, which is safer, involves
lesser complication and more economical than conventional incisional vasectomy.

**Singh et al., (2010)** assessed the impact of intra operative distal vassal flushing during NSV of 727 men. It was found that higher proportion of men (53.40%) (80.6%) were azoospermic at 4 weeks and 8 weeks respectively.


**Trollips et al., (2009)** studied the safety and of efficacy of NSV performed under local anaesthesia of 479 men. Complications occurred in 12.9% these were pain (7.3%), swelling (5.4%), haematoma (1.3%) and sepsis (1%).

**Lara, et al., (2007)** conducted a retrospective cohort study with data from clinical records of men who underwent No Scalpel Vasectomy in Mexico about the characteristics, complication and results of No Scalpel Vasectomy. In a total of 596 samples 94.3% of men requested the No Scalpel Vasectomy because of satisfied fertility
and 5.7% by morbidity in his couple. The complications were as follows: epididymitis (2.2%), mild haematoma (1.5%) and contact dermatitis (0.2%). The surgical complications were significantly more frequent for the group with varicocele compared with the normal men group (p < 0.05). Azoospermia was achieved in 99.1% of men at 18 weeks after the no-scalpel vasectomy. Early recanalization occurred in 0.5% of men there were no pregnancies.

Goldstein (2006), stated No Scalpel Vasectomy is the most dependable methods of permanent contraception’s available to men. It was estimated that about 500,000 vasectomies are performed each year in the United States.

Shaken, Yazdani, Khalafi and Al-adeeb (2006) study was undertaken to determine the failure rate of the No-Scalpel Vasectomy in Shiraz Vasectomy Center, Southern Iran, from 2001 to 2003 NSV was done among 3900 in Nader Kazemi Health Center. Among 3900 cases, 2928 patients had a complete follow up file while failure in the method was visible among 109 (3.72%) cases.

Lebrecque et al., (2004) performed a systematic review of 2058 titles and concluded that NSV is the safest surgical approach to isolate the vas when performing vasectomy.

Barone et al., (2003) determined the time and number of ejaculation to azoospermia after NSV, of the 217 men 36(16.6%) did
not achieve azoospermia by 24 weeks and 22(11.5%) had vasectomy failure.

**Eslamlou et al., (2001)** stated in the study findings that out of 334 men who underwent NSV, only one pregnancy was reported. The result suggest that men can relay on NSV for contraception’s 12 weeks after NSV.

**Kumar and Kaza (2001)** reported that among 2150 male acceptors of Lok Nayak Hospital, Delhi who were followed up for failure rates. The semen analysis after 3 months and atleast 20 ejaculations showed no failure rates.

According to **Bing and Huang (2000)** a hospital in India has employed the new vasectomy technique since September 1991. The first training course was organized in March 1992, and the NSV procedure was thus officially introduced into India. Based on the data of the hospital, after the use of NSV, the number of vasectomy increased three times as compared with the corresponding period in 1988-91. The No Scalpel Vasectomy attracted more educated and higher income men-although in India the acceptability of vasectomy is influenced by religious factors.

**Kaza (1999)** a recent follow up study performed on 4253 of No-Scalpel Vasectomies in India between 1989 and 1997 revealed lower complication rates. There were only eight complications encountered in this large number of No-Scalpel Vasectomy study,
which were two small hematomas (0.047%), three painful nodules (0.07%) and three wound infections (0.07%). The mean duration of NSV in India was 9.5 min.

**Ozvaris. et al., (1998)** did a study on male involvement in family planning in Turkey. Nearly 50% of those using contraception continue to rely on male methods or methods that require male cooperation.

**Goldstein (1991)** stated that by 1988 over 10 million No-Scalpel Vasectomies were performed in China. In one study follow-up examinations were performed on 179,741 men in China. Hematomas were identified in 160 men (0.09%) and superficial infection in 1,630 men (0.91%). These figures show that the No-Scalpel Vasectomy results in a considerably lower complication rate than that of conventional vasectomy.

**Ackman, (1979)** Many patients develop small haematomas or subcutaneous ecchymosis due to the nature of scrotal tissues. These resolve spontaneously within 1-3 weeks. Troublesome haematomas develop in 0.4-1.6%.

According to **Fuster (1994)** out of the 100 Spanish men who accepted the no-scalpel procedure in Barcelona no haematomas or no infections were reported.

