Introduction
1.0 INTRODUCTION

Cancer is said to be the second largest non-communicable disease and contributes greatly towards the total number of deaths that take place all over the world. Cancer is the leading cause of deaths in developed countries and proved to be the second leading cause of deaths in developing countries. The WHO (2006) has reported that cancer is the second commonest disease which causes mortality in both developed and developing countries irrespective of social status, race and sex. The type of cancer differs based on different anatomical sites such as lung, oesophagus, stomach, pancreas, liver, breast, brain, cervix, blood, ovary, nasopharyngeal and skin (Fleming et al., 1998). The top three types of cancer affecting men are lung, stomach and colorectal cancer whereas in female, breast, cervical and endometrial cancers are widely reported. The incidence of cancer malignancy is increasing worldwide and India too has started reporting cases alarmingly.

1.1 ENDOMETRIAL CANCER

Endometrial cancers can arise in normal, atrophic, or hyperplastic Endometrium and have been classified into two types. Type I cancers are of the commonest form and associated with increased levels of circulating estrogen. They tend to occur at young age and are not aggressive. Type II cancers are of high grade, aggressive and they tend to arise spontaneously. This type includes serous and clear cell carcinoma and tends to arise in an old patient and it does not have an estrogen relation (Prat, 2004). It is primarily a disease of the post menopausal women, although 25% of the cases occur in premenopausal patients, with 5% occurring in patients younger than forty years of age (Lachance et al., 2006).

1.2 STATUS OF ENDOMETRIAL CANCER

Endometrial carcinoma is the 4th most common cancer among women in westernized countries and 6th most common worldwide. The incidence of endometrial cancer is increasing all over the world and large differences can be seen in incidence rates between countries. The incidence varies among regions, in less developed countries, risk factors are less common and endometrial cancer is rare, although specific mortality is higher (Madison et al., 2004). The difference in incidence suggests that lifestyle factors may be responsible for developing endometrial cancer.
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The human body needs to follow an active lifestyle for a healthy living but we are perhaps grossly maladjusted to our sedentary lifestyle. The promotion of a physically active lifestyle is an essential important public health objective, which can impact many health outcomes. But, despite being a common malignancy it is not a leading cause of cancer deaths, this is due to early presentation of 70-80% of cases presenting in stage I disease (Barwick et al., 2006).

Endometrial cancer is relatively uncommon among women under 45 years old representing approximately 2–14% of all cases (Parkin et al., 2002). The American Cancer Society stated that 95% of endometrial cancer affected the women age 45 and older, 60 being the average age at diagnosis. Other industrialized western countries such as United Kingdom, France and Spain also show an increase in the annual incidence rate and mortality rate (Osteen et al., 1990). The Indian registries of endometrial cancer from the year 1993-1997 show Chennai- 2.5%, Bangalore-2.6%, Delhi-2.7%, Mumbai-2.9%, Trivandrum-2.9% (Shanta, 2004).

The mortality attributed to endometrial cancer in the United States of America (USA) is increasing. In 1998, 36,000 new cases and 6,300 deaths were estimated while today’s statistics estimate nearly 40000 women receive diagnosis and about 7,400 women die from endometrial cancer (American Cancer Society, 2007). In 2004, the annual endometrial cancer incidence by the Canadian cancer statistics was a ratio of 19 per 1,00,000 cases among women population. National Mortality Database of Australia indicates that endometrial cancer accounted for 15.8 new female cases per 1,00,000 population in 2000, encompassing 1654 new cases of disease annually .The Mortality rate statistics for deaths from endometrial cancer has been estimated to be 1.6 women per 100 000 Australian population causing 261 female deaths annually (Cancer Research UK, 2007).

An increasing trend of hormone dependent malignancies as breast and endometrial cancers has been noticed in Russia as well. Data obtained in 2000, showed a count of 6.5% of endometrial cancer when compared to all other cancers in women (Kozachenko et al., 2005). The incidence of endometrial cancer among Armenian women has substantially increased over the last two decades and is now the second most frequent onco-gynecological malignancy followed cervical cancer. The data obtained from Armenian National Oncology Center’s (NOC) in 1997 showed an incidence rate of 6.9 per 100 000 population, while in 2006, the incidence rate increased to 15.1(National Statistical Service, Armenia. 2007).
1.3 RISK FACTORS OF ENDOMETRIAL CANCER: (Amant et al., 2005).

