# Integrated Health Research Program for the Thai Elderly : Prevalence of Genital Prolapse and Effectiveness of Pelvic Floor Exercise to Prevent Worsening of Genital Prolapse in Elderly Women

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**Abstract**

**Background :** Genital prolapse is a common health problem in elderly women. It is prevalent among elderly females and affects their quality of life. Those with a severe degree of genital prolapse may need operative treatment which may be risky due to co-morbid conditions such as hypertension, respiratory disease, cardiovascular disease and diabetes mellitus. The aim of this study was to determine the prevalence of genital prolapse and the effectiveness of pelvic floor exercise to prevent worsening of genital prolapse in elderly females.

**Method :** The authors conducted a cross sectional study to determine the prevalence of genital prolapse in 682 elderly women (aged ≥ 60 years) who lived within a 10-kilometer radius of Siriraj Hospital. 654 subjects were eligible for the controlled trial to determine the effectiveness of pelvic floor exercise to prevent worsening of genital prolapse. There were 324 subjects in the control group and 330 subjects in the experimental group. The experimental group received training in pelvic floor exercise and were asked to perform the exercise 30 times after one meal, every day for 24 months. The subjects were followed-up every 6 months for 24 months to assess worsening of genital prolapse.

**Results :** The prevalence of genital prolapse was 70 per cent. There were 324 subjects in the control group and 330 subjects in the experimental group. After 24 months of pelvic floor exercise, the rate of worsening of genital prolapse was 72.2 per cent in the control group and 27.3 per cent in the experimental group ($p = 0.005$). The rate of worsening of genital prolapse was not significantly different between the control group and the study group in those who had a mild degree of genital prolapse.

**Conclusion :** The prevalence of genital prolapse in elderly Thai women was 70 per cent. A 24 months pelvic floor exercise program was effective to prevent worsening of genital prolapse in the women who had severe genital prolapse.

**Key word :** The Elderly, Genital Prolapse, Pelvic Floor Exercise

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Genital prolapse is a common health problem in elderly women. Davis[1] reported that 50 per cent of multiparous women had some degree of genital prolapse. Some studies have shown that chronic cough [2] and constipation are risk factors for genital prolapse in the elderly. About 2.9 per cent of young women and 20 per cent of elderly women had constipation. The causes of constipation in the elderly were related to dental problems and weakness of the abdominal muscles[3]. Some studies[4-6] have reported that women of the same age were more constipated than men. The degree of genital prolapse affects the symptoms of genital prolapse. The symptoms and consequences of genital prolapse include stress incontinence, chronic cystitis, chronic lower abdominal pain, difficulty in walking or urination and bladder stones. The features of severe genital prolapse are bleeding from a decubitus cervical ulcer, cervical cancer and genital tract infection. Molinelli[7] reported pelvic abscess in severe genital prolapse. Therefore, diagnosis and treatment of genital prolapse is important. Urinary incontinence in mild genital prolapse can lead to chronic dermatitis of the external genitalia. Ouslander[8] reported a case of severe dermatitis of the external genitalia as a result of urinary incontinence. Severe genital prolapse needs operative treatment. Zeitlin[9] reported a high operative risk in the elderly because of co-morbid medical problems, such as heart disease, hypertension, respiratory disease and diabetes mellitus.

Prevention or retardation of genital prolapse is a relevant health promoting activity leading to a better quality of life for elderly women and also reduces the risk of surgery and treatment. To the authors' knowledge, there has been no study of the prevalence of genital prolapse and its' prevention in Thailand.

The objectives of the study were to determine the prevalence of genital prolapse and the effectiveness of a strategy to prevent worsening of genital prolapse in elderly Thai women.