In Turkey between 1990 and 1993, 5726 men and 3320 women were received at the counseling service for vasectomy in
hospitals and health centers of Turkey and 1203 men underwent No Scalpel Vasectomy (Gural D. Lancet, 1993).

Nirapathpongporn (1990) reported that in a total of 1203 operations performed at the Thai King’s birthday vasectomy festival, an average of 57 vasectomies were done per day per physician using NSV, compared to 33 vesectomies done with the standard technique. The complication rate was 0.4% for NSV and 3.1% for the standard vasectomy, the difference being significant.

In the late 1990s in America vasectomy rose from 23 to 32, an increase of almost 40%. Haws (1997) Canadian doctors held the first Canadian no-scalpel workshop in April 1993. Vasectomy has been used by 18% of all married couples in Canada (Haws, 1993) the percentage is a little higher than that in the US (17%). Approximately, a total of 1100 doctors have been trained on NSV in the whole north American region. The ratio of tubal ligation to vasectomy was 18 to 1 in Colombia (Perez, 1995). In Mexico City alone, the number of vasectomies performed in the 1st half of 1990 increased by 65.4% over the corresponding period of the previous year (Martinez-Manautou, 1991). By June 1995, over 55,000 men received vasectomy from more than 300 doctors (De Cordero, et al., 1996).

According to AVSC, the no-scalpel technique possesses seven advantages as compared with conventional vasectomy; they are: no incision, no stitches, faster procedure, faster recovery, less chance of
bleeding and other complications, less discomfort, and high efficiency (AVSC International, 1997).

According to the various literature, performing one no-scalpel procedure requires 15-20 minutes by American, 8 minutes by Thai, 16 minutes by Danish, and 5-12 minutes by Spanish doctors (Das, 1993; Goldstein, 1991; Harvald, 1997 and Viladoms Fuster, 1994).

In an Indian study with 274 and a US study with 273 acceptors, not a single complication was found during follow-up observation (Das, 1993 and Goldstein, 1991). Perez Nino (1995) a review of the first 1000 cases of no-scalpel vasectomy performed in Mexico in 1990-93 confirmed that 97.9% had no postoperative hemorrhage or hematoma and there was not a single case of wound infection; vasectomy postoperative azoospermia rates were 97.4%, 95.7%, and 94.1% in respectively as reported in the (Arellano Lara, 1997). A comparative study of 256 men undergoing conventional vasectomy and no-scalpel technique, NSV reduced the post-vasectomy pain, the use of analgesics, the frequency of infections, and the necessary contacts with physicians, which were self-assessed on a 10-cm visual analogue scale (Skriver, 1997). In 100 Spanish men who accepted the no-scalpel procedure in Barcelona, no haematomas or infections were reported (Viladoms, 1994). Holt believed that these benefits are attributable to the minimal dissection and reduced tissue handling required to expose and isolate the vas (Holt, 1996).
Based on the analysis of 489 Chinese NSV trainees, Xu et al., (1993) believed that the minimum solo practice should be no less than five cases during the training course, although 10-15 cases would be better (Xu, and Feng, 1993). It has been reported that 6-9 solo operations in the US (Family Planning International, unpublished data, 1989), 10-15 in Denmark (Harvald, 1994) and 15-20 in Thailand (Nirapathpongporn A, unpublished data, 1989) are required to develop proficiency. Obviously, training is important to ensure the quality of the no-scalpel procedure. Although the doctor believed that there was a low rate of primary surgical complications, 7 cases of infection, one case of granuloma, 39 (45%) cases of discolouration, and 34 postoperative cases of discomfort occurred, and 5 of these were hospitalized (Dorfelt, 1997). All these are related to inadequate techniques on infiltration of anaesthesia, dissection of scrotal wall and vas, which are especially emphasized in NSV training course. Traditional incision vasectomy has been used for half a century and has proved to be a method that is simple, inexpensive and effective. The surgical incision, however, accounts for most of the operation-related complications, in particular bleeding, haematoma, and infection.

**Conventional Vasectomy Versus No Scalpel Vasectomy**

Traditional incision vasectomy has been used for half a century and has proved to be a method that is simple, inexpensive and effective. The surgical incision, however, accounts for most of the
operation-related complications, in particular bleeding, haematoma, and infection.

