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THE RELATIONSHIP OF KEGEL EXERCISES, STRESS INCONTINENCE AND SELF-CONCEPT IN A RESIDENTIAL POPULATION OF ELDERLY FEMALES

A Thesis

Presented for the

Master of Science in Nursing

Degree

The University of Tennessee, Knoxville

Howarlene Sabrina Webb

December 1988

DEDICATION

Dedicated to:

My Jesus,

without whom none of this would have been possible;

My Dad,

for his never-give-up winner's attitude;

My Mom,

for her optimism and hope;

My Family,

for their humor, prayers and self-sacrificing love and support;

My Chairperson, Dr. Mildred Fenske,

for her never-ending encouragement and assistance.

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Forever will I be thankful to my parents and family for their love and abounding prayers.

ABSTRACT

A major health care problem plaguing the elderly is urinary incontinence. This 7-week study investigated the influence of instruction (group or individual) of Kegel exercises, restoration of continence, and changes in self-concept related to the performance of Kegel exercises in a residential population of 20 elderly females (ages 60 and older) experiencing stress incontinence. The researcher used a six-month and weekly "Self Assessment of Continence Evaluation" (Henderson & Taylor, 1987) and "Sherwood's Self-Concept Inventory" (Sherwood, 1962). The researcher developed a "Demographic Questionnaire" and a "Failure to Comply Questionnaire." The study used measures of central tendency (mean, median, and mode), and measures of variability (standard deviation and range), frequency distribution, T-test, and measures of correlation (Pearson and Spearman) to analyze data obtained.

The T-test results were not significant at the 0.05 level for (a) number of Kegel exercises performed and group versus individual instruction, (b) continent versus incontinent subjects and change in self-concept, and (c) continent versus incontinent subjects and weekly compliance with Kegel exercises. The measures of correlation results were not significant at the 0.05 level for (a) number of Kegel exercises performed and post-self-concept, and (b) continent versus incontinent subjects and weekly compliance

with Kegel exercises. Frequency distribution showed (a) improvement of continence with increase in number of Kegel exercises performed, and (b) increased compliance with Kegel exercises as the study progressed. This study discusses implications for nursing actions and future research.

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CHAPTER I

INTRODUCTION

Problem

The number of elderly individuals has increased significantly in the United States since the turn of the century. By the year 2000 more than 12% of our population, about 32 million people will be over age 65 (U.S. Department of Congress, 1981). Therefore, an increased need for health care can be expected for the elderly.

A major health problem plaguing the elderly population is urinary incontinence. Estimates indicate that the incidence of incontinence among elderly people living in the community (not institutionalized) ranges from 1.6% to 42% and incontinence affects 50% of those living in institutions (Milne, 1976). The problem of incontinence has costly, embarrassing, and isolating effects.

The Surgeon General of the United States estimated that the federal government spends $8 billion on incontinence (Abdellah, 1988). Also, because of the embarrassing effects of this problem, many individuals withdraw from society and social activity (Butts, 1979; Henderson & Taylor, 1987; McCormick & Burgio, 1984; Palmer, 1988). The physical effects of incontinence can lead to skin breakdown, infection, pressure ulcers, etc., and ultimately increase mortality (Campbell, Reinken, & McCosh, 1985).

Incontinent individuals frequently do not seek help because they view the problem as a normal process of aging (Rooney, 1984; Wyman, 1988), when in fact, urinary incontinence is not a normal consequence of aging (Morishita, 1988; Simon, 1985). In addition, many health care providers neglect incontinence, perhaps as a result of their attitudes toward urinary incontinence and their lack of ability to diagnose and manage the condition (Rowe, 1985; Wyman, 1988). Ironically, 70% of urinary incontinence in the elderly can be cured (Willington, 1980). However, without appropriate detection and treatment, institutionalization occurs for many incontinent elderly persons after they experience rejection by their families, and non-acceptance by day-care and other non-institutional living settings, such as retirement housing and board-and-care homes (Morishita, 1988).

Urinary incontinence occurs more frequently in women than in men (Feller, 1983; Morishita, 1988; Palmer, 1988; Simon, 1985) primarily due to the female anatomy. The bladder in females lies in front of the vagina and uterus and the urethra is short--about 1 1/2 inches long (Butts, 1979). Because of this anatomy, stress incontinence is the most common type of urinary incontinence in adult women (Butts, 1979; Fowler & Crowley, 1987). Maly (1980) estimated that 20-30% of all women experience stress incontinence, Green's study estimated 50% of nulliparae

experience stress incontinence (cited in Graber, 1977), and Beck (1976) estimated that the problem occurs in up to 63% of post-menopausal women. These statistics signal a great need for managing and treating stress incontinence.

Historically, Kegel (1951) developed Kegel exercises to strengthen pelvic floor muscles after examining several thousand females with simple urinary incontinence. He found that their pubococcygeus muscles, voluntary muscles of the vesical neck, showed atrophy and functional loss, "often simulating a degree of paralysis" (p. 915). He noted the condition occurred in nulliparous, primiparous, and multiparous women--even in those who received Cesarean section, and described the problem as a "syndrome of lack of awareness of function and coordination of the pubococcygeus muscle" (p. 915).

Kegel recommended exercises that consisted of voluntarily contracting the pubococcygeus muscles 20 minutes three times per day for a total of 300 contractions. He also noted that patients required a weekly check of their efforts to ensure progress (Kegel, 1951). Although Kegel exercises have been described in the literature since the 1940s, Kirkpatrick & Davies (1987) reported that many health care providers still do not know about them. This lack of knowledge causes many females to suffer and endure the embarrassing problem of stress incontinence, perhaps needlessly.

In a recent study, Henderson and Taylor (1987) reported that if females with stress incontinence perform 100 or more Kegel exercises per day for 6-8 weeks, they can restore pubococcygeal function to varying degrees. Performance of Kegel exercises accompanied by an awareness of the pubococcygeus muscles constitute essential factors to regaining pelvic support and restoring continence.

Purpose

This study determined the influence of certain factors related to the performance of Kegel exercises in a residential population of elderly females (ages 60 and older) experiencing stress incontinence. The study used two types of instruction, group and individual. Subjects recorded the frequency with which they performed Kegel exercises by using colorful push pins on a researcher-designed board (see Appendix H). The 7-week study identified relationships among type of instruction, performance of Kegel exercises, restoration of continence, and changes in self-concept.

Importance

Although the efficacy of Kegel exercises on urinary stress incontinence has been previously determined (Henderson & Taylor, 1987; Kegel, 1956; Maly, 1980; Shepherd, 1983; Stoddart, 1983), a need to alert the health

care providers and the public--especially the elderly female population--of the uncomplicated benefits of performing these exercises remains. These exercises are relatively simple to perform with little or no cost to the instructor or client. In addition, the client also receives the lasting potential benefit of complete or improved continence.

As stated before, the U.S. Surgeon General estimated incontinence costs 8 billion dollars yearly (Abdellah, 1988). According to Ouslander, Kane and Abrass (1982) managing each individual with a Foley catheter costs about $2,888 yearly, as opposed to costs ranging from $2,072 to $4,532 to manage incontinent individuals using disposable pads, reusable diapers, or disposable diapers. Obviously, the cost effectiveness of treating incontinence proves more desirable than managing the impairment.

The cost of treating stress incontinence varies widely. Ring pessaries, although infrequently used, cost $50-$75 including the fitting by a physician (Dr. Morris Campbell, personal communication, April 18, 1988). The need to remove ring pessaries to clean them daily complicates their use and without daily use, incontinence occurs. Medications such as phenylephrine currently cost $10-$15 per 100 tablets with dosage of one tablet 4 times per day or $146-$219 per year (Mr. James Love, personal communication, April 18, 1988). This medication and others like it must be taken daily and

only treats the symptoms; they do not correct the basic problem. Undesirable side effects usually exceed benefits. Surgical intervention such as the Marshall-Marchetti-Krantz operation costs $1150, and if complications arise, the costs increase (Dr. Fred Klein, personal communication, April 18, 1988). Potential surgical complications include injury to the bladder and/or ureters, venous hemorrhage, and difficulty in retaining symphyseal sutures. Potential postoperative problems include recurrence of incontinence, voiding difficulty, and osteitis pubis (Stanton, 1985). Even though the above methods may be used, Kegel (1956) recommends Kegel exercises to restore and maintain function, thereby preventing recurrences of stress incontinence. Compared to other strategies to restore continence, Kegel exercises cost much less, and Kegel exercises require only 20-30 minutes of professional time to instruct patients. This instruction could take place as a routine activity in elderly day care facilities or institutions.

Determining the best method to promote daily performance of Kegel exercises will impact on the effectiveness of Kegel exercises to prevent stress incontinence. If Kegel exercises can be effectively taught and practiced, elderly women would no longer have to seek ways to adapt to their incontinence. Instead, they could control the incontinence "giant" that now plagues many of their lives.

Conceptual Framework

Self-Concept Theory

This study addresses the self-concept mode of Roy's theory. The self-concept model branches from her grand theory of adaptation (Roy, 1971). Explaining Roy's theory, Buck (1984) defines self-concept as the "composite of beliefs and feelings that one holds about oneself at a given time, formed from internal perceptions and perceptions of others' reactions, and directing one's behavior" (p. 255). This definition of self-concept incorporates self-esteem, "the individual's perception of self-worth" (p. 256); self-esteem constitutes only a small portion of self-concept. Roy (1973) further divides self-concept into two subareas: physical self and personal self. The physical self encompasses how one feels about one's body, its various parts, one's control over its functions, and one's mental image of it. Personal self encompasses all the feelings and experiences in life that shape the kind of person one is (Rambo, 1984).

Stress incontinence, an altered physical function, can very well affect the self-concept negatively, especially the physical self. Sutherland (1976) noted that incontinent elderly persons lack confidence, security, and certainty of self. This may result from the disruptive, repulsive perceptions that health care providers and family members have of incontinence. Thus, the negative reactions of

others affect negatively the patient's personal self. Hence, ostracism from informal and formal social settings occurs (McCormick, Scheve, & Leahy, 1988).

Definitions of Terms

Kegel muscle is the pubococcygeal muscle, the major muscle of support for the pelvic floor, which surrounds the urethra, vagina, and the rectum. It is experienced as vaginal contractions during climax. In addition, this muscle helps prevent uterine, bladder, and rectal prolapse and stress incontinence (Henderson & Taylor, 1987).

Kegel exercises involve contracting the Kegel muscle to strengthen the pelvic floor. Strengthening the Kegel muscle increases elasticity of the muscle, aids in bladder and lower bowel control, and supports the reproductive organs (Kirkpatrick & Davies, 1987).

Stress incontinence is unintentional loss of urine due to loss of tissue tone, childbirth trauma, and the aging process which weaken bladder support and alter the urethra vesical angle to a straight line. Stress incontinence occurs when intra-abdominal pressure increases and may arise from laughing, coughing, sneezing, jumping or stooping (Butts, 1979).

Compliance: Daily compliance is performing 100 or more Kegel exercises per day. Weekly compliance is performing

100 or more Kegel exercises per day with a total of 700 or more per week.

Continence is the absence of an episode of leaking accidents during the seventh (last) week of the study. With this achievement, the subject is considered "dry."

Elderly are those female individuals age 60 and older.

Research Question

The purpose of this study is to determine the effect of group versus individual instruction and relationships between the frequency of performing Kegel exercises, restoration of continence, and changes in self-concept.

Subsidiary Questions

1. Is there a significant difference between elderly persons receiving individual teaching and those receiving group teaching with respect to the total number of Kegel exercises performed?

2. Is there a significant difference between continent and incontinent subjects with respect to change in self-concept score?

3. Is there a significant difference between post-test scores of self-concept and frequency of Kegel exercises?

4. Is there a significant difference between those

who are continent and those who are not with respect to overall compliance score?

Scope of the Study

This study involved two methods of client instruction, individual and group. Subjects used colored push pins on styrofoam boards to record their performance of Kegel exercises. The identification of better methods of instruction and record keeping may improve performance of Kegel exercises. This study also investigated the influence of continence versus incontinence on self-concept and the influence of self-concept and the frequency of performing Kegel exercises.

Assumptions

Assumptions of this study include:

1. The subjects performed the number of Kegel exercises documented on the Record Keeping Sheet.

2. The subjects answered evaluations and demographics truthfully.

3. The subjects met the criteria delineated in the design of the study.

CHAPTER II

REVIEW OF LITERATURE

This review of related research includes an examination of urinary incontinence and Kegel exercises, the influence of self-concept, and effects of instructional strategies.

Urinary Incontinence

Urinary incontinence is a condition of involuntary loss of urine which presents as a social or hygienic problem (Bates et al., 1979). Urinary incontinence may occur as a result of one factor or many factors. The following section will delineate the various aspects of urinary continence versus urinary incontinence and discuss methods of evaluating and resolving the problem of urinary incontinence.

Normal Anatomy and Physiology

Anatomy

The urinary bladder, a muscular organ and membranous sac in the anterior part of the pelvic cavity, serves as a reservoir for urine. The bladder or detrusor has a serosal layer of peritoneum externally and a mucosal layer of transitional epithelium internally. Contraction of the detrusor urinae empties the bladder during urination. Normally, ligaments and pelvic floor muscles support and

maintain the anatomical position of the bladder (Ross & Reith, 1985; Voith, 1986; Williams & Pannill, 1982).

The urethra, a 4 cm canal in women and 20 cm canal in men, conveys urine from the bladder to the outside of the body. Transitional epithelium lines the proximal portion of the urethra, and stratified columnar epithelium lines the urethra distally. Two smooth muscle layers of the urethra form the internal sphincter and function to maintain continence. The external sphincter, small bundles of striated muscle interspersed with smooth muscle fibers, encircles the urethra and controls the initiation of urination (Ross & Reith, 1985; Voith, 1986; Williams & Pannill, 1982).