## SUBJECTS AND METHOD

A cross-sectional study was conducted in elderly women (aged $\geq$ 60 years) living in the area within a 10-kilometer radius of Siriraj Hospital to determine the prevalence of genital prolapse. Each eligible subject had her history taken and was examined for evidence of genital prolapse by vaginal examination before and during Valsalva's manoeuvre. The subject was classified as having no genital prolapse if her anterior vaginal wall did not protrude during the Valsalva's manoeuvre. A mild degree of genital prolapse was defined as a protrusion of the anterior vaginal wall which could be seen and measured only in the area of the protruding wall. A severe degree of genital prolapse was defined as a protrusion of the anterior vaginal wall which could be seen and measured by the volume of protrusion of the anterior vaginal wall from the urethral orifice. A clinical trial to determine the effectiveness of the pelvic floor exercise was carried out in these subjects. Those who had a chronic cough or needed a gynecological operation or were using hormonal replacement therapy or had had an A-P repair or conization or had an abnormal Pap smear (cervical intraepithelial neoplasia (CIN) I, II, III or human papilloma virus (HPV) infection) or had difficulty in communicating were excluded. The clusters of eligible subjects were randomly allocated to the control group and the experimental group. The subjects in the experimental group received instruction and pelvic floor exercise training or Kegal exercises to strengthen the levator and perineal muscles 30 times after one meal every day in order to prevent worsening of genital prolapse. Subjects who were unable to perform the pelvic floor exercise properly were asked to return to the clinic once a month until they could perform the pelvic floor exercise effec-

**Table 1. Prevalence of genital prolapse.**

| | Control | | Case | | Total | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Severe | 100 | 28.7 | 107 | 32.1 | 207 | 30.4 |
| Mild | 144 | 41.3 | 126 | 37.8 | 270 | 39.6 |
| No | 105 | 30.0 | 100 | 30.1 | 205 | 30.0 |
| Total | 349 | 100.0 | 333 | 100.0 | 682 | 100.0 |

tively. In addition, they were advised to eat more vegetables and fruit and to drink at least two liters of water a day in order to prevent constipation. Both the experimental and control groups were scheduled for follow-up visits every 6 months for 24 months. At each visit the subject was evaluated for the progression of genital prolapse. At each follow-up visit the doctor who assessed the progression of genital prolapse was

**Table 2. Baseline characteristics of the subjects in the control group and the experimental group.**

| Characteristic | Control group (n = 324) | Experimental group (n = 330) |
|---|---|---|
| Age (years) (Mean ± SD) | 67.7 ± 5.7 | 67.0 ± 5.6 |
| Age at Menarch (years) (Mean ± SD) | 15.8 ± 2.0 | 15.7 ± 1.9 |
| Age at menopause (years) (Mean ± SD) | 47.8 ± 4.7 | 48.5 ± 4.5 |
| Obstetric history | | |
| Total number of deliveries | 1,598 | 1,631 |
| Total number of pregnancies | 1,693 | 1,732 |
| Spontaneous abortion | 86 | 90 |
| Criminal abortion | 4 | 9 |
| Ectopic pregnancy | 5 | 2 |
| Caesarean section | 10 | 15 |
| Forceps extraction | 2 | 4 |
| Vacuum extraction | 9 | 10 |
| Perineal repair after delivery | 30.4% | 32.4% |