Since the advent of vasectomy, various attempts have been made to make the procedure safer, easier to perform, more effective and more acceptable. No-scalpel vasectomy was developed in China by Dr. Li Shunqiang with the aim of reducing men’s fear related to the incision and increasing vasectomy use in China. Since 1974, over 10 million Chinese men have undergone vasectomy by the no-scalpel technique.

The effectiveness rate of no-scalpel vasectomy has been reported to be 98% at 24 months postoperatively. Based on available evidence no-scalpel vasectomy is regarded as the safest surgical approach for isolating and exposing the vas for purposes of vasectomy. It is the method of choice for surgeons who perform vasectomy on a regular basis.

No-scalpel vasectomy is less invasive than the incision approach because tissue trauma or blood vessel injury caused by sharp or blind dissection is avoided. It is a breakthrough advance in vasectomy practice with the main clinical advantage being a low surgical complication rate, especially haematoma and infection.

Cook et al., (2006) reported the Cochrane review of NSV technique which had less operation duration than conventional vasectomy and had a quicker resumption of sexual activity.
Chou (2004) compared both conventional vasectomy and No Scalpel Vasectomy among 449 men. Among 234 men who underwent NSV, the men experienced less operation time and postoperative complication such as haemotomas, infection and granulomas (p < 0.05).

Black and Francome (2002) did a randomized prospective comparative study between scalpel and electrocautery no-scalpel vasectomy techniques among 325 men in London. The results show that electrocautery no-scalpel vasectomy technique was marginally quicker to perform. Pain levels intra-operatively were comparable. The electrocautery no-scalpel vasectomy group experienced less pain and bleeding from the wound postoperatively and were quicker to heal.

Susan Mcmullen, et al., (1999) did a study to compare the safety, easy use and effectiveness of the no scalpel vasectomy and standard incision vasectomy in 5 countries, Brazil, Guatemala, Indonesia, Srilanka and Thailand with 1,429 men seeking vasectomy. The efficacy of the 2 approaches was virtually identical. In the no scalpel group operating time was significantly shorter, and complications and pain were less frequent than in the standard incision group. The no scalpel group resumed intercourse sooner, probably as a result of less pain following the procedure.

Nirapathpongporn, (1990) in his study found that the men who had the NSV technique had significantly fewer hematomas and
infections, with an overall complication rate of 0.4/100 procedures for the NSV technique compared with 3.1/100 for conventional vasectomy (p<0.001). This study found that NSV took less time than CV.

**Nirapathpongporn, Huber and Krieger (1990)** did a prospective, randomized study (2008) in Thailand comparing the side effects of 2 vasectomy techniques showed that of 523 men, 1.34% became infected and 1.72% developed hematoma or bleeding after traditional incisional procedure. Of 680 men who underwent No Scalpel Vasectomy, 0.15% became infected and 0.3% developed hematoma or bleeding. Overall percentage of complications after No Scalpel Vasectomy is 0.4% versus 3.1% for conventional vasectomy.

**Knowledge and Attitude of Men on Family Planning**

Knowledge of contraceptive has increased enormously in recent decades. In most countries, women and men are fairly well informed about different methods, their costs, side effects and benefits. Women are forced to take up the task of using temporary family planning and permanent family planning as the men feel it is the responsibility of the women.

For a long time, international family planning and reproductive health programmes focussed exclusively on women (**Greene, 1998**). As a consequence, population policies were implemented almost exclusively through basic family planning programmes serving women. If men were involved, it was in a limited way, often to ensure
contraceptive continuation and acceptability (Amatya et al., 1994) or to promote the diagnosis and treatment of sexually transmitted infections (Mbizo et al. 1996).

Reproductive health practitioner have recognized that the failure to target men has weakened the impact of family planning programme, because men can significantly influence their partners reproductive health decisions and use of health services (Drennan, 1998, Mbiyro and Basset, 1996).

The programme to involve men in reproductive health uses many terms, including men’s participation, men’s responsibility, male motivation, male involvement, men as partners, and men and reproductive health (Finger et al., 1998, Danforth and Jezowski 1997, Helzner 1996). However, there is no consensus about which term best describes this perspective on men, what these terms mean, and how men can best be involved in reproductive health activities (Verme et al., 1996, Danforth et al. 1994). Men has to play more responsible roles in reproductive health.