Physiology

Micturition Cycle. The pressure within the urethra must exceed the pressure within the bladder to enable the bladder to fill and to attain continence. Normally, the internal sphincter provides the necessary resistance to prevent urine from leaking. The external sphincter reinforces the ability of the internal sphincter to maintain continence when high bladder pressures occur from an over-distended bladder or increased intra-abdominal pressure due to sneezing, coughing, or laughing (Wyman, 1988).

First sensations of bladder filling ordinarily occur when about 100 ml to 150 ml of urine exist in the bladder. A desire to urinate occurs when the bladder contains

approximately 200 ml to 300 ml of urine, with 400 ml usually signalling a marked feeling of fullness. The bladder will contain 400 ml of urine and more as a result of its ability to regain basal tonic pressure after consistent increases in bladder pressure because of in-flowing urine. When the bladder is full, stretch receptors throughout the bladder transmit sensory messages to the sacral segments of the spinal cord and to the brain. Sympathetic stimulation allows bladder filling by relaxing the detrusor and exciting the sphincters (Guyton, 1981; Wyman, 1988).

To empty the bladder, pressure in the bladder must exceed pressure in the urethra. Increased pressure in the bladder results from a series of detrusor contractions. Voiding occurs when detrusor contractions occur synchronously with relaxation of the sphincters as a result of spinal cord reflexes. Parasympathetic stimulation promotes bladder emptying by exciting the detrusor and relaxing the sphincters (Guyton, 1981; Voith, 1986; Wyman, 1988).

Micturition (Dorland, 1981), the passage of urine or urination, has been discussed in the above processes, but higher centers located in the brain usually enable humans to control micturition. The higher centers function under voluntary control and inhibit the spinal cord reflex until the person wants to empty his or her bladder. When the person wants to urinate, cortical centers initiate detrusor

contractions and inhibit sphincter contractions and voluntary urination occurs (Guyton, 1981; Voith, 1986).

Types of Urinary Incontinence

Non-established urinary incontinence

Incontinence in this category often proves to be transient or reversible. Emotional disturbances such as anxiety, depression, schizophrenic withdrawal, and manipulative behavior (very rare) may be primary factors initiating this type of incontinence (Perston, 1981; Tallis & Norton, 1984; Wyman, 1988). Disturbances in cognitive function may be responsible for an episode of transient urinary incontinence. Cognitive problems may include disorientation or early dementia, which result in an inability to locate a toilet. Impairment of consciousness, another cause of urinary incontinence, includes toxic confusional states, delirium, episodic losses of consciousness such as epilepsy and hypoglycemia, and coma. Immobility, especially among the elderly, increases episodes of transient incontinence. Immobility may be a result of arthritis, hemiplegia, Parkinson's disease, or poor vision. (Perston, 1981; Tallis & Norton, 1984; Wyman, 1988).

Other factors associated with non-established urinary incontinence include infections of the urinary tract (systemic or acute), atrophic vaginitis/urethritis, stool impaction, and pharmacologic agents including diuretics,

sedatives/hypnotics (including alcohol), muscle relaxants, anticholinergics, alpha- and beta-adrenergic agonists or alpha antagonists, and calcium channel blockers (Perston, 1981; Wyman, 1988). In addition, progesterone reduces the tone of the urethral musculature during pregnancy, and contributes to urinary incontinence (Powell, 1983). As mentioned before, these factors cause transient urinary incontinence. Many times these factors can be eliminated or reversed and continence can be restored. Health care professionals must be aware of factors influencing transient incontinence.

Established Urinary Incontinence

Urge incontinence results when a strong urge to void occurs prior to the loss of urine, but once urination begins the individual cannot stop urinating. Frequently the individual cannot access a bathroom in time. Urine loss usually varies from a moderate to large amount. Urgency occurs primarily because of detrusor instability. Other characteristics of urge incontinency include urinary frequency and nocturia. Causes of urge incontinence include central nervous system (CNS) damage, interference with spinal inhibitory pathways, and local bladder disorders from cancer, obstruction, or cystitis (Butts, 1979; Wyman, 1988).

Overflow incontinence occurs when an individual has a continual leakage of urine. Associated characteristics include hesitancy, straining to void, and a weak or

interrupted urinary stream. The pathophysiology of overflow incontinence involves bladder outlet obstruction, an underactive detrusor, or impaired afferent sensation. Possible etiologies include urethral stricture, myogenic or neurogenic factors (frequently diabetes mellitus) and cholinergic/antispasmodic drugs (Perston, 1981; Williams & Pannill, 1982; Wyman, 1988).

Functional incontinence implies the inability of normally continent persons to reach the toilet in time to avoid an accident. This incontinence has no urinary tract pathophysiology. Other complications include medical problems, iatrogenic illness, or adverse stimuli such as lack of privacy. Etiologies include impaired mobility or cognitive status, inaccessible toilets, depression, anger, hostility, or schizophrenia (Williams & Pannill, 1982; Wyman, 1988).

Stress incontinence, the focus of this research, happens when leakage of urine results from increased abdominal pressure; when laughing, coughing, or sneezing. Pathophysiology includes sphincter incompetence and urethral instability. Common causes involve pelvic prolapse in women and/or sphincter weakness or damage (Butts, 1979; Perston, 1981; Wyman, 1988).

Although additional classifications for established urinary incontinence exist, the above four encompass much of the symptomatology common to all urinary incontinence. The

classification of urinary incontinence lacks consistency in medical as well as nursing literature. A nation-wide classification of urinary incontinence must be established in order to generalize findings from one study to another.

Evaluation of Incontinence

To evaluate incontinence, several thoroughly planned procedures exist to identify the type of incontinence as well as the extent of damage involved in the urinary tract system. A thorough medical history and day-to-day patient involvement accompanies the planned procedures. The following paragraphs explain these procedures.

Initially, the detailed history provides information that enables the examiner to identify the type of incontinence present. A history may ask questions such as "How long have you had a problem of losing urine? How much urine do you lose? When does urine loss occur, e.g., in upright or recumbent positions, while coughing, during coitus? Do you have other health problems that may contribute to urinary incontinence, such as infection, prior pelvic surgery? What medications do you take? Do you have difficulty moving to the bathroom? What protective measures do you use to combat the incontinence?" (Shingleton, Kerr-Wilson, & Davis, 1984; Wyman, 1988). These questions enable the examiner to diagnose the type of urinary incontinence.

The physical examination may involve several extensive procedures. Examinations almost always include assessment of the pelvis, abdomen, rectum, and sacral nerve function (S2-S4). The pelvic examination includes checking for the presence of a cystocele or urethrocele, determining the presence or absence of urethrovesical angle (see Figure 1 and Figure 2), and determining the presence or absence of atrophic vaginitis. Usually a stress test accompanies the pelvic examination. The stress test involves having the patient exert intra-abdominal pressure by coughing, and/or jumping with a full bladder. This test determines if the patient has stress incontinence (Burton, 1984; Shingleton, Kerr-Wilson, & Davis, 1984; Wyman, 1988).

An abdominal examination may locate a bladder mass contributing to overflow incontinence. A rectal examination may reveal a fecal impaction, associated with transient urinary retention. A neurologic examination assesses motor and sensory supplies to the lower urinary tract and perineal area and investigates reflex responses, such as bulbo-cavernosus and anal reflexes. The presence of neurologic problems may contribute to urge incontinence (Burton, 1984; Shingleton, Kerr-Wilson, & Davis, 1984; Wyman, 1988).

Another method of evaluation of urinary incontinence involves the measuring of residual urine. A postvoiding residual urine volume greater than 10 ml identifies individuals with overflow incontinence. At this time

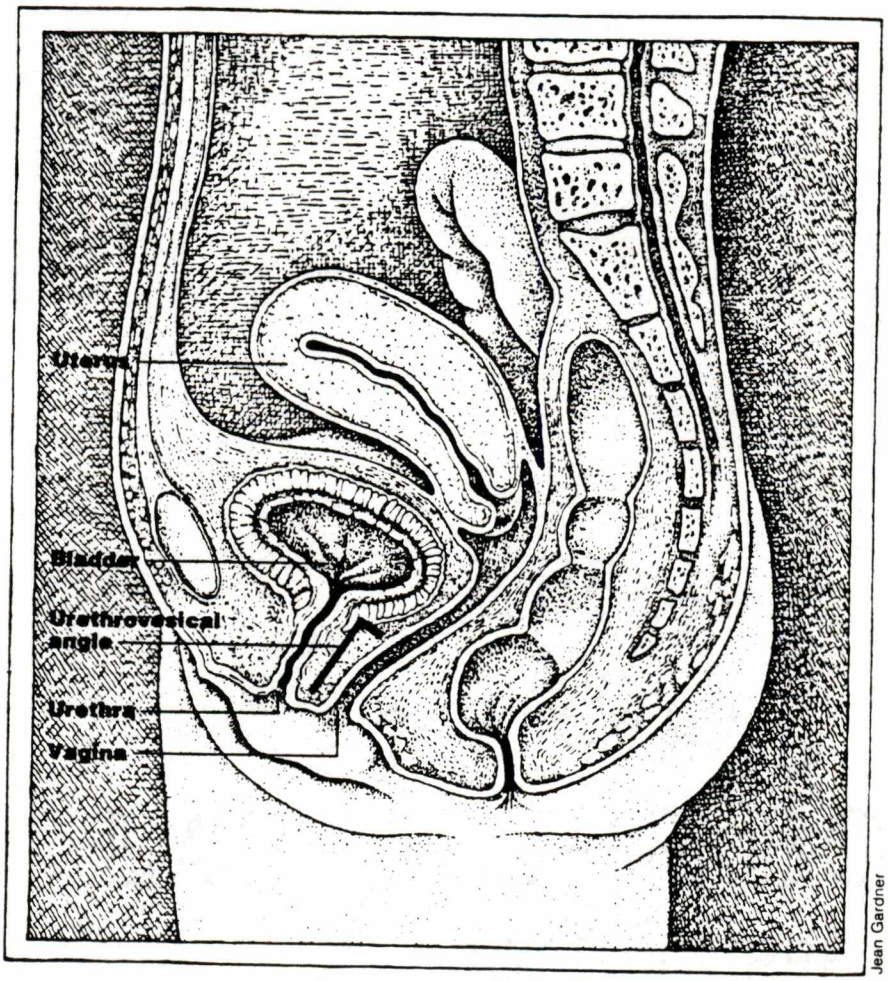


Figure 2.1 Diagram of Normal Urethrovesical Angle (90°-100°)

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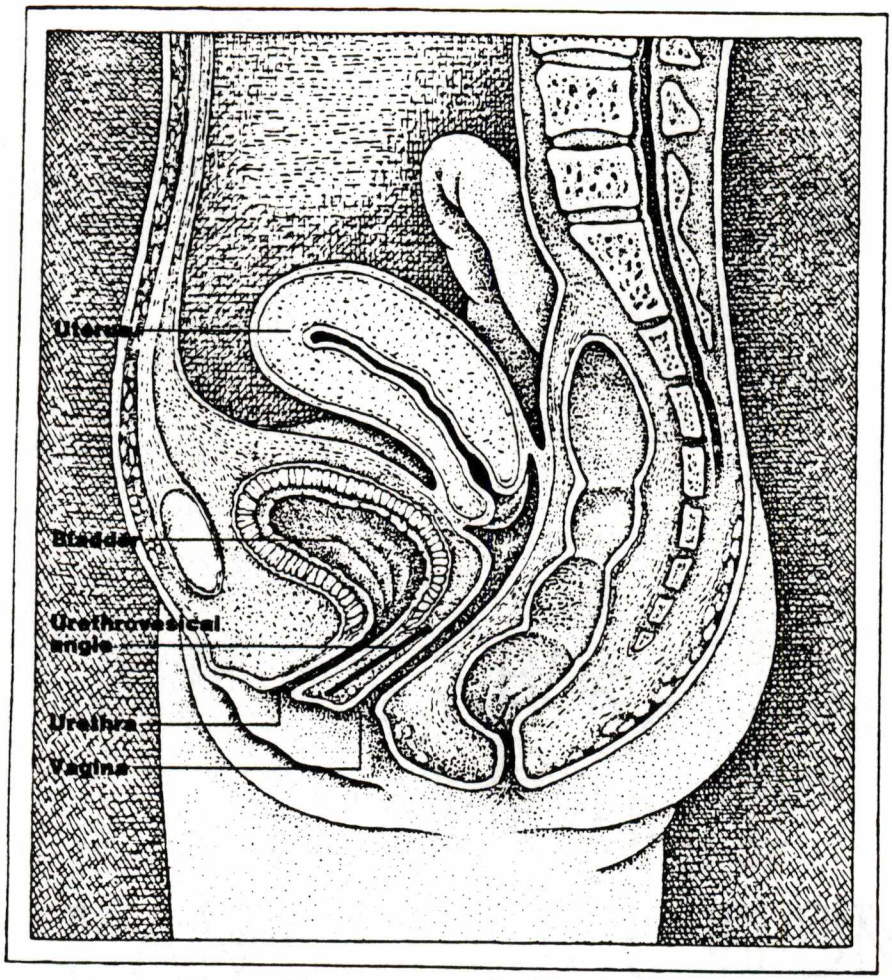


Figure 2.2 Diagram of altered urethrovesical angle due to loss of tissue tone

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bladder capacity can also be ascertained. A reduced bladder capacity usually represents urge incontinence (Burton, 1984; Shingleton, Kerr-Wilson, & Davis, 1984).

A voiding diary kept by the person for at least two weeks constitutes another helpful diagnostic procedure and serves several important functions. It (a) classifies the type of urinary incontinence; (b) determines therapeutic interventions; (c) enables the health care provider to identify contributing factors; and (d) begins the process of behavioral modification. Although the time required to record bladder emptying may be a hindering factor, the benefits far outweigh the hindrances (Burton, 1984; Wyman, 1988).