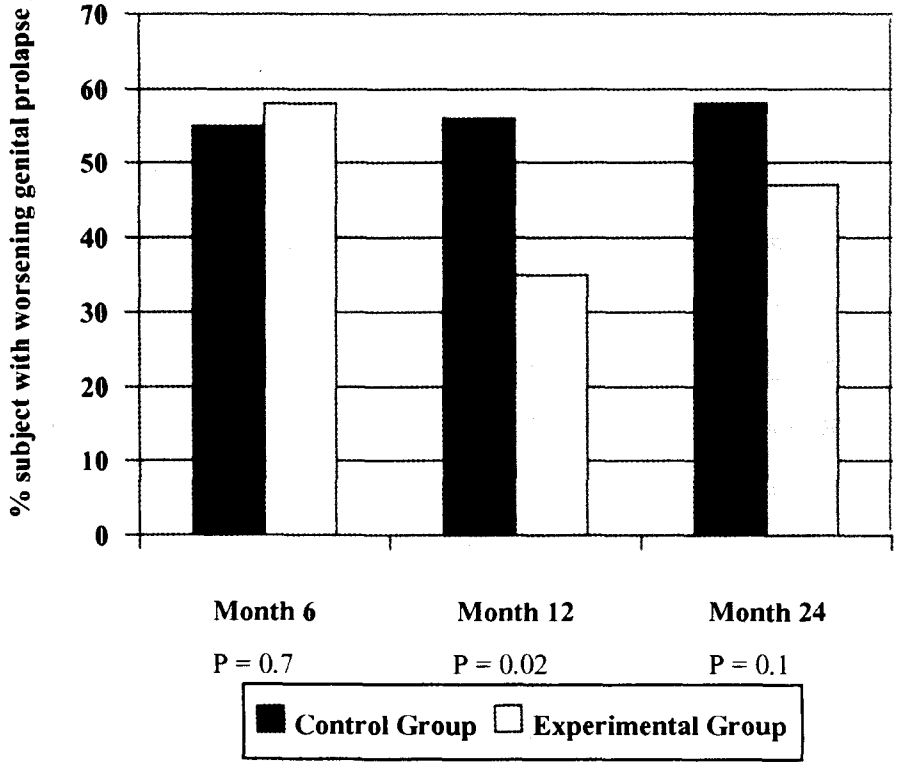


**Fig. 1. Rate of worsening of genital prolapse in the subjects with mild genital prolapse.**

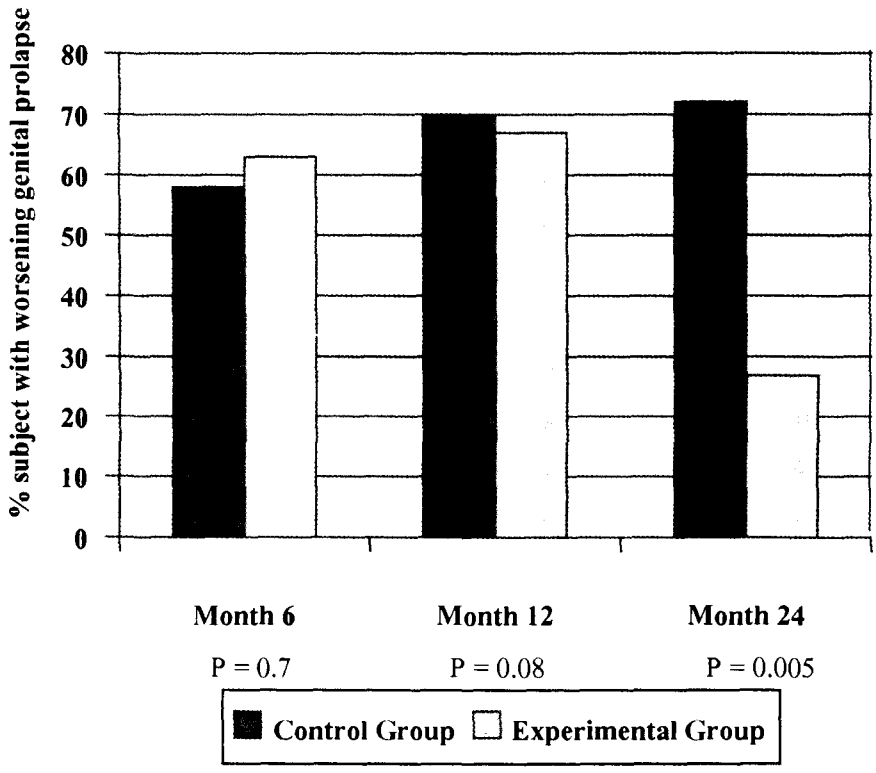


**Fig. 2. Rate of worsening of genital prolapse in the subjects with severe genital prolapse.**

blinded to the previous assessment of genital prolapse of the subject. A worsening of genital prolapse was defined as observing a larger area of vaginal wall protrusion in the subject with a mild degree of genital prolapse or a larger volume of protrusion in the subject with a severe degree of genital prolapse. The data were analyzed by descriptive statistics, student *t*-test and chi square test where appropriate. A P-value of 0.05 or less was considered statistically significant.

