Urinary Incontinence in Vulnerable Populations: Female Soldiers

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Urinary incontinence (UI) is a challenge and a burden to people of all ages. At least 13 million Americans suffer from some form of UI with 85% being women (Lepler, 1998). The incidence of incontinence increases greatly as women reach their 40s and 50s (Legace, Hansen, & Hickner, 1993; Sommer et al., 1990). However, less than half consult a health care provider about their incontinence and 85% of American adults know little or nothing about the condition (Burgio, Ives, Locher, & Arena, 1994; Ubersax, Wyman, Shumaker, McClish, & Fantl, 1995). In a survey by Harrison and Memel (1994), 13 of 167 incontinent women sought medical assistance. Women go undiagnosed because of the myth that incontinence is an inevitable part of aging or they are embarrassed to discuss this sensitive topic with anyone. Keller (1999) found that more than half of her respondents agreed incorrectly that UI is a normal part of aging and 61.2% reported a duration of incontinence over a period of 1 to 3 years with the longest being 20 years.

Stress urinary incontinence (SUI) is prevalent in women of all ages. Due to the rigorous demands of military life, physical fitness requirements, and environmental barriers, female soldiers are at risk for SUI. Since it is estimated that 20% of the total U.S. military active-duty force in the future will be women, it is important to focus on this problem now.

The Problem

Urinary incontinence incidence increases with age but should not be considered a normal part of aging (Diokno, Nommole, Brown, & Herzog, 1990). Thirty-five percent of 53 high-impact athletes reported urine loss during sports (Nygaard 1997). Numerous reports show that stress urinary incontinence (SUI) is common among young, nulliparous women during physical activity. High-impact activities such as running and jumping cause SUI by exceeding a “continence threshold” which places chronic strain on the pelvic floor through repetitive exercise (Bo, Maehlum, Oseid, & Larsen, 1989).

Stress urinary incontinence is the most common form of incontinence in women and is defined as the involuntary loss of urine that occurs when one exerts pressure on the bladder by coughing, laughing, sneezing, or any other physical activity that increases intra-abdominal pressure (Sampselle, Dougherty, Newman, & Wyman, 1997). Incontinence results from internal or external sphincter incompetence secondary to urethral hypoemibility (Wehle & Petrou, 1999) or pelvic relaxation as a result of childbirth, the aging process, or the displacement of the urethra and bladder neck during exertion or trauma (Appleby, 1999; Bishop, Dougherty, Mooney, Gimotty, & Williams, 1992; Chutka, Fleming, Evans, Evans, & Andrews, 1996; Cosner, Dougherty, & Bishop, 1991; Kegel, 1948; Wehle & Petrou, 1999). In addition, women who have even one vaginal birth are more than 2.5 times as likely to report incontinence with rates increasing with parity (Nygaard, Delaney, Amsdorf, & Murphy, 1990; Sommer et al., 1990).

Even though there have been numerous studies involving community and institutionalized women, military women are at high risk for SUI due to advancing age, parity, exercise, and the rigorous demands of military life in a field setting (see Table 1).

Physical Fitness

Physical fitness is a significant component of military readiness and an important part of training even in the field environment (Deuster, Jones, & Moon, 1997). Nearly one-third of 450 female soldiers in field-oriented environments at Fort Lewis had significant problems with exercise-induced UI. At
Fort Benning, 100% of active duty women airborne trainees (n=10) who had no incontinence before airborne training demonstrated stress incontinence after training. Twelve percent of female soldiers who dropped out of airborne training listed UI as a contributing factor (Davis & Goodman, 1996). In addition, women veterans of the Persian Gulf War have a higher proportion of genitourinary problems than other populations (Murphy, Browne, Mather, Scheele, & Hyams, 1997).

SUI symptoms frequently occur after long periods of standing and increase as the activities of the day progress, representing the so-called pelvic relaxation syndrome. In a study involving 563 female soldiers from several units at Fort Lewis, Fort Benning, and Fitzsimoms Army Medical Center, 33% reported UI during physical training. Twenty-four percent reported urine loss during recreational activities such as exercise and walking and 30% reported urine loss during the annual two-mile physical fitness run. Field exercises, which involve long road marches with heavy field backpacks, precipitated urinary incontinence. Davis et al. (1998) reported that among 50 female soldiers, 96% demonstrated abnormal detrusor contractions during ambulation.

**Military Duties**

Military women are assuming more physically demanding activities in the field that predispose them to UI. Creating a field hospital requires lifting, pulling, and carrying heavy equipment. Davis et al. (1999) found that UI occurred more often in job specialties that required jumping, running, and heavy lifting.