Laboratory tests also help to determine the type of urinary incontinence. A urinalysis may suggest urinary tract infection. Blood tests to determine glucose, urea nitrogen, and creatinine levels may identify uncontrolled diabetes mellitus and kidney disease (Shingleton, Kerr-Wilson, & Davis, 1984; Wyman, 1988).

A urodynamics evaluation may be performed when an individual presents with complex symptomatology and/or other methods of treating the incontinence have been unsuccessful. The primary targets of a urodynamics evaluation involve the bladder and the urethra. In a urodynamics evaluation, the tests include uroflowmetry, cystometry, urethral pressure profilometry and cystourethroscopy. The uroflowmetry

consists of a noninvasive procedure that electronically graphs the urine flow rate as a function of time during the entire voiding sequence. The uroflowmetry identifies urinary obstruction. The cystometry involves filling the bladder transurethrally while simultaneously monitoring intra-abdominal pressure and intravesical pressure. This test determines the presence or absence of the detrusor reflex and whether such reflex demonstrates voluntary or uninhibitory control. The urethral pressure profilometry involves inserting a small catheter and infusing carbon dioxide at 150 cc per minute. The resistance against the urethral wall indicates urethral pressure. The urethral pressure profilometry assists in diagnosing and managing stress incontinence, neurogenic bladder disease, and urethral stricture. An additional procedure, the cystourethroscopy, involves direct examination of the urethra and bladder and identifies the presence of tumors, fistulas, calculus strictures, or diverticula (Pearson & Noe, 1979; Shingleton, Kerr-Wilson, & Davis, 1984; Wyman, 1988).

Pathophysiology of Stress Incontinence

Several etiologies of stress incontinence exist. Obstetrical injury has been proven to be a major cause of stress incontinence. This type of injury usually results in the alteration of the urethrovesical angle due to stretching

and tearing as the head reaches the perineum. Many times this injury causes shortening and scarring of the urethra, which also contributes to stress incontinence (Burgio, Robinson, & Engel, 1986; Butts, 1979; Graber, 1977; Kegel, 1948; Perston, 1981).

Pubococcygeal muscle weakness, a second cause, may be found frequently in nulliparas and women who have had cesarean sections. This weakness results from poor muscle tone and/or neurological derangement. Poor muscle tone may result from the lack of awareness that a muscle exists, and that the muscle may be exercised voluntarily. Neurological derangement may cause failure of the striated muscle of the distal urethral sphincter to contract during periods of increased intra-abdominal pressure (Burgio, Robinson, & Engel, 1986; Butts, 1979; Graber, 1977; Kegel, 1948; Perston, 1981).

Another cause may be the result of decreased resistance of the urethral mucosa. This decreased resistance results from reduced vascularization due to postmenopausal reduction of estrogen. The decreased resistance causes increased sensitivity of the stretch receptors, which in turn influences incontinence (Butts, 1979; Graber, 1977; Perston, 1981).

Iatrogenic causes of stress incontinence are the result of surgery. Surgeries which negatively influence incontinence include cystocele repair, correction of uterine

prolapse, uterine suspension, and vaginal hysterectomy. These surgical interventions usually change the urethrovesical angle from 90°-100° to a straight line (Butts, 1979; Graber, 1977).

Methods of Decreasing Stress Incontinence

A variety of methods to decrease stress incontinence exist. These methods include drug therapy, electrical stimulation, supportive devices, surgical treatment, and exercise therapy. A further explanation of each method will follow in succeeding paragraphs.

Drug therapy for stress incontinence includes alpha-adrenergic agonists and conjugated estrogens. Alpha-adrenergic agonists such as pseudoephedrine, imipramine and phenylpropanolamine have a mechanism of action which contracts the urethral smooth muscle, thus increasing sphincter strength. Conjugated estrogens (oral, topical) work to increase periurethral blood flow, and strengthen periurethral tissues (McCormick, Scheve, & Leahy, 1988). Results of drug therapy ultimately reveal unsatisfactory solutions to the problem of stress incontinence, because stress incontinence involves a mechanical malfunction. In addition, side-effects of drug therapy far outweigh any benefits (Tallis & Norton, 1984).

Electrical stimulation of the pelvic floor muscles has also been used to decrease the prevalence of stress

incontinence. Electrodes implanted into the pelvic floor muscle stimulate muscle contraction through neural regulatory systems (McCormick, Scheve, & Leahy, 1988). Montgomery and Shepherd (1983) used electrical stimulation and noted re-education of pelvic floor muscles in 90% of their subjects, as evidenced by long-term continence. Electrical stimulation may be combined with Kegel exercises.

Devices used to alleviate stress incontinence include pessaries, silicon-gel prostheses, and periurethral Teflon^{R}. Pessaries are doughnut or cube-shaped devices inserted into the vagina to support the tissue beneath the bladder and urethra and to reduce bladder structural prolapse. Vaginal tampons may serve as internal pessaries. Although pessaries may decrease stress incontinence, they may obstruct urine outflow and contribute to urinary tract infections. Also, if these devices are forgotten and not removed and cleaned at intervals, they can become incarcerated and may lead to infection or fistula development (Jirovec, Brink, & Wells, 1988; McCormick, Scheve, & Leahy, 1988). Silicon-gel prostheses involve placement of silicon gel in tissue to reposition the urethra. Periurethral Teflon^{R} involves injecting Teflon^{R} into the urethra and periurethral tissues, also for the purpose of repositioning the urethra. With both silicon-gel prostheses and periurethral Teflon^{R} injections, precautions must be taken to assess for urinary tract infections and/or

allergic reactions to the silicone gel or the Teflon^{R} (McCormick, Scheve, & Leahy, 1988).

Stress incontinence has been treated by surgical intervention, and surgical treatment may be chosen as an initial intervention before using conservative methods. Surgical procedures reposition the bladder neck and urethra to approximate a normal intra-abdominal position (McCormick, Scheve, & Leahy, 1988). Fowler and Crowley (1987) reported the Marshall-Marchetti-Krantz procedure, the most common procedure, cured approximately 75% of stress incontinent patients. Potential surgical complications include injury to the bladder and/or ureters, venous hemorrhage, and difficulty in retaining symphyseal sutures. Potential postoperative problems include recurrence of incontinence, voiding difficulty, and osteitis pubis (Stanton, 1985).

Exercise therapy, the focus of this study, can be used as a method to decrease stress incontinence in elderly females. Historically, Kegel (1951), a Los Angeles obstetrician/gynecologist, found that several thousand females under his care had atrophy and functional loss of their pubococcygeus muscles, voluntary muscles of the vesical neck. This atrophy and functional loss of the pubococcygeus muscles caused stress incontinence in nulliparous, primiparous, and multiparous women alike, including those women who received Caesarian section. To restore function of the pubococcygeus muscles, Kegel

recommended exercises consisting of voluntary contraction of the pubococcygeus muscles 20 minutes three times per day for a total of 300 contractions. Presently the recommendation stands at 100 contractions per day (Henderson & Taylor, 1987).

A number of authors report the incidence of stress incontinence in females in the United States exceeds that of those in developing countries (Beck, 1976; Maly, 1980; Graber, 1977). (See Chapter I.) Women in some countries perform Kegel exercises as a part of their usual activities. Stress incontinence rarely occurs in Southern Africa, Malaysia, or Borneo where women routinely assume a squatting posture to rest, chat, eat, and micturate. In these areas more than 90% of the women have adequate pelvic floor function and do not have stress incontinence. In developing countries, the act of micturating frequently requires females to aim their urinary stream toward and void into a hole. Oriental women routinely teach their daughters at puberty to use their pelvic floor muscles to enhance sexual stimulation (Shepherd, 1983). These customary activities simulate Kegel exercises.

Van Skolkvik, a personal friend of Dr. Kegel, reported finding firm perinea among the females of a South African tribe. He attributed this finding to the tribe's midwives, who inserted their fingers in the vaginas of the women beginning several days after delivery and had the women

consciously contract their vaginal muscles. The women continued this procedure for several weeks or until they obtained the desired result (Kegel, 1948).

Several studies have shown the benefits of teaching Kegel exercises. In these studies, frequently a perineometer, a pneumatic apparatus specifically devised to exercise the birth canal muscles, has been used to teach Kegel exercises. This device gives the patient a visible account of each muscular contraction, a method called biofeedback. Kegel (1956) developed this apparatus for an instructional program for his patients.

Kegel (1956) used visual feedback of vaginal muscle activity to teach contraction of the pubococcygeus muscle in 455 women. He noted a 90% reduction in incontinent episodes. Burgio, Whitehead, and Engel (1985) used visual feedback in 18 elderly women and 1 elderly man (65-86 years) and noted an 81.7% improvement. Stoddart (1983) used visual feedback in 34 patients and noted a 70.6% improvement. Henderson and Taylor (1987) compared the use of visual feedback in groups of women aged 55 years and older and women younger than 55 years and noted 80% of the younger group and 67% of the older group eliminated stress incontinence.

A perineometer, however, does not have to be used to obtain the beneficial results of Kegel exercises. Kegel (1951) noted that as soon as slight contractions of the

muscle can be felt on voluntary effort, the individuals may be placed on the regular regimen of exercises without using the perineometer. Shepherd and Montgomery (1983) used visual feedback of vaginal muscle activity to teach pelvic floor contractions versus instruction without the use of visual feedback. They noted a 91% improvement or cure of incontinence in the visual feedback group and a 55% improvement or cure in the non-visual feedback group. Burgio, Robinson, and Engel (1986) used visual feedback versus verbal feedback from an examiner based on vaginal palpation. They noted a 92% improvement or cure in the visual feedback group and a 55% improvement or cure in the verbal feedback group.

Although many of the elderly have chronic illnesses in addition to stress incontinence, it is advantageous to implement a Kegel exercise program in the presence of other intercurrent health problems since these exercises have proven to be harmless (Smith-Jakovac, 1988). A patient with congestive heart failure, obesity, and severe stress incontinence for 4 months used Kegel exercises without visual feedback and noted a reduced number of incontinent episodes (Whitman & Kursh, 1987).

The above studies indicate the efficacy of Kegel exercises for various age groups, with or without concomitant use of a perineometer, and/or in the presence of chronic illnesses. The use of Kegel exercises proves to

be much more effective than other treatment modalities. The daily behavioral modification of using Kegel exercises not only maintains tone of the Kegel muscles, but this regimen is virtually expense-free compared to other methods.

Urinary Incontinence: A Problem For the Elderly

Urinary incontinence may have profound effects on the elderly. These effects range from physical to psychosocial implications. The physical implications of urinary incontinence include problems of wetness and odor. Wetness and odor may be remedied by using an incontinent device or pads, but then the individual must contend with the bulkiness of the devices which show under tight, slim-fitting clothing and with restricted movement and therefore many activities (Perston, 1981).

Psychological implications encompass the high degree of anxiety exhibited by the individuals. This anxiety continues to escalate due to the difficulty in discussing this problem with others and the embarrassment and loss of self-esteem associated with using the needed devices to prevent accidents. In addition, they constantly worry about the presence of odor and dampness. The individual has loss of control over urinary functions that once existed routinely. This loss may cause intense depression (Perston, 1981; Tideiksaar, 1984).

Since the majority of the individuals with urinary incontinence feel embarrassed and anxious, many refuse to participate in social outings or gatherings. The sociological implications of isolation increase, especially if inadequate or inconvenient toilet facilities exist. Individuals wonder whether their family and friends notice their problem with urinary incontinence. Another sociological implication involves the costs associated with urinary incontinence. The increased financial burden includes additional laundry costs, purchases of diapers or pads, and constant cleaning or replacement of furniture. As individuals become older and family members become caregivers, incontinence may arouse feelings of hostility in those who care for them. This hostility may arise from feelings of hopelessness of ever resolving or improving the condition in the incontinent individual. Thus, caregivers may institutionalize them (Perston, 1981; Tideiksaar, 1984).

Potential problems associated with incontinence vary, but nearly all lead to increased medical intervention. Individuals with urinary incontinence may develop urinary tract infections from constant wetness and/or frequent catheterization. Because of numerous episodes of urinary tract infections, the individual may be placed on antibiotics routinely and experience the concomitant risk of side effects plus additional medical costs. Also, constant dampness on the individual's skin may lead to macerated skin

and decubitus ulcers may become prevalent (Tideiksaar, 1984).

The problem of incontinence must be addressed! The price for silence may be costly. Incontinence has both physical as well as psychosocial implications. Health professionals have the opportunity to combat this demeaning problem and improve all the areas of an individual's life that it affects.

The Roy Adaptation Model of Nursing

Adaptation as defined means "a positive response to changes in the individual's internal or external environment that maintains 'integrity,' simply defined as 'the process used to cope with or adjust to changes in one's environment'" (Rambo, 1984). Sister Callista Roy developed this nursing model while in graduate school. With this model, she hoped to assist and support people who had difficulty coping with changes in their lives to achieve an adaptive state (Rambo, 1984).

The individual adapts to the internal and external stimuli coming not only from that individual but also from those with whom he or she may come in contact. Two coping mechanisms exist which enable the individual to adapt: (a) the regulator responds through neural-chemical-endocrine processes; (b) the cognator responds through complex

processes of perceptor and information processing, learning, judgment and emotion. Major factors influencing adaptation include culture, family, and growth and development. Each person or family has an adaptation level which constantly moves to adjust to the internal and/or external stimuli. If the adaptation level becomes unable to adjust to the stimuli, negative responses such as overeating or even death may be the result (Roy, 1984).

In describing the component parts of the model, Roy (1984) views:

A. Person--an adaptive system with a cognator and a regulator acting to maintain adaptation in the four adaptive modes; physiologic function, role function, interdependence and self-concept.

B. Goal of Nursing--to promote adaptation in each of the four adaptive modes, thus contributing to the person's health, quality of life, and dying with dignity.