## RESULTS

During the period December 1997 to March 1998, 682 elderly women were recruited. The prevalence of genital prolapse was 69.9 per cent, of whom 30.4 per cent had severe genital prolapse and 39.6 per cent had mild genital prolapse (Table 1). There were 654 subjects eligible to enter the clinical trial, 324 subjects were allocated to the control group and 330 to the experimental group. The baseline characteristics of the subjects in both groups were comparable ($p > 0.05$) as shown in (Table 2), 72 per cent of the control group and 73.3 per cent of the experimental group acheived at least one follow-up visit. The effectiveness of the pelvic floor exercise in the subjects with a mild degree of genital prolapse and severe genital prolapse is shown in Fig. 1 and 2. In subjects with a mild degree of genital prolapse, the pelvic floor exercise did not affect the rate of worsening of prolapse at 24 months. However, the rate of worsening of genital prolapse was significantly less at 12 months. The pelvic floor exercise was effective in the subjects with a severe degree of genital prolapse. The rate of worsening of genital prolapse in the control group (72.2%) was significantly greater than that in the experimental group (27.8%).

## DISCUSSION

There were 654 elderly women, aged 60-88 years old living within a 10-kilometer raduis of Siriraj Hospital recruited to this study. Half the elderly women were aged 60-65, one-fourth 66-70 and the remainder were more than 70 (Table 3). The preva-

lence of genital prolapse was 69.9 per cent which is the first report of this condition in Thailand. This result is higher than that reported by Davis[1]. The risk factors being high parity and no perineal repair after delivery. The high prevalence documented in the present study shows that genital prolapse in elderly Thai women is an important health problem. The age of menarche in the group born before 1937 was 15.7 years which is higher than that found by Piya-Anant [10] who reported the mean age of menarche of girls who were born after 1967 to be 12.3 years. This shows that girls nowadays have menarche about 3.4 years earlier than girls in the past 30 years or more. The

**Table 3. Age distribution.**

| Age | Control | | Case | |
|---|---|---|---|---|
| | No. | % | No. | % |
| 60-65 | 137 | 42.3 | 158 | 47.8 |
| 66-70 | 94 | 29.0 | 87 | 26.4 |
| 71-75 | 60 | 18.5 | 54 | 16.4 |
| > 75 | 33 | 10.2 | 31 | 9.4 |
| Total | 324 | 100.0 | 330 | 100.0 |
| Mean ± SD | 67.7 ± 5.7 | | 67.0 ± 5.6 | |
| Maxinum | 88 | | 88 | |

No statistical difference between cases and controls

**Table 4. Timing of the last follow-up visit.**

| | Control | | Case | | Total | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| 6 months | 31 | 13.3 | 30 | 12.4 | 61 | 12.8 |
| 12 months | 51 | 21.9 | 21 | 8.7 | 72 | 15.2 |
| 24 months | 151 | 64.8 | 191 | 78.9 | 342 | 72.0 |
| Total | 233 | 100.0 | 242 | 100.0 | 475 | 100.0 |

Total follow-up = 72.0%

**Table 5. Number of births.**

| Parity | Control | | Case | | Total | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| 0 | 15 | 4.6 | 20 | 6.1 | 35 | 5.3 |
| 1-3 | 88 | 27.2 | 79 | 23.9 | 167 | 25.6 |
| 4-6 | 134 | 41.4 | 138 | 41.8 | 272 | 41.6 |
| 7-9 | 72 | 22.2 | 74 | 22.4 | 146 | 22.3 |
| ≥ 10 | 15 | 4.6 | 19 | 5.8 | 34 | 5.2 |
| Total | 324 | 100.0 | 330 | 100.0 | 654 | 100.0 |

average age of menopause in this group was 48.3 ± 4.6 which was the same as that reported by Chomputavip[11], who reported that in 1992, the average age menopause of Thai women was 49.5 ± 3.6 years.

