CHAPTER - II

REVIEW OF LITERATURE

A review of literature is an essential aspect of scientific research. It provides a basis for future investigations. It justifies the need for replication, throws light on the feasibility of the study, indicates constraints of data collection and helps to relate the findings from one study to another with a view to establish a comprehensive body of scientific knowledge in a professional discipline.

2.1 This chapter consists of two sections:

Section A : Review of literature

Section B : Conceptual framework

Section A : Review of Related Literature

- Prevalence and management of SUI (7)
- Pelvic floor exercise and urinary tract symptoms (7)
- Pelvic floor exercises and pelvic floor muscle strength (5)
- Pelvic floor exercise and pad weight (5)
- Pelvic floor exercise with Vaginal cone (6)
  Pelvic floor exercises and Qol (9)
- Educational intervention on SUI (12)

Section A : Review of Related Literature

Prevalence and management of SUI (7)

Torrisi G, Minini G, Bernasconi F, Perrone A, Trezza G, Guardabasso V & Ettore g. (2012) estimated the prevalence of urinary incontinence three months after first delivery; to identify risk factors involved in UI among six Italian, nulliparous women who delivered at term. UI were assessed by administration of the
International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) and according to Wexner's Continence Grading Scale, at 2-3 days post-partum and at 3 months after delivery. Changes in sexual behaviour, and pelvic floor condition after delivery, were also recorded among 960 women, 744 were evaluated 3 months after delivery. The prevalence of UI at that time were 21.6%. Onset of incontinence during pregnancy was an independent predictor for persistent UI (Odds Ratio (OR) 4.6, Confidence Interval (CI) 3.1-6.8,(p<0.001).Family history of urinary were respectively associated with UI (OR 2.6, CI 1.6-4.0, p<0.001) and AI (OR 2.4, CI 1.4-4.0, p<0.001) 3 months after delivery. Among obstetric factors, vaginal delivery was a strong risk factor for UI (OR 3.3, CI 2.0-5.3, p<0.001). The sexual score improved 3 months after delivery in 72.4% of women.

Gyhagen M, Bullarbo M, Nielsen T & Milsom I (2012) investigated the prevalence and risk factors for urinary incontinence (UI) 20 years after one vaginal delivery or one caesarean section among Swedish women. Registry-based national cohort study was conducted including 5236 samples of primiparous. The main outcome measures were prevalence of UI and UI for more than 10 years which were assessed 20 years after childbirth. The prevalence of UI (40.3 versus 28.8%; OR1.67; 95% CI 1.45-1.92) and UI >10 years (10.1 versus 3.9%; OR 2.75; 95% CI 2.02-3.75) was higher in women after vaginal delivery than after caesarean section. There was no difference in the prevalence of UI or UI >10 years after an acute caesarean section or an elective caesarean section. It was found that an 8% increased risk of UI per current body mass index (BMI) unit, and age at delivery increased the UI risk by 3% annually. Two decades after one birth, vaginal delivery was associated with a 67% increase of the risk of UI, and UI > 10 years increased by 27.5% compared with caesarean section.

Kim H, Suzuki T, Yoshida Y, Yoshida H.(2007) evaluated the effectiveness of pelvic floor muscle (PFM) and fitness exercises in reducing urine leakage in elderly women with stress urinary incontinence (SUI) among Japanese women. 70 and older who reported urine leakage one or more times per month, 35 were randomly assigned to intervention and the other 35 to control. The intervention group attended an exercise class aimed at enhancing PFM s and fitness. Duration of the exercise was 60 minutes per session twice a week for 3 months.
After 3 months of exercise, the intervention group was followed for 1 year. Body mass index (BMI), urine leakage, walking speed, and pelvic floor muscle strength were measured at baseline, after the intervention, and at follow-up. In the intervention group, maximum walking speed and adductor muscle strength increased significantly after the intervention. There were no significant changes in the control group. After 3 months of exercise, 54.5% of the intervention group and 9.4% of the control group reported being continent. Within the cured group of UI, a significantly higher proportion had decreased their BMI at 3 months (P=.03) and increased walking speed at 3 (P=.04) and 12 (P=.047) months.

Jonsson Funk M, Levin PJ, Wu Jm (2012) estimated the rates of stress urinary incontinence (SUI) surgery from 2000 to 2009 by type of procedure, year, age, and region of the country among USA women aged 18-64 years. The study population included 32.9 million women aged 18-64 years 2000 and 2009. During that time, there were 182,110 SUI procedures for a rate of 246.1 per 100,000, (95% CI 239.7-252.6). The most common SUI surgery was sling (198.3 per 100,000) 95% CI 192.8-203.9) followed by Burch (25.9 per 100,000 95% CI 24.8-27.2). There was a dramatic increase in slings, with a corresponding decrease in Burch procedures from 2000 to 2009. Other SUI surgeries had lower rates. Although this trend was evident across all regions, the North east had the lowest rate of SUI surgery, whereas rates in the West, Midwest, and South were 1.44-times, 1.76-times, and 2.09-times higher, respectively.

Williams KS et al (2005) evaluated the impact of a new service led by a continence nurse practitioner compared with existing primary/secondary care provision for people with urinary incontinence and storage symptoms in United Kingdom. Randomised controlled trial with a 3- and 6-month follow-up in men and women (n = 3746) aged 40 years and over living in private households (intervention [n = 2958] control [n = 788]. The continence nurse practitioner intervention comprised a continence service provided by specially trained nurses delivering evidence-based interventions using predetermined care pathways. They delivered an 8-week primary intervention package that included advice on diet and fluids, bladder training, pelvic floor awareness and lifestyle advice. The standard care arm comprised access to existing primary care including general practitioner and continence advisory services in the area. Outcome measures were recorded at 3 and 6 months post-randomisation.
The percentage of individuals who improved with at least one symptom alleviated at 3 months was 59% in the intervention group compared with 48% in the standard care group (difference of 11%, 95% CI = 7 to 16 (P<0.001). The percentage of people reporting no symptoms or 'cured' was 25% in the intervention group and 15% in the standard care group (p<0.001). At 6 months the difference was maintained. There was a significant difference in impact scores between the two groups at 3 and 6 months. The continence nurse practitioner-led intervention reduced the symptoms of incontinence, frequency, urgency. Nocturia at 3 and 6 months impact was also reduced and satisfaction with the new service was high.

Brito LG, Brito LM, Chein MB, Malheiros ES, Duarte TB & Pinto-Neto AM. (2012) aimed to determine whether the prevalence of SUI in the North Eastern Brazilian municipality was higher or lower than in the general female population. Cross-sectional household cluster study of 1,180 climacteric women from the São Luís municipality of Brazil was conducted using a standardized questionnaire administered by interviewers to obtain socioeconomic and cultural information, climacteric aspects, and life habits related to SUI. From this population, 15.34% (n=181) had SUI; this prevalence did not change with age. More than half (57.92%) of the patients replied that they had not consulted a physician for their SUI. The presence of SUI was not associated with any socio-economic or gynaecological variables after multivariate analysis.