C. Health--a state and a process of being and becoming an integrated, whole person.

D. Environment--all conditions, circumstances, and influences surrounding and affecting the development and behavior of persons or age groups.

E. Nursing Activities--assess behavior and factors that influence adaptation level and intervene by managing the focal, contextual, and residual stimuli (pp. 12-13).

The way, act, or behavior in which the individual responds has been classified into four different modes, as mentioned earlier. The <u>physiological mode</u> involves the structure of the body; the actions of the cells, muscles,

and hormones; and the function of all systems. The role-function mode involves the psychosocial integrity and the expectations of the individual who assumes a particular role and the expectations of society concerning the performance of the role. Interdependence mode involves one's need for social integrity and relating to other people. Self-concept mode, the mode considered by this study, involves meeting the psychological needs for integrity, mental functioning, and expressions of feelings.

Self Concept

As noted in Chapter I, Roy's theory of self-concept as defined by Buck (1984) embodies the "composite of beliefs and feelings that one holds about oneself at a given time, formed from internal perceptions and perceptions of others' reactions, and directing one's behavior" (p. 255). The two subdivisions of self-concept include physical self and personal self. Physical self encompasses how one feels about one's body, its various parts, one's control over its functions, and one's mental image of it. Physical self asks the question "What am I?" Personal self encompasses all the feelings and experiences in life that shape the kind of person one is. Personal self asks the question "Who am I?" (Rambo, 1984).

Development of Continence

In the development of continence, the physical self as well as the personal self develops on a continuum. Toilet training has been a matter of consideration and necessity for all cultures. In the United States, parents start toilet training their children at the average age of 11 months, with a range of less than 9 months to the second half of the child's second year. Toilet training requires an average of 7 months. Children whose training begins during the second year learn most quickly. During the second year, a child has some voluntary control of his sphincters, fairly good posture, and can indicate his needs. At this age the physical self has developed to the point where toilet training may be learned quickly. The personal self also develops during the period of toilet training because the child learns from his parents and others that wetting and soiling oneself is unacceptable, followed by frowning expressions, or to the extreme, severe punishment (McCandless & Trotter, 1977).

Developmentally, continence incorporates the task of toileting which includes:

1. Eliminating into the toilet on a regular basis when sitting on it.

2. Waiting to eliminate before being placed on the toilet.

3. Awareness of the need to eliminate before going into the bathroom.

4. Remaining dry (Whaley & Wong, 1983, p. 808).

Hopefully parents encourage these tasks in a positive relaxed attitude, but many times they do not. In this country's culture, parents believe that late toilet training represents faulty child adjustment and improper child-rearing practices. In fact, many parents feel pressured to report a child as dry and clean at an early age (McCandless & Trotter, 1977).

Effect of Incontinence on the Self-Concept of the Elderly

Incontinence in many of the elderly presents great distress and embarrassment (McCormick & Burgio, 1984). Continence, a function attained at a young age, has now been lost, thus contributing to the distress and embarrassment. After several series of incontinent episodes, the elderly view their physical self negatively. They feel that their body has become incapable of achieving continence and look upon their bodies with discouragement. They have lost bodily function; they have lost control. The incontinent elderly may see her or himself as reverting back to infancy when their incontinence requires them to wear diapers or pads. Feelings of hopelessness begin to emerge, not only in the elderly but also in their families. The elderly would prefer to be dry without having to anticipate threatening episodes of incontinence. The cultural norm of continence

creates feelings of guilt among the incontinent elderly. Incontinence negatively affects the personal self (Perston, 1981; Rambo, 1984). The same embarrassment and guilt instilled at a young age when wetting oneself reoccurs. Therefore, few adults admit that they experience incontinence (Katterman, 1985).

However, some elderly view incontinence as a normal consequence of aging. Hence, their self-concept may not be as greatly affected. Many women do not recognize wetting as a dysfunction, because their mothers and grandmothers had the same problem. These women have learned to adapt and their adaptation system has allowed incontinence to become a norm. When this belief exists, the motivation or desire to make a behavioral change through instruction or other methods diminishes (Katterman, 1985; McCormick & Burgio, 1984; Simons, 1985).

Instructional Strategies

Teaching strategies will greatly affect a number of variables. The effect of group and individual instruction upon learning will be discussed in the following section.

Comprehension

Simply defined, comprehension means understanding. A broader definition of comprehension, however, involves relating new experiences to the already known. The reader must note that learning encompasses much more than

comprehension. Learning involves changing or expanding on what has already been learned (Smith, 1975).

Before instruction occurs, the instructor must know the student's (subject's) general level of previous knowledge specific to the topic. Factors affecting comprehension include educational background and age. If the learners cannot relate new subject matter to their previous knowledge, they will not learn. This may create a great problem. Thus, instruction must incorporate prior knowledge to ensure increased comprehension as well as increased learning (Blackwell, 1981; Smith, 1975).

Compliance

Compliance has been defined as the extent to which a person's behavior coincides with medical or health advice. Patient compliance has been a problem area for many health professionals as well as health organizations (Gerber, 1986). Some conditions in which persons have been known to lack compliance to their prescriptions include diabetes, renal failure, hypertension, and chronic pain. These conditions have higher rates of noncompliance due to restrictive regimens which substantially differ from culturally accepted routines (Gerber, 1986).

Factors affecting compliance encompass diverse and confounding variables. Higher levels of education and higher social class have been shown to contribute to greater levels of compliance (Blackwell, 1981; Gerber, 1986). The

length of time a regimen must be followed correlates with decreased rates of compliance. Complex regimen instructions also lower compliance rates. Other factors affecting compliance include individual factors which consist of the person's perception and sense of control of his or her condition (Blackwell, 1981; Gerber, 1986).

Strategies to increase compliance include cuing, stimulus control techniques such as improving appearance and taste of foods, self-monitoring methods such as record keeping, and reinforcing interventions and reducing symptoms. Other treatment approaches include informational/educational interventions like telephone reminders and improving patient-provider relationships (Gerber, 1986).

Barriers affecting compliance in the elderly include physical barriers such as decreased vision and hearing, environmental barriers such as inadequate income and impersonal regimens, and psychological barriers such as cognitive impairment and depression. Some suggestions for enhancing compliance in older adults include (a) writing instructions; (b) using distinct colors for medications or instructions; and (c) keeping programs simple. Another suggestion includes linking a prescribed behavior to a daily habit; for example, after brushing your teeth, or after taking your prescribed medication (Amaral, 1986; Hirschfeld, 1976; Walz & Williams, 1981).

Group Instruction

For over a century group teaching has dominated all levels of instruction from elementary to graduate school. Group instruction has also been utilized extensively in health care. Services in health care that have used group instruction include pre-surgery, postpartum, and diabetes education. As noted by the above statement, group instruction tends to produce classes in which individuals have one or more homogenous characteristics (Heathers, 1969; Redman, 1984).

Group instruction usually involves teaching two or more participants using similar methods and pacing instruction for all members of the class. Group instruction stands on the fact that individuals do not live or learn in isolation from other people; they live and learn in social settings as a part of groups (Heathers, 1969; Kolesnik, 1970).

The advantages of group instruction have kept it the major teaching method in our school system. The primary reason for the use of group instruction has stemmed from an economic advantage. In group instruction, idea sharing enables the group as a whole to have the "same mind" in what has been taught. Classmates also encourage others in the class. Since standards have been set, the group as a whole has a goal to work toward. Standard setting creates uniformity. Efficiency, also, may be added; since everyone attends the same class, the teacher can be assured that all

receive the same information without repetitiveness (Alexander, Saylor, & Williams, 1971; Kolesnik, 1970; Redman, 1984).

The disadvantages of group instruction include ignoring differences among students. In group instruction, all members do not participate equally because of the combination of domineering and meek members. Difficulty in identifying students who do not understand the content before evaluating their performance may be a problem. Pertinent parts of information given during class time may be missed because of frequent distractions. Anxiety producing personal problems may hinder a person's ability to learn and may not be considered (Alexander, Saylor, & Williams, 1971; Heathers, 1969; Lindgren, 1972; Redman, 1984).

Individual Instruction

Historically, individual instruction or one-on-one instruction has taken the form of tutoring. It stands on the principle that "all people are different." No two human beings act or develop, become motivated, or perceive or think or learn exactly the same way. Another concept of individualized instruction has been based on the fact that all students will master all academic tasks if they have the right background and if they have enough time (Kolesnik, 1970; Lahey & Johnson, 1978).

Individual instruction exists daily in many nurse-patient interactions. This one-on-one interaction allows the patient to freely express personal problems that he or she may not have disclosed if others had been present. Caregivers use this method daily to help patients cope with health stressors (Redman, 1984).

Individual instruction allows extensive feedback from the individual; thus, the teacher will be aware of the student's understanding of the subject and give personal attention to any deficits. This instruction allows for self-pacing to process information with the belief that capacities and rates of achievement vary with each individual. In individual instruction, rewards are given to each student for doing a good job at his or her own level, rather than comparing him or her to others. Students move from one task to another only after they have mastered the lower-level task, thus removing the likelihood of failure (Lahey & Johnson, 1978; Lindgren, 1972; Pai, 1973).

The disadvantages of individual instruction stem from the fact that it may be very costly as far as time and money. Uniformity does not exist in the presence of individualized instruction. Having the benefit of a comrade does not exist (Lahey & Johnson, 1978; Lindgren, 1972).

Conclusion

In summary, as noted in the review, an abundance of recent material concerning the problems of urinary incontinence, along with solutions to the problem exists. There seems to have been an awakening of health professionals to the research problem. This move could be a giant step in combating the problem of urinary incontinence. Self-concept, another area discussed, may or may not be affected by urinary incontinence, as noted in the review. The effects of urinary incontinence on self-concept depend upon the individual. An individual may perceive urinary incontinence as an inevitable process with which one must live or he or she may see it as a devastating malfunction that must not be discussed.

Methods of instruction may greatly influence the amount of information retained. Comprehension and compliance increase or decrease according to the way information has been presented. The number of individuals to which the information may be presented can also influence the amount of information retained.

The combination of the above aspects, namely compliance, method of instruction, continence/incontinence, and self-concept will be analyzed in this study.

CHAPTER III

METHODOLOGY AND PROCEDURES

Chapter III describes the method of selecting the subjects, data collection procedures, the instruments, and data analysis. The appendixes include: information for instruction, "Self-Assessment of Continence" (past six months and past week), "Sherwood's Self-Concept Inventory," "Failure to Comply Questionnaire," "Demographic Questionnaire," "Consent Form," photograph of the styrofoam board and colorful push pins, "Kegel Exercise Teaching Plan," and "Record Keeping Sheet."

Subjects

Potential subjects were identified from the residents of Walter P. Taylor, Guy B. Love, Summit Towers, and Broadway Towers, public housing facilities in Knoxville, Tennessee. Thirty-seven women responded to the investigator's invitation to participate in the study and met the initial criteria: (1) ambulatory; (2) non-institutionalized; (3) independently able to perform activities of daily living; and (4) English speaking. Three of the women were under the age of 60 years. Subjects received a letter stating the information obtained for the study would be confidential and that they could stop participating anytime during the study without penalty (see

Appendix A). Twenty-one women completed the study. One woman of the 21 was excluded from the study because of being under the age of 60, thus leaving 20 for data analysis.

Design of the Study

This experimental correlational study examined how instructional strategies (individual instruction and group instruction) relate to compliance with Kegel exercises, restoration of continence, and self-concept in elderly females with stress incontinence. This study also analyzed if restoration of continence influences self-concept.

Instruments

Self-Assessment of Continence Questionnaires

The "Self-Assessment of Continence" questionnaire developed by K. Taylor and J. Henderson (1987) quantitatively assesses an individual's perception of the severity of their incontinence. The questionnaire uses indicators and behaviors associated with stress incontinence frequently cited in the literature. Higher scores on the questionnaire indicate the use of coping behaviors frequently associated with social isolation.

The reliability of the "Self-Assessment of Continence" has been established through a test/retest of women with stress incontinence who had not sought treatment for incontinence and who had not been treated for urinary stress

incontinence (Henderson & Taylor, 1987). The construct validity of the "Self-Assessment of Continence" has been supported by the theory of a nomological network (Henderson & Taylor, 1987). The developers of this tool predicted individuals who reported episodes of urinary incontinence during activities associated with increased intra-abdominal pressure to score 1 or higher on the "Self-Assessment of Continence," and individuals who did not report episodes of urinary incontinence during activities associated with increased intra-abdominal pressure to score 0 on the "Self-Assessment of Continence." On a 50-subject pretest, they found the individuals who reported mild stress incontinence scored low on the "Self-Assessment of Continence" (Henderson & Taylor, 1987).

The researcher used two types of "Self-Assessment of Continence" evaluations for this study. The subjects used the 6-month evaluation to report their incontinence for the 6 months prior to the study (see Appendix B). For weekly data collecting the researcher used the past week evaluation (see Appendix C).

The questionnaire used in this study consists of six sections for the 6 months preceding the study. An explanation for each section follows:

I: Frequency of incontinence

II: Identification of the activities resulting in simple urinary stress incontinence (SUSI)

III: An estimation of urine lost with each episode of incontinence

IV: Methods used for protection

V: Personal concerns related to SUSI

VI: Personal perceptions of the success of the treatment program (Taylor & Henderson, 1987)

The weekly evaluation for this study omitted Sections IV and V.

Each section has code numbers which represent the value of the response. The higher the point scored, the greater the incontinence problem. The scoring mechanism for each section follows:

I: past six months--code (01123) read as (0,1,1,2,3) indicating a response A = 0 points, B = 1 point, C = 1 point, D = 2 points, and E = 3 points. Past week--code (01234).

II: (10).

III: (1234).

IV: question 18--(0678);
question 19--(0 9 10 11).

V: questions 20-22--(012);
questions 23-25--(023).