A risk area is anything which increases the chances for an individual and makes him/her prone to catch the disease. Though, certain risk factors such as age and race cannot be prevented yet some of the common risk factors associated with endometrial cancer are as follows:

Factors increasing risk

- Nulliparity
- Old age
- Long-term exposure to unopposed estrogens
- Residence in North America or Europe
- High concentrations of estrogens postmenopausally
- Metabolic syndrome (obesity, diabetes)
- Years of menstruation (early menarche and late menopause)
- Breast cancer
- Long-term use of tamoxifen
- Hereditary non polyposis colon cancer (HNPCC) family syndrome
- Hormone-replacement therapy with less than 12-14 days of progestagens.
- First-degree relative with endometrial cancer

Factors decreasing risk

- Grand multiparity
- Oral-contraceptive use (combined pills)
- Physical activity
- Diet of some phyto-estrogens.

Tamoxifen: Tamoxifen is a synthetic antiestrogen used in the treatment of breast carcinoma. It has an antiestrogen effect on Endometrium when competing with ovarian estrogen secretion but also has paradoxical estrogenic effect in the absence of ovarian estrogen secretion.

Tamoxifen increases the risk of endometrial carcinoma by two to three times, and this risk is higher as the duration of use increases, particularly after 5 years. Most cancers associated with tamoxifen use are stage I (confined to uterus), with either of grade 1 or 2 morphology and thus associated with a better outcome (Gregory, 2003).
With the use of tamoxifen the endometrial thickness become less reliable as an indicator of uterine disease, because of tamoxifen- induced subepithelial stromal hypertrophy. Over 40% of women taking tamoxifen have an endometrial thickness more than 5 mm (Gregory, 2003).

**Obesity:** Obesity is associated with a 2-5 fold increase in endometrial cancer risk in both pre and postmenopausal women (Vaino and Bianchini, 2002). Excessive fat consumption and overweight (defined as Body-mass index [BMI] of at least 25 kg/m2) are important risk factors present in almost 50% of women with endometrial cancer (Calle et al., 2003). Overweight in postmenopausal women causes higher circulating concentrations of bioavailable estrogens.

**Diabetes:** Diabetes is an important risk factor of endometrial cancer especially in obese patients because obesity could potentially account for the increased risk. Diabetes, particularly non-insulin dependent diabetes is associated with hyperinsulinaemia (Sonoda and Barakat, 2006). Chronic hyperinsulinaemia is a risk factor in both pre- and postmenopausal women.

**Nulliparity:** Pregnancy, with intense placental production of progestagens, protects against endometrial cancer. Nulliparity is a risk factor that is more important if infertility is also present; but grand multiparity protects against cancer (Hinkula et al., 2002).

**Breast cancer:** Women with breast cancer are at increased risk of endometrial cancer. Breast cancer can rarely metastaise to the Endometrium, and primary endometrial cancers are more likely to occur in breast cancer survivors because of common risk factors. In women with breast cancer that subsequently developed endometrial cancer the risk of developing a serious endometrial cancer was two to six times higher than the risk of developing an endometroid carcinoma (Gehrig et al., 2004). An additional endometrial cancer risk has been related to the use of tamoxifen for breast cancer. This drug triples the risk of endometrial cancer and also increases the chance of developing benign endometrial lesions (Neven et al., 1998).

**The familial risk:** The proportion of cases of endometrial cancer on a background of familial risk is low but having a first degree relative with this cancer is a risk factor
(Hemminki and Granstrom, 2004). Endometrial cancer can also be a part of a hereditary cancer syndrome.

**Physical activity:** Physical activity can result in change in the menstrual cycle, body fat distribution and level of endogenous hormones (Bur et al., 1992). Physical inactivity, high energy intake, blood pressure above 140/90mm Hg, and serum glucose concentrations are BMI-independent risk factors (Hardiman et al., 2003). A substantial proportion of endometrial cancers could be avoided with the maintenance of a normal weight and physical activity throughout life, which is an inexpensive way to lower bioavailable estrogens (McTiernan et al., 2004).