Wehrberger C, Madersbacher S, Jungwirth S, Fischer P & Tragl KH (2012) assessed the prevalence and severity of lower urinary tract function in 85-year-old men and women in Austria. A questionnaire on various aspects of lower urinary tract symptoms (LUTS) and urinary incontinence (UI) was also administered. The response rate was 68%, resulting in a total of 262 questionnaires available for analysis (men n=96; women n=166). All study participants were 85 years of age. Urinary incontinence defined as any involuntary loss during the past 4 weeks was reported by 24% of men and 35% of women (P= 0.04). Stress UI was more frequent in women (39%) than in men (14%, P<0.01), the difference for urge UI (women 35%, men 25%) was on the border of statistical significance (P=0.05). Only four individuals (1.5%) needed permanent catheterization.

Urgency (women 56%, men 54%) and daytime frequency (women 70%, men 74%) were equally distributed (P>0.05). Overactive bladder, according to International Continence Society criteria, was present in 55% of women and 50% of men.
Pelvic floor exercises and urinary tract symptoms

Rett MT, Simoes JA, Herrmann V, Pinto CL, Marques AA & Morais SS (2007) tested the biofeedback-assisted Pelvic-Floor Muscle Exercise (PFME) program to tackle symptoms of SUI in premenopausal women and to evaluate a training program Twenty-six women with SUI were treated with PFME with surface electromyography (SEMG)-assisted biofeedback. All participants were of reproductive age and were treated individually for 12 sessions. Results were evaluated with a 7-day voiding diary, a 1-hour pad test, pelvic-floor muscle strength measurements, SEMG amplitudes, a leakage index, and a quality-of-life questionnaire. These variables were compared before and after the intervention. The frequency of urine loss, the occurrence of nocturia, and the number of pads required decreased significantly after the intervention. Objective cure was found in 61.5% of these women. There was a significant improvement in the quality of life, in pelvic-floor muscle strength, and in the EMG amplitudes of all contractions throughout the intervention.

Bø K, Kvarstein B & Nygaard I (2005) aimed to assess current lower urinary tract symptoms and exercise adherence 15 years after ending organized training, 52 women with urodynamic stress urinary incontinence were randomly assigned to home or intensive exercise. After 6 months, 60% in the intensive group were almost or completely continent, compared with 17% in the home group. Fifteen years later, all original study subjects were invited to complete a postal questionnaire assessing urinary symptoms (using validated outcome tools) and current pelvic floor muscle training response rate was 90.4%. There were no differences in any urinary outcomes or satisfaction between the 2 study groups as a whole or when restricted to those without intervening stress urinary incontinence surgery. One half of both the groups had stress urinary incontinence surgery during the 15-year follow-up period. More operated women reported severe incontinence (P = .03) and leakage that interfered with daily life (P = .04) than the non operated women.

Maryam Kashaniana, Shadab Shah Alib, Mitra Nazemic & Shohreh Bahasadria (2011) evaluated the effect of pelvic floor muscle training (PFMT) with and without assistance by a resistance device (Kegelmaster device) on the urinary incontinence in women. 91 women with urinary incontinence were included in the study in the assisted pelvic floor
muscle training (APFMT) group (n = 41), after complete training, Kegel master device was used twice daily for 15 min each session, for a total duration of 12 weeks. In the pelvic floor muscle training (PFMT) group (n = 50) after the completion of training, kegel exercises were done (including perineal muscle contractions for 6–8 s with 6 s rest in between), twice daily for 15 min each session and for a total duration of 12 weeks. 85 women out of 91 women finished the study (46 in the PFMT group and 39 in the APFMT group). There was a significant improvement in both the groups 1 and 3 months after the intervention, according to IQOL score (P = 0.000), UDI score (P = 0.000), IIQ score (P = 0.000), strength of pelvic floor muscles, (P = 0.000), capability to participate in social activities (P = 0.000), severity of urinary incontinence (P = 0.000) and the number of involuntary urine passage (P = 0.000).

Parkkinen A, Karjalainen E, Vartiainen M & Penttinen J (2004) compared the long-term effects of individual physiotherapy at an outpatient clinic including electrical stimulation (ES), active pelvic floor muscle exercises (PFMEs), and training with a vaginal ball (VB), with home-based active PFMEs and training with a VB, in cases of female stress urinary incontinence. Thirty-three women with SUI (outpatient clinic group [Group I, n = 16] and home group [Group II, n = 17]) participated in the 5-year follow-up study. Both groups had an active PFME program and they used a VB during daily activities for intensive pelvic floor muscle (PFM) training. Group I was also treated at the outpatient clinic with maximal interferential ES, using frequencies varying from 10 to 50 Hz, and individually instructed exercises with biofeedback were carried out at the same time, once a week, an average of nine times in the first year.

After 12 months, two (3%) patients in Group I continued physiotherapy and seven (41%) patients in Group II needed physiotherapy because of an unsatisfactory outcome. At 5 years, according to the urinary incontinence severity score (UISS) questionnaire, subjective discomfort had decreased in both the groups (P < 0.01) and 21 of the 33 women (64%) perceived a subjective cure or improvement in their condition. The mean objective urine leakage verified by the pad test decreased from 23.0 to 1.0 g in Group I and from 13.0 to 1.0 g in Group II (P < 0.001 for both groups). The strength of PFMs tested in a standing position increased by 26% in Group I and by 19% in Group II (P values 0.001 and 0.084, respectively), and in a lying position by 28% in Group I and by 32% in Group II (P values 0.001 and 0.008, respectively).
Capelini MV, Riccetto CL, Dambros M, Tamanini JT, Herrmann V & Muller V (2006) evaluated the benefits of pelvic floor strengthening exercises associated to biofeedback for the treatment of stress urinary incontinence. Fourteen patients diagnosed with stress urinary incontinence (SUI) were selected for this study. All patients underwent a pelvic floor training associated to biofeedback for 12 consecutive weeks. Urodynamic tests, pad test and bladder diary were analyzed at the beginning of the study, at the end and after 3 months. The King's Health Questionnaire (KHQ) was applied before and after treatment to assess the impact in the quality of life. There was a significant reduction in the pad weight (from 14.21 g to 1 g), number of urinary leakage episodes (from 8.14 per day to 2.57 per day) and daytime frequency (from 7.93 per day to 5.85 per day). At urodynamics the authors observed a significant increase in Valsalva leak-point pressure (from 103.93 cm H2O to 139.14 cm H2O), cystometric capacity (from 249.29 ml to 336.43 ml, p = 0.0015) and bladder volume at first desire to void (from 145 ml to 215.71 ml). Those differences were kept during the first 3 months of follow up. The KHQ revealed significant differences except in the case of "general health perception", which covers health in general and not exclusively urinary incontinence.

Dannecker C, Wolf V, Raab R, Hepp H & Anthuber C. (2005) determined the short- and long-term efficacy of an intensive and EMG-biofeedback-assisted pelvic floor muscle training (PFMT) program as a therapy of female stress or mixed urinary incontinence. 390 women with stress (80%) or mixed (20%) urinary incontinence were evaluated. Mean duration of incontinence was 6.7 years. Two hundred and sixty three women completed the training. There was a significant increase in the Oxford-score by 1.2 points (2.9-4.1; P<0.001). Self-reported improvement of incontinence symptoms was 95%. The electric EMG-potentials almost doubled (11.3-20.5 mu V; P<0.001). Long-term results were studied (questionnaire) for all patients: the average follow-up time was 2.8 years (range: 3 months to 7 years). Three hundred and twelve (80%) of the questionnaires returned. Seventy-one percent of them self-reported a persisting improvement of their incontinence symptoms. Thirteen percent of all women underwent incontinence surgery following the completion of conservative therapy (9.2% group 1, 25% group 1; P<0.001).