VI: (0)--An unscored item, but used as an indication of the client's perception of the overall success of the treatment program.

For the 6-month evaluation a total score of 1-20 indicates mild SUSI; 21-40 indicates moderate SUSI; and 41-60 indicates severe SUSI (see Appendix B) (Taylor & Henderson, 1987). For evaluation, the sections may be used separately or as a whole; the lower the score, the less problem with simple urinary stress incontinence. A lower weekly score indicates the client perceives an improvement in her condition.

Sherwood's Self-Concept Inventory

This scale, developed by J. Sherwood (1962), has self-ratings across several dimensions. The scale contains a measure of realistic or aspired self-ratings to replace ideal self-ratings. It also contains three "open" scales, which allow respondents to define their own dimensions for rating. The investigator chose not to use the "open" scale ratings. Thus, the modified self-concept inventory has 15 bipolar rating scores and 1 total overall self-rating, making the number of items 16.

Sherwood (1962) used this scale when studying 68 adults attending a two-week National Training Laboratory "T group" session. The scale has also been used with college students. As far as reliability, no data on internal consistency have been reported. Sherwood reported .82 test/retest reliability for 57 psychology students. As expected, T-group participants had lower reliability (.61). As far as validity, no evidence has been available for

convergency and discrimination, although several interesting predictions concerning self-concept change have been confirmed.

The "Self-Concept Inventory" has the advantage of requiring less than 15 minutes to complete and using easily understood descriptive adjectives. The pairs of adjectives form anchors (i.e., at the end points) of 11-point scales. The high esteem adjective has been listed first, followed by the low esteem adjective. The total esteem scores are the sum of each answer on a 0 to 10 scale, with a maximum score of 160 for 16 items (see Appendix D).

Failure to Comply Questionnaire

Subjects who did not perform at least 100 Kegel exercises daily indicated the reasons for failing to follow the regimen on the investigator-developed "Failure to Comply Questionnaire." The subjects' responses to this questionnaire document problems associated with compliance to the regimen (see Appendix E).

Demographic Questionnaire

A brief "Demographic Questionnaire" obtained information about the age, living arrangements, number of children, and urinary problems of the subjects. Subjects identified previous treatment for urine leakage, their knowledge of Kegel exercises, and if they had previously

discussed their incontinence with health care providers (see Appendix F).

Data Collection Procedures

The researcher met with the directors/managers of four public housing facilities to discuss the study and obtain their permission to obtain subjects at their respective facilities. After obtaining permission from the directors/managers, the researcher posted signs in two of the facilities and placed leaflets under the residents' doors at the other two facilities. The signs and leaflets both had the following message handwritten in bold print.

If you are a woman and you lose control of your urine or bladder when you cough, sneeze, or laugh, learn how to Control Your Bladder.

(Date) (Time) in the Community Room

H. Webb, Graduate Nursing Student

Subjects at Guy B. Love Towers and Summit Towers received group instruction. Subjects at Walter P. Taylor Housing and Broadway Towers received individual instruction. This separation prevented contamination between subjects receiving individual instruction and those receiving group instruction. For the group and individual subjects, the investigator distributed information sheets at the meeting

(see Appendix A). Potential subjects who wanted to participate signed consent forms (see Appendix G). They then filled out the "Self-Assessment of Continence" (for the past six months) (see Appendixes B and C), the "Sherwood's Self-Concept Inventory" (see Appendix D) and the "Demographic Questionnaire" (see Appendix F). Potential subjects who did not have a problem with stress incontinence as evidenced by their responses to Section I of the "Self-Assessment of Continence" were automatically eliminated.

The investigator provided verbal instruction for performing Kegel exercises and keeping their records. Those receiving individual instruction were each instructed in their homes/apartments. Those receiving group instruction were instructed in groups which met in the recreation rooms of the housing facilities. The investigator distributed the styrofoam boards and colorful push pins (see Appendix H) and "Kegel Exercise Teaching Plan" handouts (see Appendix I).

Basic instruction for all subjects included:

1. Each time you go to urinate try, stopping the flow of urine. The muscles used to stop the flow of urine are the Kegel muscles. These are the muscles you want to exercise (contract or squeeze). Make sure you sit up straight with knees spread apart to exercise the deeper Kegel muscles.

2. While on the toilet, although you may have finished emptying your bladder, exercise the Kegel muscle 10 times,

then relax (bulge out) for 10 seconds, then exercise the muscle 10 more times for a total of 20 times. Do this each time you go to urinate.

3. After you know where the muscle is located and how it feels to exercise it, perform the exercises while watching T.V., on the bus, talking on the phone, playing cards, and engaging in other activities throughout the day. Remember no one can see you exercising this muscle (Kirkpatrick & Davies, 1987; Newman & Smith-Jakovac, 1988). Questions concerning instruction and terminology were addressed during this meeting.

Record keeping directions included placing a push pin under the column "Number of Kegels" for <u>every 20 exercises</u> performed. To help remind the subjects to perform their exercises each time they went to the bathroom, they recorded their frequency of urination in a column titled "number of times urinated in toilet." The subjects recorded each time they experienced "leaking accidents" (a few drops to a tablespoon) or large accidents (more than a tablespoon) by inserting one push pin in the appropriate column. In the last column, "Reason for accident," they recorded the behavior that occurred during the time of the accident (coughing, sneezing, walking, or other activity).

After instructing the subjects, the investigator told them the designated day of the week she would meet with them to collect their data and weekly progress reports. The

investigator transferred the data from the styrofoam boards to the "Record Keeping Sheet" (see Appendix J) and recorded their weekly progress reports on "Self-Assessment of Continence" (one-week evaluation) forms (see Appendix C). Subjects who did not perform 100 Kegel exercises per day completed the "Failure to Comply Questionnaire" form (see Appendix E). Subjects collected data for 7 weeks.

Data Analysis

Demographic data has been analyzed with descriptive statistics, including measures of central tendency (mean, median and mode), measures of variability (standard deviation and range), and frequency distribution. The six-month "Self-Assessment of Continence" has been analyzed using the scoring procedure developed by the authors of the instrument, Henderson and Taylor (1987), using frequency distribution. The "Failure to Comply Questionnaire" has been analyzed by frequency distribution. Frequency distributions, T-tests, and measures of correlation (Pearson and Spearman) have been used to analyze each subsidiary question. This study has investigated the following items discussed in the subsidiary questions:

1. Number of Kegels Performed and Method of Instruction
2. Continence/Incontinence and Self-Concept
3. Number of Kegels Performed and Self-Concept.

4. Continence/Incontinence and Weekly Compliance.

For analyzing the data the researcher used the Epistat and SAS computer programs. An alpha level of .05 had been selected as the criterion of statistical significance for the study.

CHAPTER IV

RESULTS

Initial participation included 37 women from four resident facilities. Two women under the age of 60 participated. A total of 20 elderly women (54%) completed the program. One woman age 47 completed the program but had to be eliminated because she did not meet the age criteria. She participated and completed the program because she desperately wanted to do so. The following data describes the results of the 20 subjects that completed the program. Subjects 1-10 received group instruction and subjects 11-20 received individual instruction.

Demographic Information

The ages of the women ranged from 61 to 85 years of age, with a mean of 74.85 and a median of 74.5. The standard deviation for the group numbered 8.06. Only 2 out of the 20 (10%) lived with significant others. The significant others included husband, children, and female friends. Seven women (35%) had never given birth to children. The number of children of those who had given birth ranged from 2 to 11. The overall mean totalled 3.15 with a median of 2.5. The standard deviation numbered 3.26.

Five of the 20 subjects (25%) had experienced urinary problems. The problems included multiple urinary tract infections, kidney infections, hesitancy and urinary surgery. Four (20%) had been treated for urinary leakage previously, two had had surgical intervention and three had used Kegel exercises. Current medical conditions of the subjects included diabetes (10%) and stroke (5%); eight (40%) of the subjects used diuretics.

Only 3 of the 20 subjects (15%) had received information about Kegel exercises. They received this information from the hospital, doctor's office, and television. Six (30%) had discussed their incontinence with health care providers. Of these six, two responded that they had had a previous discussion of how to perform Kegel exercises. Other subjects' responses included (a) "We'll work with you later"; (b) "You leak because of your hysterectomy--everything's loose down there . . ."; and (c) "It goes along with aging." One subject did not give an answer (see Table 1).

Self-Assessment of Continence: Six-Month Evaluation

The group, after being asked about the frequency of their urine leakage, gave the following percentages: (a) less than once a week, 30%; (b) one time per week, 10%; (c) 2-3 times per week, 35%; and (d) daily, 25%. Activities in which urine leakage occurred received the following

Table 1

Demographic Variables

Subject No.	Age	No. of children	Tx for urine leakage	Knowledge of Kegels	Diabetic	Stroke	Diuretic
1	65	4	+[b]	+	-	+	-
2	63	3	-	-	-	-	-
3	84	11	-	-	-	-	-
4	73	0	-	-	-	-	-
5	75	7	+[a]	+	-	-	+
6	67	0	-	-	-	-	+
7	63	4	-	-	-	-	-
8	83	4	+[c]	-	-	-	-
9	85	0	-	-	-	-	-
10	85	0	-	-	-	-	-
11	78	0	-	-	-	-	+
12	73	2	-	-	+	-	-
13	74	2	-	-	-	-	+
14	72	4	-	-	-	-	+
15	85	4	-	-	-	-	-
16	61	0	-	-	-	-	+
17	77	0	-	-	-	-	-
18	84	9	-	-	-	-	+
19	79	2	-	-	+	-	-
20	71	7	+[a]	+	-	-	+

+ = Yes
- = No
Subjects 1-10 group; 11-20 individual
[a]Kegel exercises
[b]Kegel exercises and surgery
[c]surgery

percentages: (a) coughing, 60%; (b) sneezing, 60%; (c) laughing, 40%; (d) bearing down to have a bowel movement, 45%; (e) blowing your nose, 20%; (f) bending over, 30%; (g) lifting, 30%; (h) arising from reclining or sitting, 40%; (i) walking, 35%; (j) running, 5%; (k) stair climbing, 20%; (l) exercising, 20%. Other responses (30%) included a combination of items: (a) when water was running; (b) when vomiting; (c) when standing; (d) without warning; and (e) when drinking caffeine drinks. The percentages of the amount of urine lost tallies as follows: (a) a drop or two, 20%); (b) a teaspoon, 20%; (c) a tablespoon, 25%; and (d) more than a tablespoon, 30% (see Tables 2 and 3).

The ways in which the participants coped or dealt with unintentional urine loss scores as follows:

1. Change panties with each episode--(a) never, 15%; (b) sometimes, 50%; (c) always, 35%;

2. Wear a mini pad or panty liner or use facial tissues or toilet paper--(a) never, 25%; (b) during planned exercise, 0%; (c) when leaving home, 40%; (d) always, 35%;

3. Wear a sanitary napkin or use folded washcloth--(a) never, 60%; (b) during planned exercise, 5%; (c) when leaving home, 30%; and (d) always, 5%;

4. Wear an absorbent disposable panty or use a folded towel--(a) never, 80%; (b) during planned exercise, 0%; (c) when leaving home, 15%; and (d) always, 5%. (See Table 4).

Table 2

Self-Assessment of Continence
6-Month Evaluation
(N=20)

Subject No.	# of accidents	Aver. Amt. lost during accident	Total score	Category of stress incontin.
1	2-3/wk	t	50	S
2	< 1/wk	>T	22	M
3	< 1/wk	<t	25	M
4	< 1 wk	>T	29	M
5	2-3/wk	T	14	D
6	daily	>T	29	M
7	1/wk	<t	23	M
8	daily	>T	33	M
9	daily	T	34	M
10	1/wk	T	9	D
11	daily	T	26	M
12	2-3/wk	T	18	D
13	2-3/wk	T	16	D
14	2-3/wk	>T	15	D
15	2-3/wk	>T	42	S
16	<1/wk	<t	10	D
17	daily	<t	16	D
18	<1/wk	<t	7	D
19	2-3/wk	t	26	M
20	<1/wk	t	7	D

S = Severe 41-60
M = Moderate 21-40
D = Mild 1-20
t = teaspoon
T = tablespoon

Table 3

Frequency Distribution and
Rank Order of Activities During Which Accidents Occurred
(N=20)

	Past Six Months Evaluation	
1.	Coughing	60%
2.	Sneezing	60%
3.	Bearing down to have a bowel movement	45%
4.	Laughing	40%
5.	Arising from reclining or sitting	40%
6.	Walking	35%
7.	Lifting	30%
8.	Blowing your nose	20%
9.	Bending over	20%
10.	Exercising	20%
11.	Stair-climbing	20%
12.	Running	5%
13.	Others	5% each

Table 4

Frequency Distribution of Coping Mechanisms for Accidents
(N=20)

		Never	Sometimes	During Planned Exercise	When Leaving Home	Always
A.	Change panties with each episode	15%	50%	N/A	N/A	35%
B.	Wear mini pads or panty liner or use facial tissues or toilet paper	25%	N/A	0%	40%	35%
C.	Wear sanitary napkin or use a folded washcloth	60%	N/A	5%	30%	5%
D.	Wear an absorbent disposable panty or use a folded towel	80%	N/A	0%	15%	5%

The concerns of the participants about their incontinent episodes follows:

1. To wonder if others are aware of this condition--(a) never, 50%; (b) sometimes, 20%; (c) always, 30%;

2. Concern about odor or clothing dampness--(a) never, 40%; (b) sometimes, 30%; (c) always, 30%;

3. To be afraid of damaging the property of others--(a) never, 70%; (b) sometimes, 10%; (c) always, 20%;

4. To avoid situations where you are uncertain of availability of toilet facilities--(a) never, 30%; (b) sometimes, 30%; (c) always, 40%.