**Contraceptive pills (Combined pills):** Contraceptive pills containing estrogens and progestagens lower the endometrial cancer risk due to suppression of endometrial proliferation by the progestin component of oral contraceptives (Deligeoroglou et al., 2003). This protective effect may be related to the duration of use. Patients with 12-23 months of oral contraceptive use have a 40% reduction in risk of endometrial cancer, whereas subjects with at least 10 years of use have a 60% reduction (Sonoda and Barakat, 2006).

**1.4 THE ANATOMY OF ENDOMETRIUM**

*Morphology of the Endometrium*

Among the gynecological cancers, endometrial cancer is the most common type and is considered to be a silent killer because the awareness is less about the signs and symptoms of this disease. The Endometrium is the inner layer of the uterus which covers the uterine cavity. In case fertilization would occur the Endometrium undergoes extensive morphological changes in order to prepare for implantation of the embryo, during the menstrual cycle. The Endometrium consists of two distinct layers or zones, which differ from each other both in histological characteristics and in function: a basal layer and a functional layer. The *basal layer* is in direct contact with the myometrium, and undergoes little change throughout the menstrual cycle. During menstruation the basal layer stays intact. The *functional layer* surrounds the lumen of the uterine cavity and changes extensively throughout the menstrual cycle.

The blood supply of the Endometrium consists of a network of arterial and venous channels. The arteries responsible for the blood supply of the Endometrium is
the spiral arteries which arise within the myometrium from branches of the uterine artery, subsequently pass through the basal endometrial layer, and extend into the functional zone. The proximal portion of these spiral arteries distributes blood to tissues of the basal layer and is not influenced by hormonal changes. However, the distal part of the spiral arteries, distributing blood to the functional layer, undergoes cyclic regeneration and degeneration during each menstrual cycle in response to hormonal changes.

**Embryology of the Endometrium**

In the 5th week of intrauterine life, the body of the uterus is formed by the fusion of the two mullerian/paramesonephric ducts. The epithelium of the mullerian ducts gives rise to the endometrial glands and stroma and the mesenchyme of the duct gives rise to the myometrium and serosa (Mount and Cooper, 2005).

1.5 **ENDOMETRIAL CANCER STAGE**

The stage reflects the extent of a disease at the time of diagnosis. It is necessary to determine prognosis and treatment. Staging in endometrial cancer according to surgical-pathology is based on the FIGO system, this is partly because most patients are treated surgically and also as clinical staging is inaccurate and often underestimates the extent of disease (Creasman et al., 1999). In 1988, the International Federation of Gynecology and Obstetrics Surgical Staging System (FIGO) replaced the previous clinical staging system and since then surgical staging has been the most important predictor of overall survival for patients with endometrial carcinoma (Creasman et al., 2004).

The Cancer Committee report (1971) on staging of tumours of the uterine corpus and later Barwick et al (2006) proposed the optimal staging of endometrial carcinoma. The stages are as follows:
Table 1: Staging of Endometrial cancer, FIGO, 1988

<table>
<thead>
<tr>
<th>SL.NO</th>
<th>STAGE</th>
<th>SUBDIVISION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stage I: Carcinoma is confined to the corpus uteri</td>
<td>Ia</td>
<td>The tumour is confined to the Endometrium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ib</td>
<td>The tumour invades the inner half of the myometrium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ic</td>
<td>The tumour invades into the outer half of the myometrium</td>
</tr>
<tr>
<td>2</td>
<td>Stage II: The tumour involves the corpus and the cervix</td>
<td>IIa</td>
<td>The tumour involves the endocervical glands</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IIb</td>
<td>The tumour involves cervical stroma</td>
</tr>
<tr>
<td>3</td>
<td>Stage III: The tumour extends outside the uterus but not outside the true pelvis</td>
<td>IIIa</td>
<td>The tumour invades through the serosa to the adnexa, or is associated with positive peritoneal washing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IIIb</td>
<td>The tumour involves the vagina</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IIIc</td>
<td>The tumour involves pelvic or peritoneal lymph nodes</td>
</tr>
<tr>
<td>4</td>
<td>Stage IV: Carcinoma has extended outside the true pelvis or has obviously involved the mucosa of the bladder or rectum</td>
<td>IVa</td>
<td>The tumour involves bladder or bowel mucosa.</td>
</tr>
</tbody>
</table>
1.6 SCREENING FOR ENDOMETRIAL CARCINOMA

Screening is defined as a public health service for the apparently healthy population. A test is offered to identify individuals at risk in whom further investigations or treatment may minimize the risk of a particular disease or its complication (Sharma and Menon, 2006). Abnormal uterine bleeding is the most frequent symptom of endometrial cancer, but many other disorders give rise to the same symptom.