Williams KS et al. (2006) assessed the efficacy and cost-effectiveness of pelvic floor muscle therapies (PFMT) in women aged > or = 40 years with urodynamic stress
incontinence (USI) and mixed UI. In a three-arm randomized controlled trial in Leicestershire and Rutland UK, 238 community-dwelling women aged $\geq 40$ years with USI in whom previous primary behavioural intervention had failed were randomized to receive either intensive PFMT (79), vaginal cone therapy (80) or to continue with primary behavioural intervention (79) for 3 months. The main outcome measure was the frequency of primary UI episodes, and secondary measures were pad-test urine loss, patient perception of problem, assessment of PF function, voiding frequency, and pad usage. Validated scales for urinary differences after treatment in GT and IT groups for secondary outcomes: Perineometry, muscle strength and in the domains of the quality of life questionnaire were used for the CG group, there were not significant differences in any variables. In intergroup analysis for all variables, there were no differences between GT and IT groups. The two treated groups had similar subjective satisfaction (86%). There were no complaints of adverse effects due to treatment from either groups.

**Pelvic floor exercises with Vaginal cone**

Herbison GP (2012) explored the randomised controlled trials comparing weighted vaginal cones with alternative treatments or no treatment. The study included 23 trials involving 1806 women, among 717 who received cones. Cones than no active treatment (rate ratio (RR) for failure to cure incontinence 0.84, 95% confidence interval (CI) 0.76 to 0.94). There was little evidence of difference for a subjective cure between cones and PFMT (RR 1.01, 95% CI 0.91 to 1.13), or between cones and electro stimulation (RR 1.26, 95% CI 0.85 to 1.87), but the confidence intervals were wide. There was not enough evidence to show that cones plus PFMT was different to either cones alone or PFMT alone. Only seven trials used a quality of life measures and no study looked at economic outcomes. This review provides evidence that weighted vaginal cones are better than no active treatment in women with SUI.

Schiotz HA (2007) The paper is based on the report from the 3rd International Consultation on Incontinence, the Cochrane database, a PubMed search, and clinical experience as a urogynaecologist. General practitioners may initiate conservative treatment without extensive evaluation. The first line treatment is pelvic floor muscle exercises (8-12 strong contractions X 3 every other day). Motivation and compliance are extremely important. Electro stimulation and treatment with vaginal cones are other options with comparable efficacy. Weight reduction (5-10%) may improve the condition significantly.
Medical treatment with duloxetine tablets has recently become available. The efficacy of duloxetine is similar to that of pelvic floor exercise. Currently the most commonly used surgical procedures are midurethral retropubic or transobturatoric tension free vaginal tape, which are often done as day surgery and have lower morbidity than older procedures. Approximately 90% of the patients are satisfied with the results, and they continue to be so overtime. Stress incontinence surgery is associated with complications such as denovo urge incontinence, impaired bladder emptying, recurrent urinary tract infections, pain and genital prolapse, but the risk is probably lower with tension free vaginal tape than with the older surgical methods. Conservative treatment may reduce incontinence in many patients, it is simple, inexpensive and without risk of complications and is therefore the primary treatment option. Surgical treatment may cure the incontinence permanently, but there is a risk of permanent complications.

Haslam, J. (2008) examined the vaginal cones in stress incontinence treatment with the participants (n=39) of whom only 30 completed the one-month cone therapy with weights from 20–100g (Peattie et al, 1988). The women were instructed to use the passive weight for 15 minutes twice per day. When they were able to retain the cone on two consecutive occasions, they were instructed to start using the next heaviest weight of cone. Of the 30 women completing the month of treatment, 70% reported a cure or an improvement.

Belo J, Francisco E, Leite H & Catarino A(2005) evaluated the effectiveness of the pelvic floor muscle training in the stress urinary incontinence. The standard protocol included forty eight treatment sessions all together, for sixteen weeks, three times a week using of Plevnik weighted vaginal cones and Kegel exercises. The effectiveness of this method in reducing urine loss was assessed through the "Pad-test" before and after exercises. A cohort of 75 women entered the study, aged between 28 and 66 years old, with a mean aged of 46 and light to moderate urinary incontinence. The results showed significant improvement with reduction in urine loss and increase in pelvic muscle tone in women that completed the whole treatment course.

In 1983 The International Continence Society (I.C.S.) recommended a one-hour test for objective assessment of escape of urine. The latter assesses the loss of urine by weighing pads or diapers before and after standard activities. The authors tried in their clinical department to assess the significance of a modified 40-minute test in women with urinary
incontinence which was only 44%. They also compared the number of women who operated on account of incontinence. In the group of patients with a positive PWT a neg-puraclo, max was recorded in 88.2%. Conversely in patients with a neg-puraclo, max the PWT was positive only in 50%. Surgery was used in neg-puraclo, max in 75% and in positive PWT in 76.6% women. In a negative PWT a neg S-puraclo, max was recorded in 65% of the patients of whom 61.5% were operated and two refused operation. In conclusion, the authors’ emphasized that PWT alone provides only basic objective information on the patient’s complaints. The reliability of evaluation of the patient’s complaints is increased by complete urodynamic examination.

Williams KS et al. (2006) assessed the efficacy and cost-effectiveness of pelvic floor muscle therapies (PFMT) in women aged > or = 40 years with urodynamic stress incontinence (USI) and mixed UI. In a three-arm randomized controlled trial in Leicestershire and Rutland UK, 238 community-dwelling women aged > or = 40 years with USI in whom previous primary behavioural intervention had failed were randomized to receive either intensive PFMT (79), vaginal cone therapy (80) or to continue with primary behavioural intervention (79) for 3 months. The main outcome measure was the frequency of primary UI episodes, and secondary measures were pad-test urine loss, patient perception of problem, assessment of PF function, voiding frequency, and pad usage. Validated scales for urinary dysfunction, and impact on quality of life and satisfaction were collected at an independent interview. All three groups had a moderate reduction in UI episodes after intervention but there was no statistically significant difference among the groups.

**Pelvic floor exercises and Pelvic floor muscle strength**

Gyneco Talasz H, Himmer-Perschak G, Marth E, Fischer-Colbrie J, Hoefner E, Lechleitner M (2008) evaluated the percentage of PFM dysfunction in adult women and the impact of risk factors, such as age, body mass index (BMI), number of children delivered, and the influence of previous PFM training. A total of 343 Austrian adult women (mean age, 41.2 +/-14.6 years; range, 18-79 years, selected at random, were examined to test their ability to contract the PFM. Ability to contract the PFM voluntarily or involuntarily was assessed by digital intravaginal palpation with the patients in a supine position. The muscle strength was graded according to the Modified Oxford Grading Scale by Laycock. A high percentage (44.9%) of the women was not able to voluntarily perform a normal PFM contraction.
In only 26.5%, an involuntary contraction of the pelvic floor was present before an increase in intra-abdominal pressure. The inability to contract the PFM did not correlate with the woman's age but revealed a weak relationship with the number of childbirths and the patient's BMI. A significant correlation was found between the Oxford Grading Scale rating and the patient's report about previous PFM training.