Women are expected to literally carry their load. Deuster et al. (1997) state that overuse injuries account for 60% to 80% of all training injuries. Even though this refers to musculoskeletal-type injuries, SUI involves muscle fatigue and injury to the pelvic floor muscles. More than 30% of female soldiers report that they commonly experience urinary incontinence during field duty or physical training that is enough to be a hygienic or social problem (Davis et al., 1998).

**Environmental Barriers**

Environmental barriers in the field often limit access for hygienic measures used by the incontinent soldier. The standard of living in the field is cumbersome. Female soldiers wear clothing designed for a man in an environment where toilets are sometimes unattainable. Portable toilets and heavy military attire do not make a good combination when dealing with the problem of SUI. Sherman, Davis, and Wong (1997) found that female soldiers avoid drinking water due to fear of leakage. Dehydration, urinary tract infections, and skin breakdown can result from the side effects of incontinence.

Feminine hygiene practices such as cleaning after urination, defecation, and during menses usually occur at a toilet site. For women in the field, the toilet is an outhouse or portable potty. There is no clean environment for adequate hygiene practices. In fact, the toilet doesn’t get cleaned every day and sometimes not even once a week. Water is not always available for hand washing as well. Czerwinski (1996) reported that some military women do not wash their hands after inserting feminine hygiene products or after changing pads. It was reported that 69% of 563 female soldiers commonly took measures such as wearing pads as a precaution against incontinence during strenuous activity (Davis et al., 1999). In a dirty field environment, cleanliness is extremely important to prevent urinary tract infections that can lead to incontinence.

Female soldiers report that good hygiene is difficult to maintain when showers aren’t always available (Markenson, Raez, & Colavita, 1992). In addition, since the shower tent is not cleaned daily, it is a breeding ground for bacteria. In spite of the fact that the Army encourages women to bathe daily and to use personal hygiene items to avoid urinary tract infections, the shower is sometimes not available during field exercises (FRC-Army Booklet, 1997).

**Privacy**

Privacy does not exist in a field environment. There are as many as 10 to 20 females in one tent. Women bathe, sleep, and depending on the situation, use the toilet with other women. Female soldiers may go to the portable potty at night to avoid the crowds or avoid taking a shower completely. Conditions such as these lead to a sense of powerlessness over the situation. This lack of power may lead to a decrease in compliance and adherence to a preventative treatment protocol. Buchmann (1997) found a relationship between self-efficacy and power. Bandura (1995) reports that behavior is influenced by the interaction of internal factors with perceptions about the environment where the behavior will be performed. In the field setting, obstacles such as these lead some women to sacrifice hygiene needs.

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**Table 1. Urinary Incontinence Risk Factors for Female Soldiers**

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<tr>
<th>Gender</th>
<th>Aging process</th>
<th>Multiple births</th>
<th>Urgenital trauma</th>
<th>Urinary tract infections</th>
<th>High-impact exercise</th>
<th>Heavy lifting/pulling</th>
<th>Unsatisfactory field conditions</th>
<th>Underhydration</th>
<th>Environmental hazards</th>
<th>Overuse syndrome</th>
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Treatment and Preventive Options

With managed care programs such as Tri-Can today’s military faces the same financial restrictions as other institutions. Treatment options such as protective clothing, invasive devices, surgery, and pharmacologic agents increase health care expenses for the soldier and the government. Since the number of females in the military is likely to expand in the future, so will health care expenses for this problem. The Agency for Health Care Research and Quality suggest pelvic muscle exercise (Kegel exercise) as first-line treatment for mild to moderate SUI (AHQR, 1996).

Kegel exercise as an inexpensive, noninvasive technique offers sufficient improvement to avoid surgery for an estimated 30% to 75% of women (Nygaard, Køder, Lepic, Fountain, & Romberg, 1996). The exercise strengthens the levator ani muscle group that supports the bladder, uterus, and rectum; aids in maintaining intra-abdominal pressures; and offers some urethral and anal sphincter control.

After proper training, pelvic floor exercises can be done in any environment and in various positions. The exercises must be done frequently throughout the day and continued on a daily basis for long-term effect. While 30 to 80 pelvic muscle contractions are recommended a day, positive results can be achieved using the lower number (Miller, Kasper, & Sampselle, 1994). It takes 6 to 8 weeks for beneficial effects to be achieved (Burgio et al., 1994; Chutka et al., 1996), with the greatest efficacy appearing after 11 to 12 weeks of treatment (Wyman, Fantl, McClish, & Bump, 1998). Since military women are faced with the rigors of military life at a young age, education regarding this exercise should begin in military basic training. Prevention is the key to success in managing this problem.