This group had 3,423 pregnancies and 3,229 deliveries. The spontaneous abortion rate was 51.4 per 1,000 pregnancies which is lower than previous reports, Hill[12] reported a spontaneous abortion rate of 42-61 per 1,000 pregnancies and Grimes[13] reported 150-160 spontaneous abortion per 1,000 pregnancies. Ectopic pregnancy in this group, was only 4 per 1,000 pregnancies. Goldner[14] reported an ectopic pregnancy rate of 16 per 1,000 pregnancies. The results of the present study show a better pregnancy outcome than at present which may be due to an increase in increase in environmental effect, socio-

economic effect, psycological effect and sexually transmitted diseases (STDs).

About 98.4 per cent of the study group had normal vaginal deliveries, only 0.8 per cent had an operative vaginal delivery and only 0.8 per cent had caesarean section. Tungsatearnpong[15] reported in 1996, that the caesarean section rates in Thai government and private hospitals were 21.2 per cent and 51.5 per cent respectively. This may indicate that caesarean sections are being performed unnecessarily for some inadequate reasons. Only 5.6 per cent of the study group had no children but the rest had 1-15 deliveries; one-fourth had 1-3 deliveries and one-half had 4-6 deliveries (Table 5). About 67.5 per cent had never had a perineal repair and only 15.3 per cent had had a repair after every delivery. The high parity of the women in the present study and the high incidence of vaginal delivey without perineal repair both increased the risk of genital prolapse.

There was no difference in age, parity, age at menarche, age at menopause and eating and drinking habits between the 324 controls and the 330 cases. Only 72 per cent of the study group returned for follow-up because many of them were living with their children who went to work during the day so the elderly women were responsible for the house and could not leave for a doctors' appointment.

Some elderly women could not perform the pelvic floor exercise initially but were able to after several episodes of education and training during vaginal examination. Many elderly women in the study group noticed an improvement in their bowel habit following the study. They were advised to take more steamed or boiled vegetables, fruit and water. As a result, some elderly women never needed to use laxatives.

Comparing mild genital prolapse between the controls and cases at the initial assessment and at 24 months, there was no statistical difference, $p = 0.111$. However, on comparing severe genital prolapse, there was a statistical difference between the initial assessment and the 24-month follow-up ($p = 0.005$). There was no statistical difference between the groups at one year. This may be because a year of pelvic floor exercise is still too short for a difference to be evident. An 18-month follow-up was not possible because there was a Metropolitan election at that time. Therefore, the authors cannot conclude whether performing the pelvic floor exercise for 18 months was effective in preventing or delaying genital prolapse in this group.

One of the advantages of the present study was that the doctor assessing genital prolapse was blinded both to the status and to the previous assessment of prolapse. The authors could not control whether the women performed the pelvic floor exercise regularly in the study group but even so, the present study shows that pelvic floor exercise 30 times after one meal for two years can prevent or delay progression of severe genital prolapse in elderly women. It may be more beneficial if the pelvic floor exercise was started postpartum or at the menopause. Some women could not perform the pelvic floor exercise initially but they could be trained in the correct technique during pelvic examination.