Tsai Yc & Liu Ch (2009) examined to find out if interpersonal support and digital vaginal palpation (DVP) as part of the pelvic floor muscle exercise (PFME) training is more effective for stress urinary incontinence (SUI) than PFME with a printed handout instruction among Japanese women. 108 women were randomized to either the group who received interpersonal support and DVP as part of the PFME training (experimental group), or the group who received PFME with a printed handout instruction (control group). The effects were assessed with 1-h pad tests. A total of 99 patients (50 experimental, 49 control) completed the study. The patients' mean age was 55.35+/-9.60 years, ranging from 20 to 80 years. A significant decrease in the weight of 1-h pad test from baseline was observed in the experimental group (p<0.001) compared to the control group (p=0.514). Interpersonal support and DVP as part of the PFME training is more effective than PFME with a printed handout instruction. PFME, performed correctly and consistently, is effective even in patients who have very few symptoms of SUI.

Aksac B, Aki S, Karan A, Yalcin O, Isikoglu M, Eskiyurt N (2003) investigated the effectiveness of pelvic floor muscle (PFM) exercises or biofeedback for the treatment of urinary stress incontinence (USI). Among 50 women twenty patients were taught PFM exercises via digital palpation and instructed to perform regularly as home program. The second group of 20 patients had PFM exercises via biofeedback three times a week for 2 months. The third group of 10 patients did not practice any exercises. The patients were evaluated via pad test, perineometry, digital palpation based PFM strength, incontinence frequency, and visual analogue scale based social activity index prior to and 8 weeks after the treatment. The first two groups had significant improvement in USI with respect to the control group (p<0.001). The rise in PFM strength with perineometry of the biofeedback group was higher than in the digital palpation group after treatment (p < 0.001). PFM exercises are effective for the treatment of USI the biofeedback method revealed better PFM strength results with respect to digital palpation.
Ha Na Lee, Seo Yeon Lee, Young-Suk Lee, Ji-Yeon Lee, Myung-Soo Choo and Kyu-Sung Lee (2012) examined the efficacy and safety of extracorporeal biofeedback combined with pelvic floor muscle training (PFMT) for the treatment of female stress urinary incontinence (SUI) were evaluated. One hundred and six participants with SUI were enrolled in a 12-week PFMT program using extracorporeal biofeedback intervention.

A standard pad test was performed, and pelvic floor muscle strength was assessed using the Oxford scale. Measurements were taken with a Perineometer at baseline and at a 12-week follow-up visit. Seventy one participants completed the 12 week extracorporeal biofeedback intervention. The objective cure rate was 52.1%, and there was a significant reduction in pad weight over the time period. The incontinence visual analogue scale, the Sandvik severity index, and the incontinence quality-of-life questionnaire domains were significantly improved after treatment ($p < 0.001$). The strength of the PFM was significantly increased after the 12-week treatment. After PFMT, 64.3% of 56 participants reported good treatment compliance, and 24 participants (42.9%) had continued PFMT at home 12 months after treatment.

Piassarolli VP, Hardy E, Andrade NF, Ferreira Nde O & Osis MJ (2010) evaluated the effect of pelvic floor muscle training (PFMT) on female sexual dysfunctions. Twenty-six women with a diagnosis of sexual dysfunction (sexual desire, arousal, orgasmic disorders and/or dysspareunia) were included in a clinical trial with a before/after approach. The assessment was carried out before, during (after five sessions) and at the end of the treatment (after ten sessions) by two-digit palpation, intravaginal electromyography (EMG) and Female Sexual Function Index. The women underwent PFMT in different positions for ten sessions. A significant improvement ($p<0.0001$) of FSFI scores was observed at the end of treatment compared to the values observed before and in the middle of the treatment. Regarding the EMG, the amplitudes of tonic and phasic contractions increased significantly during treatment ($p<0.0001$). Pelvic floor strength increased, which 69% of the women presenting grade 4 or 5 at the end of treatment, with a total improvement of sexual complaints.

**Pelvic Floor Exercises and Pad Weight**

Tibaek S, Gard G & Jensen R (2005) evaluated the effect of Pelvic Floor Muscle Training (PFMT) in women with urinary incontinence. Twenty-six subjects were randomised to a
treatment group (14 subjects) or a control Group (12 subjects). The intervention included 12 weeks of standardised PFMT. The outcome measures were: (1) diary recording the frequency of voiding, the number of incontinence episodes and used pads; (2) 24-hr home pad test; and (3) vaginal palpation of pelvic floor muscle evaluating function, strength, static and dynamic endurance. A significant improvement in frequency of voiding in daytime (Treatment Group/Control Group) 7/8 at pre-test, 6/9 at post-test (median values- P=0.018), 24-hr pad test (Treatment Group/Control Group ) 8/12 to 2/8 g (P=0.013) and dynamic endurance of pelvic floor muscle (Treatment Group/Control Group) 11/20 to 20/8 contractions of Pelvic Floor Muscle,( P=0.028) was demonstrated in the treatment group compared to the control group. A significant improvement in frequency of voiding in daytime (decreased from seven to six,( P=0.036), pelvic floor muscle function (P=0.034), strength (P=0.046), static endurance increased from 9 to 30 sec (P=0.028) and dynamic endurance increased from 11 to 20 contractions (P=0.020) which was also demonstrated within the treatment group, but not in the control group.

Amaro Jl, Oliveira Gameiro Mo & Padovani Cr (2003) evaluated the effectiveness of the treatment for of urinary stress incontinence using intra vaginal electrical stimulation and pelvic floor physiotherapy in patients with urinary incontinence. 30 women (mean age 54 years) were studied. All patients had USI and 70% urge incontinence; average follow-up was 7 months. The treatment protocol consisted of three sessions of IES per week for 14 weeks using INNOVA equipment. A significant decrease in the number of micturition and urgency was observed after treatment (P<0.01). The pad test showed a reduction in urinary leakage from 13.9 to 5.9 g after treatment (P <0.01). Objective evaluation of perineal muscle strength showed a significant improvement in all patients after treatment (P<0.01). A positive correlation was also observed between ALPP and the stop test.

Sriboonreung T, Wongtra-ngan S, Eungpinichpong W & Laopaiboon M (2000) compared the effects of three different pelvic floor muscle training (PFMT) in stress urinary incontinence (SUI) women. Sixty-eight eligible SUI women who could perform pelvic floor muscle contraction correctly were randomly allocated to the three different PFMT protocols, exercise every day (G1), exercise three days per week (G2), and exercise plus abdominal training three days per week (G3). The primary outcome was pad test. The secondary outcomes were pelvic floor muscle strength, and treatment satisfaction. The outcomes were evaluated before and after a 12-week of exercise.
The weights of pad were decreased by 2.6 +/- 0.8, 2.3 +/- 1.3, and 3.1 +/- 1.3 grams for group 1, 2, and 3, respectively. There was no statistical significant difference among the three groups. The pelvic floor muscle strength was increased by 18.4 +/- 2.7, 13.9 +/- 2.9, and 17.3 +/- 3.0 cm H2O for group 1, 2, and 3, respectively, with statistical significant difference among groups (p <0.00). The increased muscle strength in group 2 was significant less than the other two groups (p < 0.00). Pad weight among the three training groups, the pelvic floor muscle strength were increased in all groups.