Successful male involvement is critically dependent on addressing the social and cultural norms that impede health (Bernstein and Hansen 2006, Pande et al. 2006). It is very difficult for men to access accurate, timely and good quality reproductive and sexual health information and services (Pande et al., 2006). More recently, however, male involvement in reproductive health has become a popular area among reproductive health programme
designers, policy makers, and population researchers. Still, the meaning of “male involvement” has divergent interpretations. In the patriarchal culture predominantly prevalent in most of India, husbands have the authority to make legitimate decisions on behalf of their wives, and reviews have suggested that they are also involved in making decisions about their wives’ reproductive health, including contraceptive usage, visit to the health facility and family composition and size (Edmeades et al., 2011, Sharma 2002, Balaiah et al., 1999, Karra et al., 1997).

Although both men and women have responsibilities and interest in reproductive health and family planning, demographic studies on fertility and family planning have overwhelmingly focused on women. (Berer 1996, Greene and Biddlecom 2000). In practice, the effect that men have on their own and on women’s reproductive lives may be more varied. To exclude men from information, counselling, and services is to ignore the important role men’s behaviour and attitudes may play in couples’ reproductive health choices (Bloom et al. 2000). “Men’s participation can be seen as a means to an end, rather than as a goal in itself” (Greene et al. 2006).

Kabagenzi et al., (2014) conducted a qualitative study using 18 focus group discussions with purposively selected men aged 15 to 54 years and women aged 15-49 years to explore men and women’s perception regarding barrier to men’s involvement in reproductive
health. The study concluded that in general the knowledge of effective contraceptives was high. However lack of time and overall limited awareness regarding the specific role of men in reproductive health was also thought to deter men’s meaningful involvement in issues related to fertility regulation.

Men are more interested in family planning than often assumed but need communication and services directed specifically at them. Most studies report that men have responded positively to being involved in interventions and that they do in fact care about the welfare of their families (Chankapa et al., 2010, Clark et al., 2008, Singh and Arora 2008, Varkey et al. 2004, Becker and Costenbader 2001, Drennan 1998, Finger and Ndong 1998, Greene 1998, Karra et al., 1997, AVSC International 1997).

A study conducted by Das and Ray (2007) among adolescent boys aged 15-18 years in the peri-urban and rural areas of West Bengal has shown that the reproductive health awareness among peri-urban boys was more than that of their rural counterparts.

Santhya and Jejeebhoy (2007) had reported that even if young people reported awareness, they possessed only superficial information though reproductive health is a serious concern not only for adults but also for the adolescents.

Many studies have discussed inter-spousal communication, much more internationally (Becker et al. 2006, Lasee and Becker

Mullany et al., (2005) investigated the patterns of decision making and the context of male involvement behaviours in Katmandu, Nepal with 592 pregnant women indicated positive association between joint decision making and male involvement and it implied that communication between the couple and shared negotiation strategies can improve health practices.

Heinemann et al., (2004) conducted a survey of more than 9000 male aged 18 – 50 years in nine countries four continents in 2002. The result indicted male fertility control appears to be well accepted overall but the willingness to use varies widely between differing population group.

Drennen’s (1998) comparative study on the demographic and health survey data of 15 countries indicated that more than 90% of men know about knowing at least one contraceptive method used.

Rao and Sinha, 2003; Gupta et al., 2002; Narayan et al., 2000; Moore, 1999; Knan and Patel, 1997; Jeffrey et al., 1989) found that for any family welfare programme to be effective
and successful, men should actively participate in it, if they are sincerely concerned with health and well being of the family.

**Promotion of No Scalpel Vasectomy**

Effective NSV programme ought to use several channels to deliver the message to create an awareness among the mass. Client satisfaction should be the primary aim of all NSV information and communication activities. Client satisfaction is influenced by the quality of information and satisfied clients have proven to be the best and most effective communicators about NSV.

The following are the some of the promotional activities of NSV by the Philippines Program Management Technical Assistance Team Services (PMTAT) includes, clinic signage - clients should be made aware of the services available at the center, i.e. NSV services availability (day, time and information on service fees), seminar/lecture/open forum on how the NSV procedure is done, questions about vasectomy are answered or clarified by a resource person, which could either be the physician who performs the NSV procedures or a vasectomy client or both. A satisfied client, giving his testimony in forums, and sharing his positive experience and who can motivate others. Organization of community theater/comedy skit on the values of planning the family and answers to questions frequently asked about the NSV- how it works? How it is done? The side effects? Organization of street parade - participation by local government officials, health workers, students, and interested parties
from the community. Poster-making contest - for elementary and high-school students. Streamers posted at strategic areas announcing the availability of NSV services. Motivating potential clients by mobilization of face-to-face information, education, and motivation activities. Use of IEC materials such as leaflets and flip charts. Finally client counselling is very important aspect in the delivery of NSV services providing correct information about the method that could help the couple, especially the man, to make a decision to accept and submit to the NSV procedure. A trained nurse or midwife can do counselling at the clinic level.