Commonly used Screening modalities

A- Out patient endometrial biopsy: Endometrial biopsy is the most common technique employed for obtaining endometrial tissue for histologic evaluation. Several large studies have demonstrated that endometrial biopsy might produce insufficient tissue for diagnosis.

B- Ultrasound: Transvaginal sonography (TVS) is the imaging procedure of choice to evaluate patients with postmenopausal bleeding. Ultrasound signs of endometrial carcinoma include heterogeneity and irregular endometrial thickening. However, these signs are non-specific and ultrasound cannot reliably distinguish between benign proliferation, hyperplasia, polyps and cancer. Sonohysterography (TVS with instillation of fluid into the uterine cavity to outline intrauterine pathology)
may help to differentiate polyps, hyperplasia and carcinoma. This improves specificity of TVS in differentiating endoluminal masses from diffuse endometrial thickening, but it is not widely available (Goldstein et al., 2001). TVS is considered as a highly sensitive non-invasive test.

C- Magnetic Resonance Imaging (MRI): Magnetic resonance imaging (MRI) is considered to be the most accurate imaging technique for preoperative assessment of endometrial cancer due to its excellent soft-tissue contrast resolution. Overall staging accuracies have been reported at 83-92% (Barwick et al., 2006).

D- Hysteroscopy: Inpatient or outpatient hysteroscopy, which is the direct inspection of the Endometrium, has been used to evaluate cases of abnormal uterine bleeding. Its many advantages over endometrial biopsy, transvaginal ultrasonography, sonohysterography and D&C include direct visualization of the Endometrium, which provides the opportunity to obtain a biopsy specimen and remove lesions, especially polyps and leiomyomas. Its disadvantages include surgical risks, which are similar to those of D&C and the additional concerns of cost and the possible spread of malignant cells into the peritoneal cavity (Canavan and Doshi, 1999).

1.7 ENDOMETRIAL CANCER CONTROL PROGRAMME

The first historical statement on cancer control was developed in 1971 by the Government of India. Four major goals were formulated by the National Cancer Control Programme (NCCP) for India in 1984 which were as follows:

i) Primary prevention of tobacco related cancers
ii) Early detection of cancers of easily accessible sites
iii) Augmentation of treatment facilities and
iv) Establishment of equitable, pain control and palliative care network throughout the country.

Under this programme twenty one Regional Cancer Centers (RCCs) have been established. Cancer care facilities are available in a number of medical colleges and in some private and charitable hospitals in the country (Dinshaw et al., 2001). To provide stage by stage diagnosis and treatment to the infected population, the four approaches must be systematized. Thus, with the initiatives of the WHO, the
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Government of India has introduced and developed cancer control measures in the country.

Cancer epidemiology and several invasive methods are required by a cancer control programme to assess the etiology of cancer in a patient. On diagnosis, use of invasive histopathological studies, confirms the stages of cancer.

NCCP in India has made optimal use of scarce resources in implementing cancer control activities to a large number of people. Cancer prevention and education programs in the community with preventive intervention research projects are being undertaken by the Department of Preventive Oncology and The Tata Memorial Hospital at Mumbai, along with training, guidance and expertise to the institutions desirous of setting-up their own prevention and education programs.

1.8 EXPLORATORY TOOLS FOR ENDOMETRIAL CANCER ANALYSIS

Cancer diagnosis and cancer control researchers seek to reduce the burden of cancer by studying intervention, their impact on defined populations and the means by which they can be used. Several approaches are used by GIS analysts in cancer control with an aim to identify where the cancer burden is elevated. (A T Najafabadi et al., 2011)

Information technology in medicine enables acquisition and accumulation of diagnostic data in electronic form. The estimation of current clinical case in the form of a second opinion can be given for the physician’s decision support, taking into account diagnostic parameters of all former clinical cases. Evaluation of such former cases can help physician in making clinical decision, diagnosis and for predicting future cases and locations (Jegelevicius et al., 2002).

Computer based methods have provided solutions to biological problems by initiating the relationship between the medical field and GIS as medical geography which also led to spatial analysis methods to map epidemiological diseases. Snow (1854) created the first thematic map of cholera death in London.