Feng J, Wang XP, Chen GM, Wang JL (2007) investigated the procedures and benefits of using bio-feedback and pelvic electric stimulation in treatment of stress urinary incontinence among Chinese women. Treatment procedures and benefits were observed among 46 patients, 43 cases achieved improvement with an effective rate of 93%. Nineteen patients in pre menopause received 4-30 times treatments with an average of 9.8. Effectiveness in terms of time was 1-10 with an average time of 3.6. Twenty-seven patients in post-menopausal period received same treatments with an average of 10. Effectiveness time was 1-10 with an average time of 4.2. Average treating time was 40 minutes. Forty patients had follow-up information, but 6 patients were lost to follow-up. Nine patients were cured, including 3 patients with stress incontinence after hysterectomy. Four patients chose surgical treatment after successful conservative treatment.

Liebergall-Wischnitzer M, Paltiel O, Hochner-Celniker D, Lavy Y, Shveiky D & Manor O (2010) examined the concordance among the 1-hour pad test results, subjective questions regarding incontinence, and a quality-of-life questionnaire to assess the role of the pad test as a non invasive measurement tool in clinical trials. A total of 731 clinical pad tests were evaluated from the 2 trials. Significant associations were found between several questions regarding subjective leakage and the pad test results in the study subgroups. A significant correlation was seen between the pad test results and the quality-of-life questionnaire scores (r = 0.14 before intervention and r = 0.42 after intervention in the combined studies P < .05).

Pelvic floor exercises and Quality of life

Lúcio AC, Perissinoto MC, Natalin RA, Prudente A, Damasceno BP & D’ancaona CA (2011) compared the pelvic floor muscle training and a sham procedure for the treatment of
lower urinary tract symptoms and quality of life in women with multiple sclerosis in Brazil. Thirty-five female patients with multiple sclerosis were randomized into two groups: a treatment group (n = 18) and a sham group (n = 17). The evaluation included use of the Overactive Bladder Questionnaire, Medical Outcomes Study Short Form 36, International Consultation on Incontinence Questionnaire Short Form, and Qualiveen questionnaire. The intervention was performed twice per week for 12 weeks in both groups. The treatment group underwent pelvic floor muscle training with assistance from a vaginal perineometer and instructions to practice the exercises daily at home. The sham group received a treatment consisting of introducing a perineometer inside the vagina with no exercises required. Pre- and post-intervention data were recorded. The evaluation results of the two groups were similar at baseline. At the end of the treatment, the treatment group reported fewer storage and voiding symptoms than the sham group.

Carls C (2007) assessed the prevalence of stress urinary incontinence in high school and college-age female athletes in the Midwest of USA identified the prevalence of stress incontinence and assessed the education needs. Results indicated that more than 25% of those completing surveys experienced incontinence and that more than 90% had never told anyone about their problem and had no knowledge of preventive measures; 16% reported incontinence negatively impacted their quality of life.

G. Nascimento, V. Santos-Pereira, N. Tahara & P. Driusso (2012) assessed the effects of kinesiotherapy on function and level of pressure of pelvic floor muscle (PFM) and quality of life (QOL) of a group of women with urinary incontinence (UI). Thirty women (age 60.87 ± 9.05 years) were evaluated, before and after 12 weeks of treatment, for urinary loss, PFM function and pressure, and QOL they were allocated to Kinesiotherapy Group (KG) and Control Group (CG). The KG protocol consisted of 12 1-h sessions with exercises to strengthen PFM and information for UI. The CG did not receive any treatment during the corresponding time. KG presented a significant improvement in urinary loss (p = 0.053), PFM function (p < 0.006) and pressure (p = 0.0014) and in some domains of King's Health Questionnaire (KHQ) for QOL assessment incontinence impact (p = 0.034), limitations of daily activities (p = 0.025), sleep and disposition (p = 0.018) and gravity domains (p = 0.004). No differences were found in the CG for any improvement.
Kashanian M, Ali SS, Nazemi M & Bahasadi S (2011) identified the effect of pelvic floor muscle training (PFMT) or Kegel exercise with and without assistance by a resistance device (Kegelmaster device) on the urinary incontinence in women. A randomized clinical trial was performed on 91 women with the complaint of urinary incontinence. In the assisted pelvic floor muscle training (APFMT) group (n=41), after complete training, Kegelmaster device were used twice daily for 15 min each session, for a total duration of 12 weeks. In the pelvic floor muscle training (PFMT) group (n=50) after complete training, kegel exercises were done (including perineal muscle contractions for 6-8s with 6s rest in between), twice daily for 15 min each session and for a total duration of 12 weeks. 85 women out of 91 women finished the study (46 in the PFMT group and 39 in the APFMT group). Pair t test showed a significant improvement in both groups 1 and 3 months after intervention, according to IQOL score (P=0.000), UDI score (P=0.000), IIQ score (P=0.000), strength of pelvic floor muscles, (P=0.000), capability to participate in social activities (P=0.000), severity of urinary incontinence (P=0.000) and the number of involuntary urine passage at (P=0.000).

Jha S, Strelley K & Radley S. (2012) studied the prevalence of urinary leakage during intercourse in the United Kingdom. Four hundred and eighty women attending between January 2006 and December 2010 with urinary incontinence and subsequently undergoing urodynamic assessment were included using electronic Pelvic floor assessment questionnaire and correlated with urodynamic findings. 60% of women with urinary incontinence reported leakage during intercourse. Overall quality of life in women with urinary incontinence was strongly correlated to the impact of urinary symptoms on sex life.

Gray M et al (2012) reviewed on incontinence-associated dermatitis (IAD) this is the first of 2 articles focusing on IAD review revealing a small but growing body of evidence that provides additional insight into the epidemiology, etiology, and pathophysiology of IAD when compared to the review generated by the first IAD consensus group convened 5 years earlier. Research supporting the use of a defined skin care regimen based on principles of gentle perineal cleansing, moisturization, and application of a skin protectant. Clinical experience also supports application of an antifungal powder, ointment, or cream in patients with evidence of cutaneous candidiasis, aggressive containment of urinary or fecal incontinence, and highly selective use of a mild topical anti-inflammatory product in selected cases. The panel concluded that research remains limited and additional studies are urgently
needed to enhance our understanding of IAD and to establish evidence-based protocols for its prevention and treatment.

Bodhare TN, Valsangkar S & Bele S (2010) studied the urinary incontinence and its impact on quality of life among women aged 35 years and above in a rural area among Indian women. A cross-sectional descriptive study was conducted using semi-structured questionnaire assessing socio-demographic factors, severity and type of incontinence, and obstetrical and other risk factors along with impact on QOL was administered in two clusters (villages) in Karimnagar district through multistage cluster sample of 552 women, 53 (10%) reported episodes of UI. The prevalence of UI showed significant association with increasing age (P < 0.01). Fifty-seven percent of the women had symptoms of stress incontinence, 23% of urge, and 20% of mixed symptoms. Obstetrical factors associated with UI included high parity (P < 0.003), young age at first childbirth (P < 0.01), forceps delivery (P < 0.001), and prolonged labour (P < 0.001). Chronic constipation, chronic cough, and history of urinary tract infection were predictors of UI in regression analysis (Nagelkerke R (2) = 0.7). Women with stress incontinence had perceived severe impact on QOL on a five-point scale questionnaire, mean 24.87 (95% CI 21.26-2. One in 10 women reported episodes of UI with impaired QOL.