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## REFERENCES

1. Davis MR. Pelvic relaxation. In Kase NG, Weinglod AB, Gershenson DM. eds. Principle and Practice of Clinical Gynecology. London: Churchill Livingstone; 1990: 657-68.
2. Zacharin RF. Pulsion entercele : Review of functional anatomy of the pelvic floor. Obster Gynecol 1980; 55: 135-40.
3. Thomson WG. Heaton. KW. Functional bower disorders in apparently healthy people. Gastroenterology. 1980; 79: 283-8.
4. Preston DM, Lennard - Jones JE. Severe chronic constipation of young women : Idiopathic slow transit constipation. Gut 1986; 27: 41-8.
5. Read NW, Timms JM, Barfiels LJ, et al. Impairment of defaecation in young woman with severe constipation. Gastroenterology 1986; 90: 53-60.
6. Reynolds JC, Ouyang A, Lee CA, et al. Chronic severe constipation. Prospective motility studies in 25 consecutive patient. Gastroenterology 1987; 92:

414-20.
7. Molinelli EA, Porges RF. Incarcerated uterine prolapse associated with a cul-de-sac abscess. Obstet Gynecol 1993; 82: 664-6.
8. Ouslander JG. Geriatric urinary incontinence. Dis Mon 1992; 38: 65-149.
9. Zeitlin MP, Lebherz TB. Pessaries in the Geriatric patient. J Am Geriatric Soc 1992; 40: 635-9.
10. Piya-Anant M, Bharncharearn M, Suvanichchatis S, et al. Sexual maturation in Thai girls. J Med Assoc Thai 1997; 80: 557-64.
11. Chompootweep S, Tankeyoon M, Yamarat K, Poomsuwan P, Dusitsin N. The menopausal age and climacteric complaints in Thai women in Bangkok. Maturitas 1993; 17: 63-71.
12. Hill LM, Guzick D, Fries J, Hixson J. Fetal loss rate after ultrasonically documented cardiac activity between 6 and 14 weeks menstrual age. J Clin Ultrasound 1991; 19: 221-3.
13. Grimes DA. Management of abortion in TeLinde's Operative gynecology Rock JA, Thomson JD eds. Philadelphia, USA: Lippincott-Raven; 1997: 477.
14. Goldner TE, Lawson HW, Xia Z, Atrash HK. Surveillance for ectopic pregnancy - United States, 1970-1989. MMWR CDC Surveillance Summary 1993; 42: 73-85.
15. Tungsatearnpong V, Chuntornsatit NG, Sittitoon CH, Ung P. Pattern of delivery in hospital during 1990-1996. Health Systems Research Institute 1st ed. 1998.

# ความชุกของภาวะกะบังลมหย่อนและประสิทธิผลของการออกกำลังกล้ามเนื้อกะบังลมในการชลอความรุนแรงของภาวะกะบังลมหย่อนในหญิงสูงอายุ

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คณะผู้วิจัยได้สำรวจความชุกของภาวะกะบังลมหย่อนในหญิงสูงอายุที่อาศัยอยู่ในชุมชนใกล้โรงพยาบาลศิริราชจำนวน 682 คนพบว่ามีความชุกของภาวะนี้ประมาณร้อยละ 70 หญิงสูงอายุจำนวน 654 คนเข้าร่วมการวิจัยเพื่อประเมินประสิทธิผลของการออกกำลังกล้ามเนื้อกะบังลมในการชลอความรุนแรงของภาวะกะบังลมหย่อนโดยหญิงสูงอายุ จำนวน 324 คนได้รับการจัดให้อยู่ในกลุ่มควบคุมและหญิงสูงอายุ จำนวน 330 คนได้รับการจัดให้อยู่ในกลุ่มศึกษา กลุ่มศึกษาได้รับการฝึกการออกกำลังกล้ามเนื้อกะบังลม ผลการศึกษาพบว่าการออกกำลังกล้ามเนื้อกะบังลมมีประสิทธิผลในการชลอการชลอความรุนแรงของภาวะกะบังลมหย่อนในกลุ่มที่มีภาวะกะบังลมหย่อนชนิดรุนแรง

**คำสำคัญ** : กระบังลมหย่อน, ผู้สูงอายุ, การออกกำลังกล้ามเนื้อกระบังลม

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