5. To have skin rashes or sores resulting from the dampness--(a) never, 95%; (b) sometimes, 5%; (c) always, 0%;

6. To alter your social activities in any way--(a) never, 80%; (b) sometimes, 15%; (c) always, 5% (see Table 5).

In summing up total scores on the 6-month evaluation, 10% had severe simple urinary stress incontinence (SUSI), 45% had moderate SUSI, and 45% had mild SUSI. The mean of the total scores averaged 22.4 with a range of 7 to 50. See Chapter III for more details about scoring (see Table 2, p. 59).

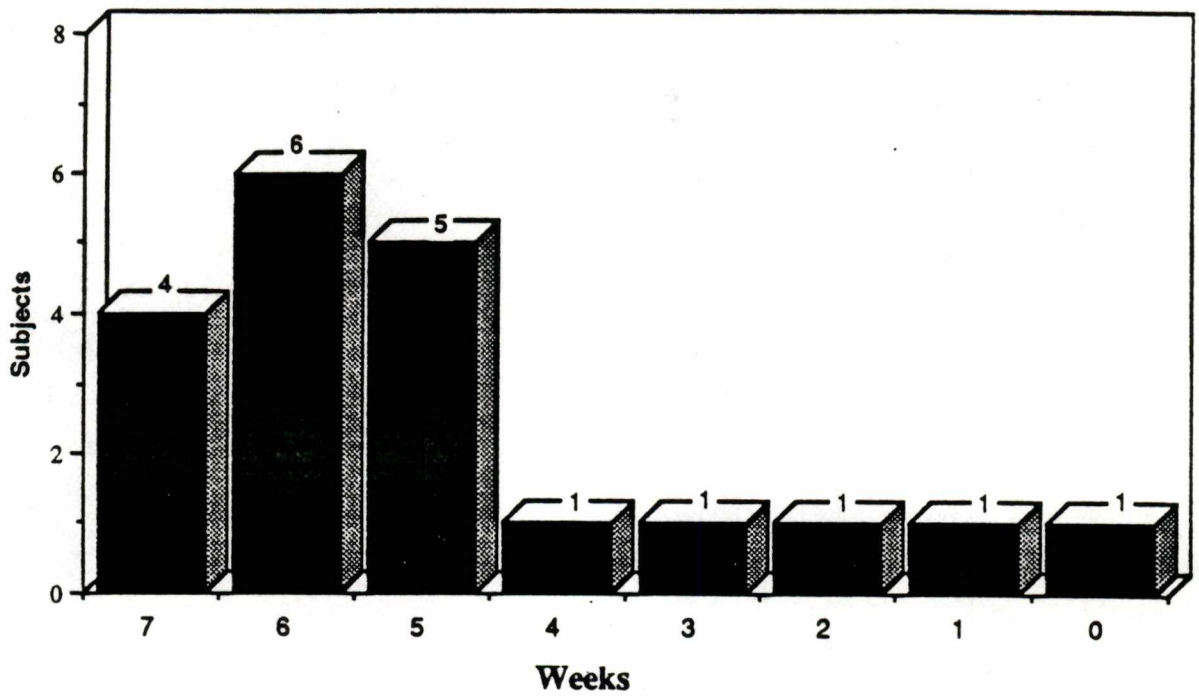
Compliance with Kegel Exercises

Only four (20%) had been totally compliant throughout the program (see Figure 4.1). Compliance increased as the

Table 5

Frequency Distribution of Concerns
About Incontinent Episodes
(N=20)

		Never	Sometimes	Always
A.	Wonder if others are aware of this condition	50%	20%	30%
B.	Concern about odor or clothing dampness	40%	30%	30%
C.	Afraid of damaging the property of others	70%	10%	20%
D.	Avoid situations where you are uncertain of the availability of toilet facilities	30%	30%	40%
E.	Have skin rashes or sores resulting from the dampness	95%	5%	0%
F.	Alter your social activities in any way	80%	15%	5%



*On the average 100 Kegel exercises

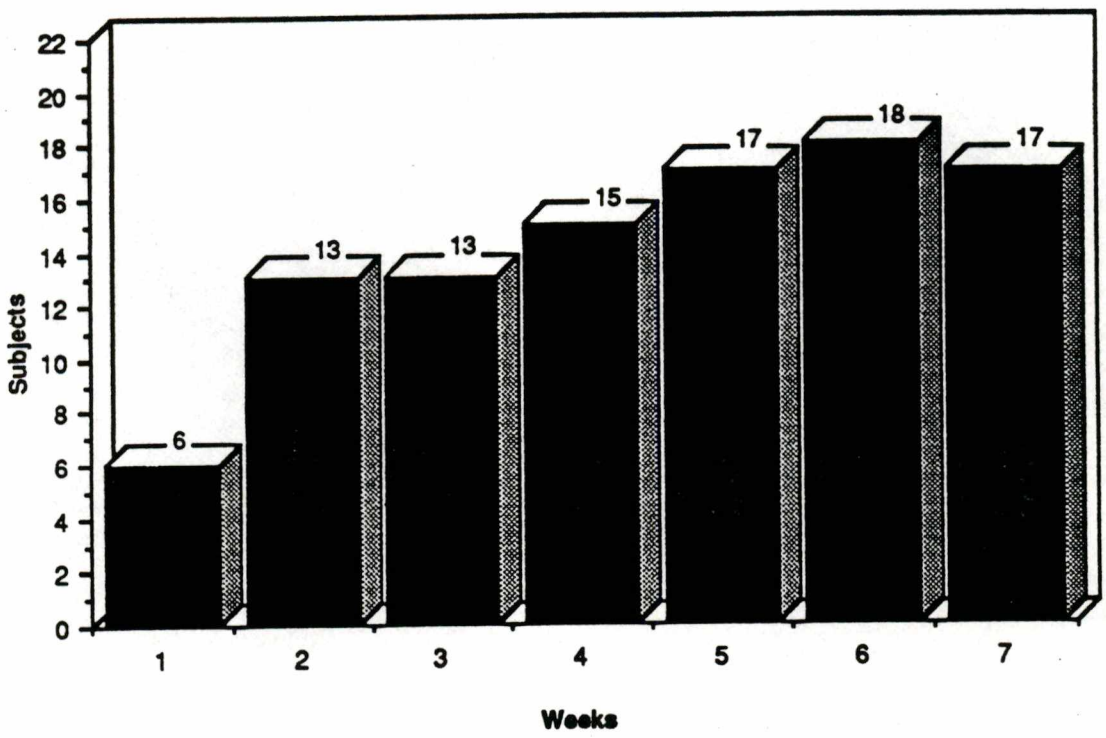
Figure 4.1 Total Weeks Compliant* (N=20)

study progressed. In the first week only six (30%) had been compliant; in the seventh week 17 (85%) of the participants had been compliant (see Figure 4.2). Overall average percentage of total weeks compliant for those receiving group instruction was 91%; for those receiving individual instruction, 94% (see Table 6).

Weekly, those who had not been compliant filled out a "Failure to Comply Questionnaire." The responses (41%) report as follows over a seven-week period: (a) I was tired, 2; (b) I did not know whether I was exercising the right muscle, 1; (c) I was too busy, 10; (d) I was frustrated because I had not seen results, 0; (e) I was discouraged because I had not seen results, 0; (f) I forgot, 10; (g) My pelvic floor muscles ached, 0; (h) I got nervous, 4; (i) I got dizzy, 0; (j) I did not like doing them, 0; (k) Other, 14 (sickness, 5; did not understand procedure, 4; death or illness in the family, 3; traveling, 1; did not feel like doing the exercises, 1) (see Table 7).

Degree of Continence With Kegel Exercises

Although a prior 6-month evaluation of continence provided information of the participants perception of their degree of incontinence, it may not have given an accurate baseline. Table 8 gives the first week after training baseline of the number of accidents experienced by the subjects to compare to seven weeks after instruction. Seven



*On the average 100 Kegel exercises daily

Figure 4.2 Weekly Compliance* by Subjects (N=20)

Table 6

Weekly Percentage of Compliance
With Kegel Exercises

Subject Number	Weeks 1	2	3	4	5	6	7	Avg. % of total weeks compliant
1	80	100	100	100	100	100	100	97
2	100	100	100	100	100	100	100	100
3	100	63	100	100	100	100	100	95
4	57	100	54	57	100	100	66	76
5	100	100	100	100	100	100	100	100
6	100	89	100	100	100	100	100	98
7	80	100	100	100	100	100	100	97
8	100	94	97	100	100	100	100	99
9	85	69	69	69	71	100	100	80
10	69	71	54	77	83	60	46	66
11	51	83	100	100	97	100	100	90
12	100	100	100	100	100	100	100	100
13	69	100	100	86	100	100	100	94
14	43	49	54	74	100	80	69	67
15	100	100	100	100	100	100	100	100
16	80	100	94	100	100	100	100	96
17	80	100	97	100	100	100	100	97
18	60	100	100	100	100	100	100	94
19	100	100	100	100	100	100	100	100
20	77	100	100	100	100	100	100	97

Table 7

Reasons for Noncompliance

Responses	Weeks 1	2	3	4	5	6	7	Total
1 Tired	1				1			2
2 Unaware if exercising right muscle	1							1
3 Busy		1	1	3	1	1	3	10
4 Frustrated								0
5 Discouraged								0
6 Forgot	6	2	1			1		10
7 Muscles ached								0
8 Nervous	1		1	1	1			4
9 Dizzy								0
10 Didn't like doing exercises								0
11 Other	5	4	4	1				14
						Total:		41

Table 8

Results of Instruction on Frequency of Incontinence (N=20)

Subject Number	Number of Accidents: 1st week after instruction	7th week after instruction	% of improvement
1	2	0	100%
2	0	0	ϕ
3	1	0	100%
4	0	0	ϕ
5	40	6	85%
6	9	0	100%
7	1	0	100%
8	13	0	100%
9	1	1	ϕ
10	4	0	100%
11	1	0	100%
12	0	0	ϕ
13	12	1	92%
14	1	0	100%
15	3	0	100%
16	3	1	67%
17	11	3	73%
18	6	1	83%
19	13	3	77%
20	12	1	92%

ϕ = no difference, but a change may have occurred

weeks after the instruction 12 subjects out of the 20 were continent as illustrated by the 0.

Difference in Self-Concept

In scoring, this researcher subtracted the total pre-test score from the total post-test score of each subject. Each subject's pre-test differed from their post-test. The differences ranged from -10 to +30. Self-concept increased for 16 subjects. Self-concept decreased for 3 subjects. The totalled increases and decreases of difference in self-concept scores were +211 and -14 respectively.

Analysis of Subject Factors

The purpose of this study was to determine the effect of group versus individual instruction, and relationships between the frequency of performing Kegel exercises, restoration of continence, and changes in self-concept. The data was subjected to T-test and measures of correlations to determine relationships (see Tables 9 and 10).

Number of Kegels and Method of Instruction

The first subsidiary question asked if a significant difference existed between elderly persons receiving individual teaching and those receiving group teaching with respect to the total number of Kegel exercises performed. The reader must note the instruction took place on the day of the first meeting. The mean number of Kegel exercises

Table 9

Means, Standard Deviations, t Statistics, Degrees of Freedom and Probabilities of Client Variables (N=20)

	Variable	Subvariables	N	Means	SD	t	df	PR>|t|
1.	No. of Kegel exercises	Group[a]	10	7642.00	3611,038			
		Individual[b]	10	7454.00	2710.015	0.13	18.0	0.8967
2.	Difference in Self-Concept	Continent[c]	12	10.75	10.575			
		Incontinent[d]	8	8.50	12.035	0.44	18.0	0.6641
3.	Weekly Compliance	Continent[e]	12	4.75	2.340			
		Incontinent[f]	8	5.25	1.488	-0.53	18.0	0.5999

Ranges: [a]Minimum = 3340 Maximum = 13520
[b]Minimum = 3580 Maximum = 11220
[c]Minimum = -2 Maximum = 30
[d]Minimum = -10 Maximum = 23
[e]Minimum = 0 Maximum = 7
[f]Minimum = 2 Maximum = 7

Table 10

Means, Standard Deviation, and Ranges
(N=20)

Variable	N	Mean	SD	Ranges	
				Minimum value	Maximum value
1. Self-concept (Post Test)	20	136.80	13.489	109	156
No. of Kegels	20	7548.00	3108.822	3340	13520
2. Compliance	20	4.95	2.012	0	7
Continent/[x]					
Incontinent[x]	20				

[x]Discrete variable

for group instruction was 7642.00 for the seven week period, compared to a mean of 7454.00 for individual instruction. Group instruction subjects reported a minimum of 3,340.00 and a maximum of 13,520 Kegel exercises performed. Individually instructed subjects reported a minimum of 3,590 and a maximum of 11,220 Kegel exercises performed. The means were not significantly different (t = 0.13; P > $|t|$ 0.8967).

Continent/Incontinent and Self-Concept

The second question asked if a significant difference existed between continent and incontinent subjects with respect to change in self-concept score. The difference between the pre- and post-self-concept score was used. The mean of the continent subjects was 10.75 and for the incontinent subjects 8.50. The continent subjects (12) had a minimum score of -2.0 and a maximum of 30.0. The incontinent subjects (8) had a minimum score of -10.0 and a maximum of 23.0. The means were not significant (t = 0.44; P >$|t|$ 0.6641) (see Table 9, p. 71).

Number of Kegels and Self-Concept

The third question asked if a significant difference existed between post-test scores of self-concept and frequency of Kegel exercises. The mean for the post-self-concept was 136.80 and for the total number of Kegel exercises, 7,548.00. The post-self-concept score had a

minimum of 109.00 and a maximum of 156.00. The total number of Kegels had a minimum score of 3,340.00 and a maximum of 13,520.00. The correlation coefficient, although slightly positive, was not significant (see Table 10, p. 72).