Sar D & Khorshidl (2009) assessed the effects of pelvic floor muscle training on stress and mixed urinary incontinence and quality of life among Turkey women. 41 women were randomly assigned to either the Pelvic Floor Muscle (PFM) training group or the control group. Muscle training included 3 sets of daily fast and slow contractions in lying, sitting, and standing positions. Participants were also taught the knack. The intervention period was 8 weeks, and the women in the exercise group telephoned once a week to provide motivation. The untreated control group had no contact during the intervention period. Outcome measures were Incontinence Quality of Life (I-QOL) Questionnaire, episodes of leakage in 3-day bladder diary, 1-hour pad test, and PFM strength.

Thirty-four women completed the trial. The mean age of women was 41.82 +/- 8.65 years in the exercise group and 44.64 +/- 6.90 years in the control group. The 2 groups were statistically similar regarding key demographic and clinical characteristics. After 8 weeks, significant differences in the 1-hour pad test, episodes of leakage in 3-day bladder diary, PFM
strength, and I-QOL scores (P=0.01) were noted when participants in the PFM training group were compared to control group participants.

Borello-France DF, Downey PA, Zyczynski HM, Rause CR (2008) examined the effectiveness of pelvic-floor muscle (PFM) exercises to reduce female stress urinary incontinence (SUI) over the long term. 36 women with SUI who completed an intensive PFM exercise intervention trial were randomly assigned to perform a maintenance exercise program either 1 or 4 times per week. Urine leaks per week, volume of urine loss, quality of life (Incontinence Impact Questionnaire [IIQ] score), PFM strength and prevalence of urodynamic stress incontinence (USI) were measured at a 6-month follow-up for comparison with post intervention status. 28 post intervention status was sustained at 6 months for all outcomes urine leaks per week=1.2+/−2.1 versus 1.4+/−3.1; mean [SD] urine loss=0.2+/−0.5 g versus 0.2+/−0.8 g; mean [SD] II Q score=17+/−20 versus 22+/−30; mean [SD] Brink score=11+/−1 versus 11+/−1; and prevalence of USI=48% versus 35%). Women assigned to perform exercises once or 4 times per week similarly sustained their post intervention status.

Carneiro EF (2010) determined the effects of exercise in anatomic abnormalities of the pelvic floor and the quality of life (QOL) of women with stress urinary incontinence (SUI). An experimental study with 50 women with SUI, distributed randomly into two groups, experimental (GE, 49.24±7.37 years) and control group (CG; 45.25±5.60 years). The groups performed ultrasound evaluation of the SP, evidence of pelvic floor muscle strength by palpation by digital, surface EMG motor activity and replied to the CV before and after treatment. The GE had 16 sessions of pelvic floor exercises twice a week for 30min. The comparison between the GE and GC revealed significant differences in mobility of the bladder neck p=0.00, thickness of pelvic floor muscle strength at p= <0.00.

Elmissiry MM & Ghoniem GM. (2008) determined the acceptance regarding treatment outcomes of stress urinary incontinence (SUI), and correlated this to age, distress and quality of life (QOL). A cross-sectional study was conducted among women in USA. 100 women (mean age, 53.8 years) answered questionnaires on initial interview, including the Urogenital Distress Inventory (UDI-6), the American Urologic Association QOL questionnaire, as well as other validated questions regarding treatment options and possible outcomes. Of the 100 women who submitted questionnaires, 22% overall expected a complete cure, 57% a good improvement, 12% to be able to cope better, and 9% expected
any improvement at all. This was found to be a realistic expectation of possible outcomes of treatment, with 79% expecting a good improvement or cure for their SUI. The women were also asked what type of treatment they found acceptable for their SUI: 22% found a major surgery acceptable, 39% found a minor surgery acceptable, 32% found a clinical procedure acceptable, and 7% found medication acceptable. The majority of women (71%) found a minor surgery, like a transobturator tape, or a clinical procedure, like collagen injection, most desirable.

Azuma R, Murakami K, Iwamoto M, Tanaka M, Saita N & Abe Y (2008) identified the Prevalence and risk factors of urinary incontinence and its influence on the quality of life of Japanese women. In this cross-sectional study, 975 women completed the Urogenital Distress Inventory-6, the Short Form (SF)-36 Health Survey, and the King's Health Questionnaire. Their mean age was 47.6 years and the reported prevalence of stress, urge, and mixed urinary incontinence symptoms during the past month were 19.3%, 4.2%, and 7.8%, respectively. The prevalence rate of all the three types of incontinence increased with age and Body Mass Index. There was no significant difference in the questionnaire subscale scores of the SF-36 Health Survey and the King's Health Questionnaire between these types and those without urinary incontinence.

**Educational Intervention on SUI**

Whitford HM, Alder B & Jones M (2007) studied the knowledge of pelvic floor exercises and prevalence of stress urinary incontinence in a sample of women in the third trimester of pregnancy. Structured cross-sectional interview survey was conducted among pregnant women over the age of 16 years and more than 30 weeks gestation attending antenatal clinics in North-East Scotland. Of 350 women who agreed to participate, 289 (82.6%) were interviewed between July 1999 and March 2000. 225 women (77.9%) reported being given or obtaining information about pelvic floor exercises in the current pregnancy. Books were the most frequently mentioned source of information. Midwives were the health professionals most likely to give information about pelvic floor exercises. A third of women (n=90, 31.1%) said that they would have liked more information about the exercises. Practice of the exercises during pregnancy was reported by just over half the sample (n=156, 54.0%) and more than once a day by 26.3% (n=76). Younger women, and those from more deprived backgrounds, were less likely to report the practice of exercises. No difference was found in
reported practice according to parity. More than half (n=157, 54.3%) of the women reported incontinence during the current pregnancy. No relationship was found between reported practice of pelvic floor exercises and stress urinary incontinence.

Hampton BS, Sung VW. (2010) estimated the effect of an Interactive computer trainer on improving medical student knowledge and attitudes regarding female pelvic anatomy (PA) and pelvic floor dysfunction (PFD) at the United States of America. Forty-three students were randomized to the trainer and usual teaching vs usual teaching alone. Pre- and post intervention knowledge and attitude questionnaires were completed (P > .05). The trainer group had significantly higher post intervention knowledge (mean score, 15.6 +/- 1.9 vs 12.6 +/- 2.5; P = .007) and attitude (mean score, 19.2 +/- 2.8 vs 15.8 +/- 3.2; P = .001) scores compared with the usual teaching group.

Moen MD, Noone MB, Vassallo BJ & Elser DM (2009) concluded in their observational study regarding knowledge, prior instruction, frequency of performance, and ability to perform pelvic floor muscle exercises in a group of women presenting for evaluation of pelvic floor disorders. 325 women presenting for evaluation of pelvic floor disorders were questioned concerning knowledge and performance of pelvic floor muscle exercises (PMEs) and then examined to determine pelvic floor muscle contraction strength. The majority of women (73%) had heard of PMEs, but only 42% had been instructed to perform them and 62.5% stated they received verbal instruction only. 23.4% of the patients could perform pelvic muscle contractions with Oxford Scale 3, 4, or 5 strengths. Increased age, parity, and stage of prolapsed were associated with lower Oxford scores. Although most women with pelvic floor disorders were familiar with PMEs, less than one fourth could perform adequate contractions at the time of initial evaluation.