Pelvic muscle exercise programs can increase muscle strength and reduce incontinent episodes in motivated clients of all ages (Wells, Brink, Diokno, Wolfe, & Gillis, 1991). Bums, Nochajski, and Pranikoff (1993) found significant reductions in urine leakage for women using pelvic muscle exercise. In a study of 65 women ages 35 to 75 years, there was a significant improvement in force (25%) and duration (40%) of muscle contraction and significant reductions (62%) in the amount of urine leakage after a 16-week course of pelvic muscle exercise. Similarly in another study, 56% of women who completed a 3-month pelvic muscle exercise program had greater than 50% improvement in the number of incontinent episodes per day. In a 5-year followup of women who were taught pelvic muscle exercise, muscle strength increases were maintained. Sherman et al. (1997) reported improved symptoms of urinary incontinence in a small sample of female soldiers after a 2-month program of Kegel exercise. This is the only known Kegel exercise intervention in female soldiers. Since without exercise the pelvic muscle weakens over time (Smith, Hosker, & Warrell, 1989; Snooks, Swash, Mathers, & Henry, 1990), incontinence is more easily treated by Kegel exercise in women with a strong pelvic floor, at a young age, and experiencing mild UI (Visco & Figuers, 1998). Morkved and Bo (1996) found that teaching women about pelvic muscle exercise before and after childbirth led to improved outcomes. These findings can be generalized to this population.

In spite of the negative aspects of the field environment, Kegel exercise can be performed (see Tables 2 & 3). A female with

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<th>Table 2. Kegel Exercise Guidelines for the Female Soldier</th>
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<tr>
<td>Be evaluated by health care professional prior to starting the exercise to eliminate any other possible cause for incontinence.</td>
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<td>Go to a Kegel exercise clinic or health care professional for proper instruction.</td>
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<td>The exercises can be performed while sitting, standing, or lying down.</td>
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<td>Practice at home before going to the field.</td>
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<td>Practice in all positions since this will be necessary in the field environment.</td>
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<td>Practice while taking a break during the day, in the shower, or at night in the tent.</td>
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<td>Take advantage of free time.</td>
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<th>Table 3. The Kegel Exercise</th>
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<tr>
<td><strong>Step 1</strong> — Tighten the pelvic muscle as hard as possible.</td>
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<td><strong>Step 2</strong> — Hold for at least 10 seconds.</td>
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<td><strong>Step 3</strong> — Relax 10 seconds.</td>
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<td><strong>Step 4</strong> — Repeat 8-10 times.</td>
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<td>Keep a calendar to monitor your progress.</td>
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<td>Be persistent. You may see improvement in a matter of weeks!</td>
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high-efficacy beliefs can overcome the barriers of the environment. One's confidence in being able to perform a given self-care behavior has a relationship to one's self-efficacy beliefs about performing the same task or one similar in the future (Bandura, 1986).

If one has strong self-beliefs about the exercise, then challenges are not seen as threats (Bandura, 1996). Behavior is influenced by the interaction of internal factors with perceptions about the environment where the behavior will be performed (Bandura, 1995). Individuals with high self-efficacy tend to approach more challenging tasks, put forth more effort, and persist longer in the face of obstacles, barriers, and stressful stimuli. In the stressful field environment, a pleasant form of treatment that decreases the annoying side effects of incontinence is an incentive to practice the exercise. In addition to pelvic muscle exercise, female soldiers must maintain proper feminine hygiene and hydration in this restricted setting to decrease conditions that would predispose them to incontinence.

Conclusion

There is limited research available dealing with stress urinary incontinence or the use of Kegel exercises in female soldiers. However, according to the “Defense Women’s Health Initiative” (Gunby, 1995), health promotion should focus on the physiological, psychological, and behavioral responses to problems such as:

- Intense physical activity, temperature extremes, gynecologic problems, having to use clothing and equipment designed for a man, and other factors affecting work performance.
- Integration into a male environment or lack of privacy, dignity, and other factors when military women and men work together in close quarters including methods for dealing with urination, defecation, menstrual flow, and other sanitary needs.

Since military women are taking on more physically demanding roles in the field environment and will compose 20% of the total U.S. military active-duty force in the future (Gunby, 1995), this problem will only increase unless focus is placed on preventing and treating stress urinary incontinence now. Females should be screened, educated, and trained in Kegel exercise upon induction to the military. A healthy urologic and gynecologic program will save these women physiologic and psychologic hardship, thereby improving soldier readiness. In addition, military leaders should be aware of the negative impact that urinary incontinence has on military women and remove obstacles to continence in the field environment.[

References