Many studies were conducted and proved that there is a strong link between the cancer and the demographic factors coupled with socio economic data. A part of this study is based on GIS related cancer research, which has wide scope and will emphasize the important place for demographic factors in prevention and resources allocation for cancer diagnosis and control.
Several authors have reviewed spatial analysis and the use of GIS for health (Mayer, 1983; Gesler, 1986; Twigg, 1990; Marshall, 1991; Scholden and deLepper, 1991; Walter, 1993). Prediction of the disease risk by identifying environmental factors responsible for the geographic distribution of disease helps to target, control strategies and optimize preventative measures (Das et al., 2002). GIS and spatial statistical tools are used by New York State Department of Health Cancer Mapping Project [Cancer Surveillance Improvement Initiative to provide information about the incidence of cancer for countries (Elizabeth and Michl, 2003)]. The identification of cancer clusters of excess mortality over time may prove beneficial for health policies and planning.

Medical researchers need more improved tools and analysis methods for examining health-related information in spatial and temporal context. Mapping techniques highlight the spatio-temporal variations in the rates of cancer mortality. Several methods have been proposed for spatial analysis and modeling. Many of these methods have been recently developed in response to the interest in spatial processing and data presentation. However, the idea of using spatial analysis is to solve the problem in the very beginning of the research (Snow, 1854).

The function of GIS is to integrate epidemiological components such as person, place and time and that subsequently assists in establishing that a person is related to race or sex. Pickle et al., (2006) reported that the cancer rates vary with regions but recently it has been found that local neighborhoods can also have an influence over cancer outcomes, perhaps through shared environmental exposure through cultural and behavioral factors. Thus, cancer control becomes a more complex task with multilevel and multifactorial features. And a simple statistics cannot address this problem. Hence GIS can be utilized to address this problem as it is a modern tool for health fields and growing rapidly.

The main goal of introducing GIS as one of the chapters is to ascertain whether GIS can be an important guiding force in cancer control research and will ultimately help to reduce the future cancer burdens. The reality and certainty of nature tells us that there will be instances when the predicted result does not agree with the observed outcome. It is critical to acknowledge the uncertainty that exists in the real world. Continuous research is on in various disciplines where there is some level of uncertainty and limitations to empirical data. Hoffmann had stated that in medical research, for example by using the epidemiological data, a model is derived
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Empirically to estimate the probability of women developing breast cancer in future. In this example some basic data are required to determine the level of stressors which may be correlated with breast cancer such as woman’s age, first child birth, age at menopause, having previous biopsy with atypical hyperplasia and others. However all stressors are not of the same type. For example, chemical or genetic and also all the data are not available to quantify the risk.

Normally the available data are too broad or very fine which may often prove impossible or at least highly impractical due to the nature and the extent of the problems and with the resources available for research. Recently the Geostatistics and GIS seem to provide a reasonable method to parameterize input variables giving inconsistencies in existing data sources with an opportunity to apply expert knowledge. Hence, we believe that GIS may provide a method of accounting for expert and stakeholder knowledge to screen diagnose and treat cancer patients.

GIS has been used to determine the risk factors responsible for cancer (Valarmathi et al., 2010; Harathi et al., 2010). In addition to the risk factors enumerated for specific cancers, environmental and socioeconomic factors also play a vital role in more than half of the cancer cases. The application of GIS which are reported are as follows:

- To help decision Makers to visualize patterns of diseases
- Geographical distribution and variation of diseases
- Analyses of spatial and temporal trends
- Monitoring diseases and interventions over time
- Route health workers, equipment and supplies to service locations

Geographical information technology with association rule mining helps to reveal the spatial patterns of socio-economic inequality in cancer mortality and identify regions that need further attention (Vinnakota and Lam, 2006) Nahar and Tickle (2008) have stated that association rule was used to determine the significant risk factor in cancer.

The characteristics of a population can be observed to establish the factors associated with a specific outcome. Observational studies, such as statistical learning and data mining, can establish the association of the variable to the outcome, but they do not always establish the cause and effect of the relationship of the association.
Data driven statistical research is becoming a common complement to many scientific areas like medicine and biotechnology. This trend is becoming more and more visible as in the studies of Houston et al. (1999) and Cios and Moore (2002).