Goode P. S et al (2003) determined the efficacy of pelvic floor electrical stimulation in increasing the efficacy of behavioural training for community-dwelling women with stress incontinence in the United States. A Sample of 200, aged 40 to 78 years with stress or mixed incontinence with stress as the predominant pattern; stratified by race, type of incontinence and severity was studied. Patients were randomly assigned to 8 weeks (4 visits) of behavioural training, 8 weeks (4 visits) of the behavioural training plus home PFES, or 8 weeks of self-administered behavioural treatment using a self help booklet. Incontinence was
reduced by a mean of 68.6% with behavioural training, 71.9% with behavioural training plus PFES, and 52.5% with the self-help booklet (P =.005). In comparison with the self-help booklet, behavioural training (P =.02) and behavioural training plus PFES (P =.002) were significantly more effective, but they were not significantly different from each other (P =.60). The PFES group had significant better patient self-perception of outcome (P<.001) and satisfaction with progress (P =.02).

Wong . Betty Yuen-Ting Lau, Ho-Leung Mak, Man-Wah Pang, Cecilia Cheon & Shing-Kai Yip (2006) assessed the prevalence, knowledge, and treatment-seeking behaviour of Chinese women using Urogenital Distress Inventory (UDI-6) and Incontinence Impact Questionnaire (IIQ-7). 540 women, aged between 17 and 77 years were interviewed. Of the respondents, 40.8% reported stress urinary incontinence, 20.4% had urge incontinence and 15.9% had mixed incontinence. Among these, 16.0% reported quality of life impairment; 9.3% felt frustrated with low morale, and 15.2% had nervous and anxiety problems. However, as many as 78.3% of the respondents did not know that stress urinary incontinence is a disease entity, and 60.6% thought that leakage of urine was a normal aging process. Respondents with stress urinary incontinence showed higher education level but the understanding the disease condition and treatment seeking behaviour is less among these women.

Liao YM, Dougherty MC, Liou YS & Tseng IJ. (2006) investigated the Pelvic floor muscle training effect on urinary incontinence knowledge, attitudes, and severity among Taiwanese women. Of 114 participants in a 4 hr PFMT program, 55 suffering from UI completed 2 questionnaires, 1 before and 1 after the program. Among them, 78% reported experiencing UI under increased abdominal pressure, and 82% had suffered the condition for more than 1 year. Participants achieved reductions in UI severity after PFMT and the program produced a significant difference in their knowledge about, though not in their attitudes toward, both UI and PFMT.

Mc Lennan MT, Melick CF, Alten B, Young J & Hoehn MR (2006) determined the patients received information about possible pelvic floor complications of pregnancy/delivery. Day 1 post-partum women completed a 52-item questionnaire assessing information given during routine antenatal care. Pelvic floor and general questions were intermixed. Of the 232 patients, the mean age was 26.9 years, with 59.5% white, 32.8%
African-American and 7.7% other. Most (84.5%) had at least grade 12 education. The following percentage of patients reported receiving no information about Kegel exercises (46.1%); episiotomy (51.3%); urinary incontinence (46.6%); faecal incontinence (80.6%). Counselling on all of these issues occurred significantly less frequent than education on general pregnancy topics. Our results suggest that knowledge and instruction of pelvic floor risks is very much lacking and provides us with an impetus to develop educational tools.

Chiarelli P, Murphy B & Cockburn J (2003) assessed the knowledge, practises, and intentions regarding correct pelvic floor exercises (PFXs) among Australian women regarding PFX regimens both before and during pregnancy and postpartum. Findings demonstrated that most women were aware of the required frequency for PFXs (at least every second day) just over half had done them this often during pregnancy and 91% intended to do. However, few had done them at this level before pregnancy and less than half knew that PFXs should be carried out indefinitely throughout the lifetime. Moreover, only two thirds were confident that they were doing PFXs correctly. The findings suggest that, despite good knowledge of the required frequency of PFXs, few women practise them regularly over their lifetime, many apparently perceiving PFXs as relevant only to the childbirth years.

Stadnicka G, Iwanowicz-Palus G & Bień A (2002) assessed the state of knowledge of women with urinary incontinence in Poland women. Among 194 patients hospitalised in the ward of operative gynaecology. The knowledge of the term urinary incontinence was declared by nearly half of the respondents (42.8%), about two thirds of them (65.4%) assessed their state of knowledge in this sphere as unsatisfactory women showed great interest (85.7%) in information on urinary incontinence. The favourite forms of information in this sphere were educational materials--brochures, leaflets (58.2%), individual talks with a doctor, midwife (34.8%), and demonstration of exercises of the floor of the pelvis (29.9%). The above conclusions enabled to state that the educational success and even doing away with strain urinary incontinence depends on the program of urinary incontinence prophylaxis.
Studies related to Allergic Reactions of Methyl Methacrylate

There were no studies reported regarding Allergic Reactions of Methyl Methacrylate

Beth Greenwood (2013) **Allergic Reactions** An allergic reaction involves the immune system. Although reasons are unclear, your body reacts to foreign substances because the immune system thinks your body is being attacked. Hay fever, asthma and skin allergies are typical allergic reactions. In a serious allergic reaction, the person may have severe swelling, be very short of breath or even go into shock. This sort of severe allergic reaction is called anaphylaxis, and death can occur within a few minutes.

MMA allergy symptoms

MMA can cause allergic skin reactions, according to the Occupational Safety and Health Administration. Symptoms include itching, redness, cracking and scaling of the skin. A product such as hairspray that contains MMA can also cause itching, redness and tearing of the eyes. Dental technicians and dentists who work with MMA have been found to develop allergic reactions of the hands and fingers, with itching, redness and skin breakdown. Women who use acrylic nails have developed itching around the cuticle next to the nail.

2.2 Conceptual Frame Work

Conceptual frame work provides an abstract perspective regarding inter related phenomena of interest. The health beliefs and behaviour modification, education information on stress urinary incontinence and pelvic floor exercises influences the health of the women with SUI. The motivational factors enhances the understanding the importance of performing a particular behaviour. Women particularly from urbanized areas have great concern and attention on their beauty, health, fitness, etc.

There has been a vast difference between the old ages and the modernized and civilized new trends. This healthy lifestyle trend drives demand for various healthier products and services and brings great impact on a number of industries. Steptoe, Wardle, Vinck, Tuomisto, Holte & Wichstrøm (1994) expressed that people adhere to behaviours such as eating healthy diet, tobacco-free lifestyle, regular exercise, cautious preventive practices and weight control to manage stress.
Health professionals have the great responsibility in imbibing these healthy lifestyles especially among women. The theory of planned behaviour was formulated by Icek Ajzen, in the year 1985 and revised in the year 1987. The Theory of planned behaviour (TPB) was based on extension of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). The TPB extended the TRA by adding the perceived behavioural control (PBC) because the TRA has difficulty in explaining behaviours in which a person does not have voluntary control over it. The theoretical framework adapted for this current study is based on the concepts of TPB volitional.