Subramanian (2010), conducted a longitudinal study in 2003-2004 and 2007-2008, to promote an initiative to improve client and provider knowledge and acceptance of No Scalpel Vasectomy (NSV) in Ghana. At eight facilities, physicians were trained in NSV and staff received training in the provision of “male-friendly” services. Health promotion activities provided NSV information to prospective clients. Client-provider communication was assessed via a mystery client study (n=6). Knowledge and acceptance of NSV among potential clients were assessed with baseline and follow-up surveys (each n=200) in 2003-2004 and three follow-up panel surveys in 2008 (each n=240). The results indicated that trained health staff exhibited improved attitudes and knowledge regarding NSV. Mystery clients reported receiving accurate, nonjudgmental NSV counselling. Awareness of NSV among panel respondents doubled from 31% to 59% in 2003-2004 and remained high (44%) in 2008. The proportion
of men who would consider NSV increased from 10% to 19% in 2007-2008. NSV procedures increased three-fold from 2003 (n = 26) to 2004 (rc = 83) and 2007 (n=18) to 2008 (n= 53). The author concluded that provider training in client-centered services, coupled with targeted health promotion, improved client and provider knowledge and acceptance of NSV in an African context.

**Sharma (2006)** stated to propagate awareness and information the awareness material prepared are disseminated through display hoardings, wall writings, distribution of pamphlets, audiovisual clips, face to face counselling, etc. Communication technology serves mobilising and educating people, especially rural populace.. Counselling is an essential part of motivation to the client. During the last 5 years a significant surge has been noticed in terms of access to new communication technologies. This may be employed to successfully implement the family planning programme.

**Ruminjo et al., (2002)** reported the following findings that telephone hotlines have been effective in Kenya and the United States in increasing vasectomy caseloads. The hotlines offered a means of private and confidential counseling

**Kaza (1998)** cited partners can be a barrier to men’s acceptance of vasectomy and often have more misconceptions and concerns about vasectomy. In the tea districts of West Bengal, India, “mothers’ clubs” were instrumental in mobilizing clients for vasectomy
Johns Hopkins School of Public Health, Center for Communication Programs (1997) stated vasectomy promotion through community talks and home visits and mass media (billboards, newspaper and magazine advertisements, and radio and television spots) have been instrumental in informing men about vasectomy. Program experience shows that individuals who are exposed to a message from multiple sources—such as mass and community-based media and interpersonal communication—are more likely to take action than are those exposed to a message from a single source.

Khan and Patel (1997) conducted a study in rural India found that 90% of men interviewed had been exposed to mass-media messages, compared with only 30% of women interviewed.

Green et al., 1995 and Karra et al., (1997) found that men have less contact with health workers than do women, and personal contacts—friends, relatives, and co-workers—are key to introducing new ideas and provide support for behavior change. In programs in Asia, Latin America and Africa, satisfied vasectomy clients have been especially influential in helping other men decide to have a vasectomy.

In Kenya and Tanzania, these themes have addressed prevailing misconceptions—such as that men could become impotent as the result of vasectomy—and have acknowledged economic
pressures, particularly the rising costs of education (Wilkinson et al., 1996 and Muhondwa et al., 1997).

Successful communication campaigns focus on factual information and perceptions to overcome myths or rumors that sometimes lead men to oppose vasectomy and other family planning methods. In Latin America, themes have included—vasectomy has many advantages over female sterilization and over temporary methods; men elect vasectomy out of love for their wife and concern for her health; men choose vasectomy out of a desire to take responsibility; and that vasectomy confers peace of mind and greater sexual enjoyment by eliminating worries about unintended pregnancy (Vernon, 1996).

Kincaid et al., 1996; Vernon, Ojeda, & Vega, 1989; Bertrand et al., 1987) reported programs in Brazil, Colombia, and Guatemala were able to double their vasectomy caseload through multimedia campaigns.