Continent/Incontinent and Weekly Compliance

The fourth question asked if a significant difference existed between those who attain continence and those who do not with respect to overall compliance scores. The mean for weekly compliance for the continent individuals was 4.75, and for the incontinent individuals, 5.25. The weekly compliance score of the continent individuals had a minimum of 0 and a maximum of 7. The weekly compliance score of the incontinent individuals had a minimum of 2 and a maximum of 7. The means were not significant ($t = -0.53$; $P > |t|$ 0.5999) (see Table 9, p. 71).

When analyzing question four using Spearman's correlation, the mean for compliance was 4.95, and for continent/incontinent, was a discrete variable. The weekly compliance score had an assigned minimum of 0 and a maximum of 7. Those continent had an assigned score of 1 and those incontinent had an assigned score of 0. The correlation coefficient, although slightly negative, was not significant (see Table 10, p. 72).

CHAPTER V

DISCUSSION

This study investigated several areas, most of which had not been previously investigated, with regard to the elderly and the issue of incontinence. Recently the interest in incontinence has increased. This has been evidenced by an increased attention to incontinence in the literature and national conferences held on the problem of incontinence.

As stated by Help for Incontinent People, a non-profit organization, "one in every 25 North Americans cannot control his or her bladder in some way, with 15 to 20% of this group over the age of 65 (including half of all nursing-home residents)" (Wood, 1988, p. 30). There may be a high probability that many others have incontinence, but because it happens to be somewhat of a closet issue they do not freely relay this information to others. The above statistics are unfortunate because 85 to 90% of all cases of urinary incontinence prove to be treatable (Wood, 1988).

Implications of the Study

This researcher examined several factors using Kegel exercises in elderly females with stress incontinence. Those factors included types of instruction of Kegel exercises, degree of compliance with Kegel exercises, degree

of continence with compliance with Kegel exercises, change in self-concept with achievement of continence, and influence of self-concept on compliance with Kegel exercises. This section discusses the actual results and the expectations of the researcher.

Even though advantages and disadvantages to group instruction and individual instruction exist (discussed in Chapter II), this researcher initially believed individual instruction would be the better way to obtain adherence to the regimen because of the time invested with each individual during the instruction phase. Surprisingly, the two scores revealed only a marginal mean difference of 188 Kegel exercises in favor of group instruction. The small total sample size probably affected these results, and the resulting absence of significant differences between the two teaching methods. To the knowledge of this researcher, no previous studies examined the variables of group and individual instruction of Kegel exercises.

As stated in Chapter IV, this study found an overall compliance rate of 71% for the seven weeks (99 times out of a possible 140) for all subjects participating. Four women (20%) performed 100 or more Kegel exercises per day. Henderson and Taylor (1987) noted that eight out of nine women in their older group reported excellent compliance, whereas their younger group only reported fair compliance. Henderson (1983), when teaching Kegel exercises to a group

of pregnant women, found that none of the women practiced as instructed. The women viewed counting and record keeping as too difficult (Henderson, 1983). Several potential subjects of this study refused to participate because they did not want to keep their records. Ironically, these non-participants stayed to learn how to perform the Kegel exercises before leaving the session.

With regard to compliance and continence, in Henderson and Taylor's study (1987), although seven of the nine older women reported being dry at least one week in the study, only six of the nine reported being dry at the end of the eight-week study even though they maintained excellent compliance. Sixteen of the twenty subjects reported being dry at least one week during the course of this study; and at the end of the seventh week, twelve reported being dry. (Frequency distribution of total weeks compliant for the 20 appears in Chapter IV.) From the reports of their frequency of incontinence after instruction compared to prior to instruction, one can readily observe that all subjects improved after instruction. In addition to the Kegel exercises, factors responsible for the improvement in incontinence may also be related (see Chapter IV).

In Henderson and Taylor's study (1987), their older group did not report as high a percentage of being dry as their younger group, even though the older group reported greater compliance. Henderson attributed this irony to (a)

the younger group entering the study with stronger pubococcygeal strength and (b) the older group having a greater motivation to achieve continence because of concerns for detection of their problem. This researcher also believes that individuals in this study who had fewer problems with incontinence did not have as much motivation to comply with the Kegel exercise regimen as did subjects who had greater problems with incontinence. Nevertheless, there were no significant findings in this study regarding compliance and continence.

Overall changes in self-concept ranged from -10 to 30. Those individuals who achieved continence had only a 2.25 greater difference in the change in self-concept than those who did not achieve continence. Simons (1985) in her study also revealed no statistical differences between the self-esteem scores in her continent group and her incontinent group.

Seven weeks probably is an insufficient period of time to influence detectable and/or enduring changes in an individual's self-concept. In reference to self-concept's influence on compliance with Kegel exercises, the probability level using Pearson's correlation, although nonsignificant, was slightly positive. Perhaps in using a larger population size more information can be obtained. No other research has been done concerning self-concept and

compliance with Kegel exercises to the knowledge of this researcher.

The conceptual framework centered around the self-concept mode of Roy's Adaptation model. Nevertheless, the physiological mode readily functions as a vital part of this study. Kegel exercises, an intervention, serve as a method for reducing the incidence of stress incontinence in elderly females.

Limitations of the Study

Two methods recruited subjects for the study at the four facilities. The reason the researcher used two different methods stems from the fact that the first method of posting on the bulletin boards in the first two facilities had been relatively unsuccessful. To alleviate this problem, the researcher recommends the second method of distributing leaflets under the doors of potential subjects, which generated more potential subjects for this study. Even though the second method recruited more potential subjects, the researcher also recommends using more facilities. Hopefully, the above recommendations would eliminate a major limitation of this study, the small population size. As a result, this study only represents the participating subjects and not the population as a whole.

Although all the subjects spoke English, many of the potential subjects could not read. This problem prevented many of the subjects from completing the program. Although the researcher initially assisted many of the subjects, data recording posed a great problem to accurate data collection. Although the researcher believed that the styrofoam board and colorful push pins would facilitate an easier interpretation of data needed, illiterate subjects still had to deal with the words labelling each column on the styrofoam board.

A third problem concerned the fact that a shorter baseline evaluation may have been much more beneficial than the 6-month evaluation to accurately estimate the number of leaking accidents. Subjects may have been unable to recall the past 6 months accurately. A shorter evaluation period may have more clearly indicated the relationship before and after Kegel exercise instruction.

A fourth problem involved the inability of the "Failure to Comply Questionnaire" to accommodate the majority of the responses. The category entitled "Other" received 14 responses (35%). Adding two other responses, (a) "I was sick/ill, and (b) "I had death/illness in the family" may have eliminated this problem.

To make this study as noninvasive and economical as possible, the researcher did not use a perineometer nor did she instruct the participants to use their fingers to

palpate for vaginal contractions. Since these interventions were not used for this study, the strength of Kegel muscle contraction may not have been significant. Lack of these interventions may have also interfered with the ability of the subjects to locate the Kegel muscle. In addition, the subjects did not have diagnostic tests to definitely classify their incontinence.

A sixth problem concerns the fact that all of the subjects participated as volunteers. The fact that they wanted to take part in the study may show that their self-concept differed from those who chose not to participate. Subjects who participated readily identified other potential subjects who needed to come, but who would not. This study did not use a control group of those who did not participate in Kegel exercise instruction to determine baseline differences in self-concept. Once again this study describes only the participants and cannot be generalized.

A seventh problem may have been that the subjects experienced difficulty quantifying the amount of urine lost. For additional research, if using the Self-Assessment tool, this researcher recommends exhibiting a tablespoon and a teaspoon, so that subjects would know the difference. Possibly, some subjects confused a tablespoon with a teaspoon, as ordinarily a teaspoon is an item of silverware placed on the table and used for eating.

Nursing Implications

Actions

The need to educate the public regarding treatment modalities for urinary incontinence can easily rest in the hands of capable professional nurses as a part of their daily teaching regimen to in-patients as well as out-patients. If each nurse familiarizes herself or himself with the literature concerning urinary incontinence and ways to solve the problem, urinary incontinence could cease to be a problem. Furthermore, the shame that once plagued many will no longer bind and isolate.

Although this study dealt with elderly women, when this researcher began to gather information, women in all age groups inquired about how to perform Kegel exercises. Many informed this researcher that they thought all women experienced leaking accidents. They believed leaking accidents to be a part of life and they had learned to live with them. Educating the public will de-mystify these beliefs and provide help to solve the problem of incontinence.

Recently, Continence Clinics have greatly increased in numbers; the first one opened in the United States in 1981. These clinics assess, diagnose and treat problems causing incontinence. Treatments may range from exercise, bladder training, and medication to surgery. Most times, Master's prepared nurses knowledgeable about incontinence work manned

these with urologists (Katterman, 1985; Mandelstam, 1983; Whitman & Kursh, 1987). If more nurses become active in Continence Clinics and their establishment, incontinence will surely be curbed.

Clinical nurse specialists (CNSs) and nurse practitioners (NPs) should be knowledgeable in both nursing and medical treatments of urinary incontinence. When performing community health conferences for the elderly, topics involving urinary incontinence must also be included. CNSs and NPs must educate doctors, staff, other nurses, and caregivers, in addition to the patients on the problem of incontinence and ways to solve the problem (Whitman & Kursh, 1987).

Research

More studies involving incontinence, the elderly, and self-concept need to be done to improve the present-day nursing interventions for the elderly in general and those with incontinence in particular. Studies that have been done must be replicated with larger subject populations to obtain beneficial statistical information. Elderly who live in institutions have a 50% prevalence of incontinence. More research on the institutionalized elderly with incontinence must be done. Also, nursing professionals must attend continence conferences, which generate ideas for further research in the area of urinary incontinence.

Since incontinence has also been recognized as a problem in younger age groups (Graber, 1977), studies involving these groups must also be done. Many of the elderly women in this study wished they had known about Kegel exercises in their "younger days" and perhaps their problems may not have progressed. As stated earlier, younger women seemed curious enough about Kegel exercises to want to participate in this study. Studies involving Kegel exercises and younger women would both contribute to our understanding of incontinence and benefit the individuals involved.

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BIBLIOGRAPHY

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APPENDIXES

APPENDIX A

INFORMATION FOR GROUP INSTRUCTION

Dear Potential Female Participant:

If you have times when you are incontinent, that is, you have urine coming away unexpectedly and without your being able to stop it, and you get wet, you are invited to participate in a research study involving women with urinary incontinence. Your participation will involve group instruction on Kegel exercises (strengthening exercises of the muscles around where your urine comes out), and keeping a record of the number of Kegel exercises you perform for 7 weeks. The instruction will require approximately 35-40 minutes; record keeping will require only a few minutes each day.

You will also be requested to complete some general questions and describe the extent of your incontinence. The Kegel exercises can be combined with other activities; however, if performed as a separate activity, they will not require more than 20 minutes each day.

There are no known risks related to your participation doing Kegel exercises; however, you personally may greatly benefit from performing these exercises by regaining control of the passage of urine. Your records of the number of Kegel exercises you perform and your responses to the questionnaires will be confidential. All data will be stored in a locked cabinet in the researcher's home. All data will be summarized for any presentations or publications that arise from the research.

Participation in this study is strictly voluntary. You have the right to withdraw at any time, without any penalties.

If you have any questions about the study or about your participation, please call me. You can reach me at 546-8718.

Your cooperation is appreciated,

Howarlene S. Webb
Graduate Nursing Student
College of Nursing
University of Tennessee, Knoxville

Note: If you are interested in participating, please plan to meet with me and other interested residents on _____, 1988 at _____ for further information.

APPENDIX B

Client #_____

SELF-ASSESSMENT OF CONTINENCE: SIX-MONTH EVALUATION

Kathleen H. Taylor, R.N., C., M.S.
Jane S. Henderson, R.N., M.N.

I.

1. Approximately how often have you unintentionally lost urine (had urine come away unexpectedly and without your being able to stop it and you get wet) in the <u>past six months</u>? (01123)

   A. never
   B. less than once a week
   C. one time per week
   D. 2-3 times per week
   E. daily

<u>If you never unintentionally lost urine in the past six months, there is no need to continue</u>.

II. In the <u>past six months</u> have you unintentionally lost urine during any of the following activities? (10)

YES	NO		
A	B	2.	coughing
A	B	3.	sneezing
A	B	4.	laughing
A	B	5.	bearing down to have a bowel movement
A	B	6.	blowing your nose
A	B	7.	bending over
A	B	8.	lifting
A	B	9.	arising from reclining or sitting
A	B	10.	walking
A	B	11.	running
A	B	12.	stair-climbing
A	B	13.	exercising

A B 14. at any time not previously listed

If you marked "A" on item 14, please state specifically what caused this unintentional loss of urine.

III.

15. Indicate how much urine is usually lost unintentionally during each episode. (1234)

A. a drop or two
B. a teaspoon
C. a tablespoon
D. more than a tablespoon

IV. In order to deal with this unintentional urine loss, do you:

16. change panties with each episode: (012)

A. never
B. sometimes
C. always

17. wear a mini pad or panty liner or use facial tissues or toilet paper: (0345)

A. never
B. during planned exercise
C. when leaving home
D. always

18. wear a sanitary napkin or use a folded washcloth: (0678)

A. never
B. during planned exercise
C. when leaving home
D. always

19. wear an absorbent disposable panty or use a folded towel: (091011)

A. never
B. during planned exercise
C. when leaving home
D. always

If you use other methods of dealing with this problem, please list them specifically.

APPENDIX B (continued)

V. Does unintentional loss of urine cause you:

NEVER	SOMETIMES	ALWAYS		
A	B	C	20.	to wonder if others are aware of this condition? (012)
A	B	C	21.	concern about odor or clothing dampness? (012)
A	B	C	22.	to be afraid of damaging the property of others? (012)
A	B	C	23.	to avoid situations where you are uncertain of availability of toilet facilities? (023)
A	B	C	24.	to have skin rashes or sores resulting from the dampness? (023)
A	B	C	25.	to alter your social activities in any way? (023)

If you answered either "B" or "C" on question 25, please state how you alter your social activities.