Medical researchers are seeking more robust approaches that can analyze complex dynamic non-linear biological systems. Association Rule and Fuzzy logic in Oncological research focuses on the image analyses for the diagnostic purposes (Cahoon et al., 2000). A computerized fuzzy logic system is used for the evaluation of the cardiovascular autonomic function (Carvalho et al., 2002). It is also used for diagnosing, analyzing and learning purpose of the prostate cancer disease, which is also involved in determining whether there is a need for the biopsy and it gives the range of risk of cancer disease to the medical practitioners (Saritas et al., 2003).

Soft computing (Genetic algorithm, Artificial Neural Network and Fuzzy Logic) has developed rapidly for the diagnosis and prognosis in medical informatics (Baker and Kareem, 2002). Decision support algorithm for the differential diagnosis of intraocular tumours using eye images was obtained by the ultrasound examination (Jegelevicius et al., 2002). Schneider et al., (2003) has stated that the fuzzy logic based tumour marker profiles improved sensitivity of the detection of progression in small-cell lung cancer patients. Rotshtein and Raktyanska, (2000) have stated that genetic algorithms are used for solving fuzzy logical equations in medical diagnostic expert systems.

Imaging equipment and image analysis software can partially, and perhaps eventually, completely automate the process of feature extraction from the original image (Maglogiannis and Zafiropoulos, 2004). Machine learning techniques are used to discern patterns relevant to the separation of malignant from benign cancer. The applications of fractal analysis and texture measures are explored for the prediction of architectural distortion to detect endometrial cancer. The development of Computer-Aided Diagnosis (CAD) techniques dedicated to the detection and localization of abnormal region is used which leads to the efficient finding of endometrial cancer.

Landini and Rippin (1993) found that lowest fractal dimension value determined was 0.99 (normal mucosa) and the highest was 1.61 (carcinoma), by studying the fractal dimensions of the epithelial-connective tissue interfaces in premalignant and malignant epithelial lesions of the floor of the mouth. Recently, fractal analysis has been applied for the image compression, texture analysis and texture image segmentation. Variations in shape of the dermo-epidermal junction and
the size of the superficial vessels in psoriatic lesions were determined and compared by fractal dimension (Uhoda et al., 2005). Microvascular architectural complexity in oncocytomas and chromophobe renal cell carcinomas were evaluated by fractal Box-counting method (Karshoglu et al., 2009).

Computer aided classification of benign and malignant cancer was used, using wavelet based enhancement techniques. The literature on this and the related image processing methods are very scanty with respect to Endometrial Carcinoma (Lopes et al., 2009). Most of the modalities adopted for endometrial cancer have been explained in this section earlier. MRI is the most commonly used modality and the method adopted for the image processing is Wavelet. Since the MRI is more expensive and time consuming, other modalities are also used for screening and diagnosis of endometrial cancer. Granberg et al., (1991) Makris et al., (2007) have used CA-125 to diagnose the ovarian cancer. They have also used endovaginal ultrasonography for detecting endometrial cancer. Haemila et al., (2005) used a prospective study and applied 3D Ultrasonography and hysteroscopy in detecting uterine lesions in premenopausal bleeding. Another cheap method was adopted by Huanshuang Niu et al., (2005) using NIRS (Near Infrared Spectroscopy) for detecting endometrial cancer. The same method was used for diagnosis of breast, cervix and prostate cancer by Chung et al., (2008), Horunung et al., (1999) and Ali et al., (2004), respectively.

Huanshuang Niu reported that 2D wavelet Packet transformation is used for future extraction of the MRI, ultrasonography or ultrasound images and found the accuracies of their classification were 98 ± 2%, 99 ± 2%, 98 ± 3% for normal hyperplasia and malignant cases respectively.

After applying different textural features Michael et al., (2014) found that ultrasound images could efficiently be capable of differentiating malignant and benign endometrial tissues. In most of the studies, the feature extraction was done using wavelet and applied histogram based features and statistical parameters.

The use of GIS, data mining and other computational methods can be very promising in monitoring of health programs, evaluation of diseases, and appraisal of the effectiveness of diagnosis and treatment facilities. The present study, therefore, outlines a theoretical framework in developing GIS based models and exploratory tools for monitoring distribution and evaluating diagnosis methods for endometrial cancer cases in Mysore District. The sensitivity of the problem and the prospective methodologies that can be applied are detailed in the next section.