**Concepts of the Theory of Planned Behaviour**

The planned behaviour is the intension to perform a given behaviour in the immediate antecedent of that behaviour. Behavioural intention refers to the amount of effort a person exerts to engage in behaviour. It captures the motivation factors necessary to perform a particular behaviour (Icek Ajzen, 2002). This model focuses on the following areas, behavioural beliefs and attitude toward behaviour, normative beliefs and subjective norms, control beliefs and perceived behavioural control, behavioural intention and behaviour.

Apart from attitude and subjective norm construct that may affect individual’s exercise participation, some other control factors include physical inability, time and money constraint, neighbourhood security, availability of exercise equipments and so on. The more a person intends to carry out the intended behaviour, the more likely he or she would do so (Armitage and Conner 1999). Intention is determined by three conceptually independent variables labelled attitude, subjective norms and Perceived Behaviour control. Generally, the more favourable the attitude and subjective norm, and the greater the perceived behavioural control, the stronger should be the individual’s intention to perform a particular behaviour (Icek Ajzen 2002).

**Behavioural beliefs and attitude toward behaviour**

**Behavioural belief:** is an individual's belief about consequences of particular behaviour. The concept is based on the subjective probability that the behaviour will produce a given outcome. The individual characteristics and behaviour consider the personal factors categorized as biological, psychological and socio-cultural. The personal biological and social factors considered in this study by the investigator for women with stress urinary
incontinence include: age, education, residence, marital status, occupation, income per month, type of family, social support, duration of the problem, the biological factors are the age at first delivery, mode of delivery, no of abortions, para, BMI, birth weight of the baby, place of delivery, diabetes, hypertension, presence of constipation and chronic cough for the past six months, and history of menopause attainment.

**Attitude** toward behaviour is the person’s favourable or unfavourable feeling of performing that behaviour and is determined by behavioural beliefs about the outcome of the behaviour and evaluation of the outcome. In this study it is believed that a woman with SUI having a positive attitude will strongly believe that the pelvic floor exercises will have positive effect in treating the problem. This positive attitude and favourable feeling will enhance the practice of pelvic floor exercises regularly at home with proper follow up bringing about a positive outcome of controlling SUI.

**Normative beliefs and subjective norms**

**Normative beliefs**

**Normative belief**: is an individual's perception about the particular behaviour, which is influenced by the judgment of significant others. The women with SUI are influenced by the husband, family members, friends, neighbours, peer group, nurses, doctors, other paramedical health professionals and media etc. In this present study the educative information regarding SUI and training of Pelvic floor muscles with Vaginal cone will have the influence on the practice of pelvic floor exercises at home regularly, and the telephonic reminders by the investigator for proper follow up will have the influence on the health outcome of the women with SUI.

**Subjective Norm** refers to the perception of an individual in regard to social restrictions and pressure in performing or not performing a given task and is determined by normative beliefs which assess the individual’s social pressure and restrictions on a particular task.

The social restrictions that may be faced by the women with SUI include lack of time to care for self due to involvement in caring for her family, participation in job and social related activities, individual’s thought that SUI is due to normal aging process or, hereditary in nature, and lack of knowledge about SUI and pelvic floor exercises, cultural
restrictions: false norms and beliefs, myths, social shame and economic restriction where women depend on others economically to buy pad, bear treatment costs, lack of specific treatment modalities to identify and treat SUI and lack of female Urogynaecologist. Due to these issues women fail to come forward to discuss with the health care professionals about the problem and seek appropriate treatment. Though certain hindrances exist in seeking treatment, there are also some social pressure that help women to seek treatment and adhere to prescribed activities are physical, psychological, social, cultural, sexual in nature and also the modernization of world.

Physical pressure are frequent leaks which make the women feel uncomfortable due to bad odour, skin rashes, erosions, allergies, urinary tract infections, itching and the need to changing of linen frequently. Psychological pressures experienced are a feeling of lack of control over self and body which in turn causes stress, helplessness, depression, anger, discomfort, sleep disturbances and it affects the family relationship. So they walk towards performing pelvic floor exercises regularly. Social situation arise due to women’s participation in family functions, social gatherings, parties, shopping, spending leisure time, travelling has a positive influence to perform the pelvic floor exercises which make the women to become continent.

Culture has become a boon in influencing the behaviour on the women some of them are aware in removing out the false beliefs, myths and norms, influence of modern civilization. During intercourse if there is urinary leak it may influence the women to perform pelvic floor exercises that could strengthen the pelvic floor and reduce the urine leak that will help the women to maintain a good sexual relationship.

In recent years there has been a great development in the health field world has led to availability of medical centres, appraised with modern technologies. Media plays a vital role in spreading out the importance of SUI and importance of performing pelvic floor exercises. This reaches each and every loop corner of the world and therefore the women come out to identify their problems and get treated earlier as possible to prevent complications.
Control beliefs and perceived behavioural control

Control beliefs: indicate an individual's beliefs about the presence of factors that may facilitate or impede performance of the behaviour (Ajzen, 2001). The concept of perceived behavioural control is conceptually related to self-efficacy.

Perceived behavioural control is an individual's perceived ease or difficulty of performing the particular behaviour (Ajzen, 1988). It is assumed that perceived behavioural control is determined by the total set of accessible control beliefs.

The women with SUI have strong influence and confidence to perform Pelvic floor exercises with the help of motivational factors. A strong intention or belief that runs over the mind of whether the given activity is either easy or difficult to perform becomes a motivational factor. The relative importance of intentions and perceived behavioural control in the prediction of behaviour is expected to vary across situations and across different behaviours. When the behaviour situation affords a person complete control over behavioural performances, intentions alone should be sufficient to predict behaviour, as specified in the theory of reasoned action. The ease in the activity advised and taught impedes or facilitates to perform the task.

Behavioural intention and behaviour

Intentions and behaviour. (Ajzen, 1988; Ajzen & Fishbein, 1980; Canary & Seibold, 1984; Sheppard, Hartwick & Warshaw (1988). The behaviour of a woman can be identified by her level of intention that she has over performing the task given to her.

Study group - In this present study, women with SUI had strong intention on seeking a solution for their problem due to the irritable signs of SUI which in turn to treat it and prevent from complications. The investigator’s encouragement and motivation has made the women to perform the pelvic floor exercises, and adhere to the proposed behavioural modifications so as to bring about the positive behaviour outcome. With a strong intention to overcome the SUI, women also feel at ease and gain interest to perform the pelvic floor exercises at home, which in turn strengthened the pelvic floor muscles, reduced urinary symptoms, decreased urine leak as assessed by reduced pad weight and improved the overall quality of life when comparing to control group.
**Control group** – In the present study in control group the women followed the routine pelvic floor exercises they also had improvement in pelvic floor muscle strength, decreased urinary symptoms, urine leak as assessed by reduced pad weight and in quality of life when comparing the study group it is less.

**Conclusion**

The theory of planned behaviour model is thus a very conservative, powerful and predictive model for explaining the human behaviour. Thus it has been used in this study to find out the outcomes of using Vaginal cones in treating SUI. Core understanding of the importance of using Vaginal cones in reducing, treating and preventing SUI is found in the present study. Greater understanding of factors that lead to exercise behaviour is valuable in the planning and implementation of effective strategies and interventions to increase the awareness among women.
Figure 4. Conceptual framework based on Modified The Theory of Planned Behaviour Model by Icek Ajzen & Fishbein 1987.