VI. Please indicate below if, during the past week, the unintentional loss of urine has: (0)

A. improved
B. become more frequent
C. stayed the same

If a change has been noted, what do you think has caused this?

Used with permission. Copyright (c) 1985, Kathleen H. Taylor and Jane S. Henderson. For information write Jane S. Henderson, 1505 Derby Hills Ct., Derby, KS 67037, USA., or Kathleen H. Taylor, University of Arkansas for Medical Sciences, College of Nursing, Slot 529, 4301 W. Markham, Little Rock. AR 72205-7129, USA.

APPENDIX C

Client #_____

SELF-ASSESSMENT OF CONTINENCE: ONE-WEEK EVALUATION

Kathleen H. Taylor, R.N., C., M.S.
Jane S. Henderson, R.N., M.N.

I.

1. Approximately how often have you unintentionally lost urine (had urine come away unexpectedly and without your being able to stop it and you get wet) in the <u>past week</u>? (01234)

   A. never
   B. one time per week
   C. 2-3 times per week
   D. 4 or more times per week
   E. daily

<u>If you never unintentionally lost urine in the past week, there is no need to continue</u>.

II. In the <u>past week</u> have you unintentionally lost urine during any of the following activities? (10)

YES	NO		
A	B	2.	coughing
A	B	3.	sneezing
A	B	4.	laughing
A	B	5.	bearing down to have a bowel movement
A	B	6.	blowing your nose
A	B	7.	bending over
A	B	8.	lifting
A	B	9.	arising from reclining or sitting
A	B	10.	walking
A	B	11.	running
A	B	12.	stair-climbing
A	B	13.	exercising

A B 14. at any time not previously listed

If you marked "A" on item 14, please state specifically what caused this unintentional loss of urine.

III.

15. Indicate how much urine is usually lost unintentionally during each episode. (1234)

A. a drop or two
B. a teaspoon
C. a tablespoon
D. more than a tablespoon

IV. Please indicate below if, during the past week, the unintentional loss of urine has: (0)

A. improved
B. become more frequent
C. stayed the same

If a change has been noted, what do you think has caused this?

Used with permission. Copyright (c) 1985, Kathleen H. Taylor and Jane S. Henderson. For information write Jane S. Henderson, 1505 Derby Hills Ct., Derby, KS 67037, USA., or Kathleen H. Taylor, University of Arkansas for Medical Sciences, College of Nursing, Slot 529, 4301 W. Markham, Little Rock. AR 72205-7129, USA.

APPENDIX D

SHERWOOD'S SELF-CONCEPT INVENTORY

On this scale you are to rate how high or low you judge yourself to be on the following characteristics. Please place an "x" in the blank corresponding to your perception of degree of characteristics.

1.	Self-confident	:	___	:	___	:	___	:	___	:	___	: Lack self confidence
2.	Tolerant of others	:	___	:	___	:	___	:	___	:	___	: Critical of others
3.	Able to do most things well	:	___	:	___	:	___	:	___	:	___	: Unable to do most things well
4.	Honest	:	___	:	___	:	___	:	___	:	___	: Dishonest
5.	Enthusiastic	:	___	:	___	:	___	:	___	:	___	: Unenthusiastic
6.	Likable	:	___	:	___	:	___	:	___	:	___	: Not Likable
7.	Cooperative	:	___	:	___	:	___	:	___	:	___	: Competitive
8.	Leader	:	___	:	___	:	___	:	___	:	___	: Follower
9.	Moral	:	___	:	___	:	___	:	___	:	___	: Immoral
10.	Satisfied	:	___	:	___	:	___	:	___	:	___	: Frustrated
11.	Intelligent	:	___	:	___	:	___	:	___	:	___	: Unintelligent

12. Friendly :___:___:___:___:___:___:___:___:___:___:___: Unfriendly

13. Calm :___:___:___:___:___:___:___:___:___:___:___: Anxious

14. Useful :___:___:___:___:___:___:___:___:___:___:___: Useless

15. Know myself well :___:___:___:___:___:___:___:___:___:___:___: Don't understand myself at all

16. Finally, on this scale you are to rate your overall level of self-opinion or self esteem, that is, how high or low you presently judge your <u>total</u> picture of yourself to be.

    High :___:___:___:___:___:___:___:___:___:___:___: Low

Note. From Measures of Social Psychological Attitudes (pp. 124-125) by John P. Robinson and Phillip R. Shaver, 1985, Ann Arbor, MI: Institute for Social Research, The University of Michigan.

APPENDIX E

Failure to Comply Questionnaire

Identification # _____

Directions: Circle the appropriate number

Question:

What is your major reason for not doing at least 100 Kegel exercises per day?

1. I was tired
2. I did not know whether I was exercising the right muscle.
3. I was too busy.
4. I was frustrated because I had not seen results.
5. I was discouraged because I had not seen results.
6. I forgot.
7. My pelvic floor muscles ached.
8. I got nervous.
9. I got dizzy.
10. I did not like doing them.
11. Other (specify)

APPENDIX F

DEMOGRAPHIC QUESTIONNAIRE Code # _____

DIRECTIONS: Please check the appropriate answer or fill in the blanks as indicated.

1. Age _____

2. Do you live alone? _____ Yes _____ No
If you do not live alone, with whom do you live?

_____ Husband _____ Female friend
_____ Children and/or other relatives _____ Male friend

3. How many children have you given birth to? _____

4. Urinary problems:
_____ Multiple urinary tract infections
_____ Kidney infections
_____ Urinary surgery
_____ Other urinary problems (describe) _____
_____

5. Have you been treated for urine leakage previously?
_____ Yes _____ No
If you have been treated for urine leakage before, what types of treatment have you had?
_____ Medications _____ Exercise _____ Surgery
_____ Other (please describe)_____

6. Do you know about Kegel Exercises?

_____Yes ____ No
If yes, where did you receive information about them?

_____ Hospital _____ Friends _____ Family _____ Other

7. Have you discussed your incontinence with a health care provider?
_____ Yes _____ No
If yes, with whom?

_____ Nurse _____ Other (specify)
_____ Doctor

What did the nurse or doctor do or say?_____
_____

APPENDIX G

CONSENT FORM

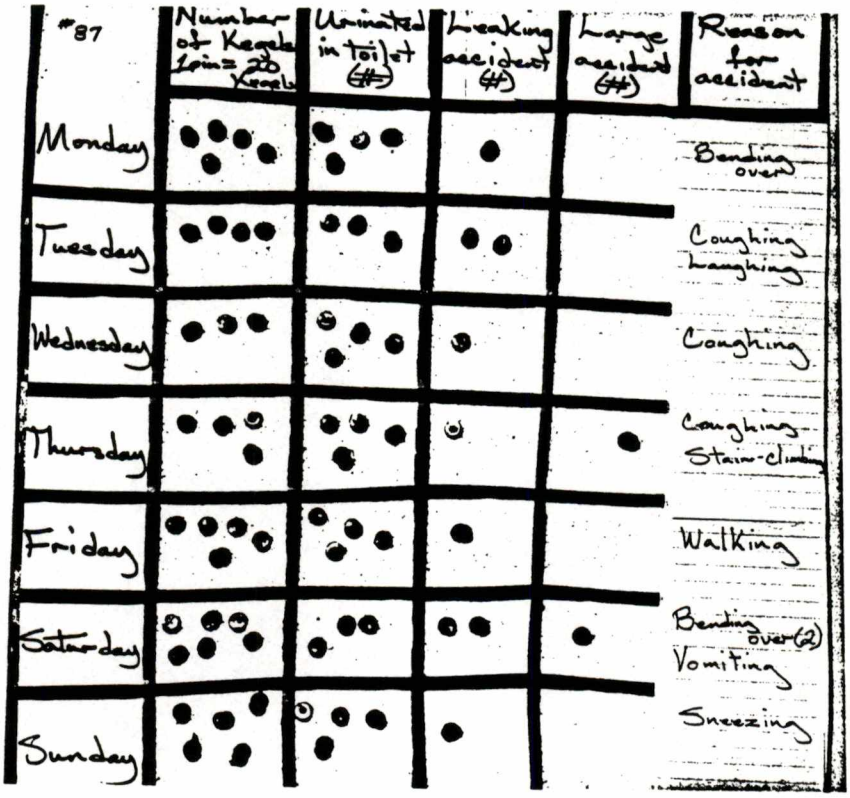
I consent to participate in Howarlene Webb's study of Kegel's exercises to strengthen the muscles where my urine comes out.

I understand that my participation in this study is strictly voluntary and that I have the right to withdraw at any time without any penalties.

Date: _____ Signature: _____

APPENDIX H

Styrofoam Board and Push Pins



APPENDIX I

Kegel Exercise Teaching Plan

What the Kegel muscle is:

* Major muscle of support for the pelvic floor
* Attaches at the symphysis pubis and the coccyx
* Surrounds the urethra, vagina, and rectum
* Is experienced as vaginal contractions during climax
* Helps prevent uterine, bladder, and rectal prolapse and stress incontinence

Importance of the Kegel Muscle

* Stretches and sometimes tears slightly during the delivery process because it is above the level of the episiotomy
* Like stomach muscles, if not exercised, it will not regain tone, possibly resulting in structural prolapse and stress incontinence
* Loss of tone decreases sexual enjoyment by decreasing the strength of contractions felt in the vaginal wall during climax

Note. From "Age as a Variable in an Exercise Program for the Treatment of Simple Urinary Stress Incontinence" by J. Henderson and K. Taylor, July/August 1987, Journal of Gynecologic Neonatal Nursing, 16(4), pp. 266-272.

How to do Kegel Exercises
(Copy given to each subject)

Step 1: To gain awareness of the muscles involved, urinate teaspoonful by teaspoonful. Contract and release muscles strongly and quickly. It is more beneficial if the knees are widely separated and you are sitting up straight in order to exercise the deeper pubococcygenus muscles. Do with a full bladder.

Step 2: Tighten the anus as if to keep from having a bowel movement. As you do that, pull up on the vaginal opening and urethra as well. Attempt to lift the whole tightened area up into the pelvis. Slowly relax all those muscles. Begin practicing 10 contractions 5 times daily, and work up to 10 contractions 10 times a day.

Step 3: Contract the pelvic floor gradually, counting to 6, hold. Gradually release to a count of 6, so that you are fully released at 6--not before or after.

Step 4: Think of the pelvic floor as an elevator. As you contract, it is rising to successive levels and coming down as you release. Contract 6 levels, hold to a count of 3, and slowly release 6 levels. Bulge (push through vagina) to a count of 1. Then relax. Repeat. Always tighten to second level before lifting, coughing, sneezing, and while standing and walking.

Step 5: Sit with legs out in front of you on the floor. Contract pelvic floor strongly. Hold. Cross ankles slowly and uncross, maintaining tension on perineal floor.

Step 6: Sit on a low stool or chair, knees apart, leaning forward with elbows resting on knees. Contract the area around the urethra and vagina. Release. Repeat, adding the anus. Release in opposite direction. Tempo is wave-like to build elasticity.

Note. From Kirkpatrick & Davies, July/August, 1987, Nursing Homes.

Tips for Practicing Pelvic Floor (Kegel) Exercises
(Distributed to each subject)

REMEMBER! Never use your stomach, leg, or buttock muscle. The most common mistake is to use too many muscles. To find out if you are also contracting your stomach muscles, place your hand on your abdomen while you squeeze your pelvic floor muscle. If you feel your abdomen move, then you are also using these muscles.

CONVENIENCE! These exercises can be practiced anytime, in any place. Since this muscle is internal, no one can see you exercising this muscle.

Build strength slowly; do not expect **RESULTS** right away.

Squeeze the muscle that you identified earlier and hold for a count of 10, or 10 seconds. Then relax for a count of 10 or 10 seconds. **REMEMBER THAT IT IS JUST AS IMPORTANT TO RELAX AS IT IS TO CONTRACT THIS MUSCLE.**

WHEN WILL I NOTICE A CHANGE?

After about 2 weeks of consistent daily exercise, you will notice fewer accidents (episodes of incontinence); in 1 month, you will see an even bigger difference.

CAN THESE EXERCISES HARM ME?

NO! These exercises cannot harm you in any way. Most patients find them relaxing and easy. If you get back pain or stomach pain after you exercise, then you are probably trying too hard and using stomach and/or back muscles. Go back and find the Kegel muscle and remember,

this exercise should feel mild and easy. If you experience headaches, then you are also tensing or causing yourself undue tension. Remember to focus on relaxation as well as contraction of the muscle. In time, you will learn to practice effortlessly. Eventually, work these exercises in as part of your lifestyle, like brushing your teeth or eating a meal. This will help you to remain successful for a lifetime!

HOW CAN I AVOID FORGETTING TO DO MY EXERCISES?

Do exercises 20 times each time you go to urinate. This way each time you can regain awareness of the muscle and remember to do the exercises.

Used by the courtesy of Diane Kaschak Newman, RN, MSN, and Diane A. Smith, RN, MSN. From "Continence Restoration in the Homebound Patient" by Diane A. Smith, 1988, Nursing Clinics of North America, 23(1), p. 215. (Modified).

APPENDIX J

Record Keeping Sheet

	# of Kegels*	Urinated in toilet	Leaking or accident	Large accident	Reason for accident
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					

*Each slash (|) represents 20 Kegel exercises

VITA

Howarlene Sabrina Webb was born in Trenton, New Jersey on December 8, 1961. She attended primary and secondary schools in Baton Rouge, Louisiana. In May 1983 she received a Bachelor of Science degree in Animal Science from Southern University in Baton Rouge.

In the fall of 1986 she entered The Graduate School of The University of Tennessee, Knoxville. She received a Master of Science in Nursing degree, awarded in December, 1988.