Effects of Age and Causal Attribution to Aging on Health-Related Behaviors Associated With Urinary Incontinence in Older Women

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Purpose: The purpose of this study was to assess the effects of age and patients’ attribution of incontinence to aging on health-related behaviors associated with incontinence. Design and Methods: Participants in this study were 74 women who either sought treatment for urinary incontinence at a multidisciplinary incontinence program or volunteered for a randomized clinical trial of behavioral and drug therapy for incontinence. As part of their clinical evaluation, women were interviewed about how they managed their incontinence and their perceptions of what had caused the condition. Self-management of incontinence was defined as behaviors used to cope with incontinence, rather than treat or cure incontinence. Self-treatment was defined as self-implementation of Kegel exercises, and formal treatment was defined as interaction with a health care provider. Results: Over half of the respondents attributed their incontinence to aging. In multivariate analyses, age was associated with self-management of incontinence, but not self-treatment or formal treatment. In contrast, attribution of incontinence to aging was associated with self-management and self-treatment of incontinence. There was also a trend for attribution of incontinence to aging to be associated with formal treatment for incontinence. Women who attributed their incontinence to aging were less likely to have engaged in self-management strategies and to have received a previous evaluation or treatment; but, they were more likely to have engaged in self-treatment for incontinence. When other relevant variables were added to the regression models, perception that incontinence restricted one’s activities became the most significant predictor of performing self-management strategies and performing Kegel exercises. Implications: Attribution to aging may be an impediment to seeking treatment. Education to promote understanding of the actual causes and treatment of urinary incontinence may encourage people to seek appropriate intervention. Additionally, whereas attribution to aging is an important factor contributing to health-related behaviors, other factors, such as perception that one’s activities are restricted, may play an important role.

Key Words: Treatment-seeking, Self-management, Self-treatment

The purpose of this study was to assess the effects of age and patients’ attribution of incontinence to aging on health-related behaviors associated with incontinence. Health-related behaviors include both “illness behavior” and “health behavior” (Kasl & Cobb, 1966). The focus of this study is on illness behavior. Mechanic (1995, p. 1208) describes illness behavior as “the varying ways individuals respond to bodily indications, how they monitor internal states, define and interpret symptoms, make attributions, take remedial actions and utilize various sources of informal and formal care.” Although incontinence is not an illness by definition, it is a condition that can be self-managed, self-treated, or treated by health care providers. Furthermore, incontinence is a condition that may be a symptom of a medical problem; or it may contribute to the development of a medical problem, as well as social, psychological, or financial problems (Wyman, Harkins, & Fantl, 1990). Thus, it is appropriate to view incontinence within the context of the growing social-psychological literature on illness behavior.

Individuals’ beliefs about the cause and nature of their illness are a determining factor in their response...
to that condition. Whereas attribution theory has been most often applied to the achievement domain within social psychology, it is especially applicable to the health domain, as well. Weiner (1995) has demonstrated that “causal beliefs give rise to inferences about personal responsibility.” These beliefs ultimately serve to guide behavior. When individuals perceive an event as resulting from an impersonal, external, and/or uncontrollable cause, they are less likely to assume responsibility for doing anything about the event. Thus, if individuals perceive incontinence as resulting from the immutable process of aging, they may be less likely to engage in behaviors to ameliorate or treat the condition and more likely to engage in behaviors to manage the condition. Several investigators have demonstrated that incontinent individuals often attribute incontinence to aging (Gjorup, Hendriksen, Lund, & Stromgard, 1987; Mitteness, 1987a, 1987b, 1990, 1992; Simons, 1985).

The most common response to symptoms of illness involves the adoption of self-care behaviors (Haug, Akhyama, Tryban, Sonoda, & Wykle, 1991; Segall & Goldstein, 1989). These may include both self-management and self-treatment behaviors. Self-management strategies for incontinence include reducing fluid intake, increasing frequency of voiding, using absorbent devices (such as pads or towels), isolating oneself from others, changing nutritional intake, and not taking medications (such as diuretics). Self-treatment strategies for incontinence include performing Kegel exercises (Brink, Wells, & Diokno, 1987; Diokno, Brock, Brown, & Herzog, 1986; Engberg, McDowell, Burgio, Watson, & Belle, 1995; Herzog et al., 1989; Mitteness, 1987a; Thomas & Morse, 1991; Wells, Brink, Diokno, Wolfe, & Gillis, 1991). Additionally, “psychological strategies” are adopted in response to incontinence to manage the stigma associated with incontinence, thereby preserving one’s sense of self (Mitteness, 1987a). These include keeping the incontinence a secret by either not telling others about the problem or “through hyper-vigilance with respect to wetness or other evidence of accidents” (Mitteness, 1987a; p. 189).

Another common response to illness is the seeking out and utilization of formal health care services. Mechanic (1978) has formulated a general theory of help-seeking behavior positing that individuals respond to symptoms based on what is culturally and socially appropriate as defined by both the self and others. “Factors affecting the response to illness include: 1) visibility, recognizability, or perceptual salience of deviant signs and symptoms, 2) the extent to which symptoms are perceived as serious, 3) the extent to which symptoms disrupt family, work, and other social activities, 4) the frequency of the appearance of the deviant signs or symptoms, their persistence, or their frequency of recurrence, 5) the tolerance threshold of those who are exposed to and evaluate the deviant signs and symptoms, 6) available information, knowledge, and cultural assumptions and understandings of the evaluator, 7) basic needs which lead to autistic psychological processes, 8) needs competing with illness responses, 9) competing possible interpretations that can be assigned to the symptoms once they are recognized, and 10) availability of treatment resources, physical proximity, and psychological and monetary costs of taking action” (pp. 130–131).

Incontinence is a prevalent condition in older adults and is sometimes viewed erroneously as a natural process of aging (Brink et al., 1987; Jeter & Wagner, 1990; Locher & Burgio, 1996; Mitteness, 1987b, 1992). Whether or not age or the attribution of incontinence to age affects health-related behaviors associated with incontinence, including self-management, self-treatment, and formal treatment by health care providers, has received little attention in the literature. A few studies that have examined this issue report beliefs that incontinence is caused by aging are associated with not seeking treatment (Ashworth & Hagan, 1993; Gjorup et al., 1987; Goldstein, Hawthorne, Engberg, McDowell, & Burgio, 1992; Jolleys, 1988; Simons, 1985). It is well-known, however, that incontinence is a significantly underreported and undertreated problem, despite the availability, albeit limited, of formal treatments for incontinence by health care providers (Faintl et al., 1996). Studies of community-dwelling older adults have demonstrated that fewer than half of the participants experiencing incontinence reported the condition to their health care provider (Burgio et al., 1994; Roberts et al., 1998).

Utilization of health care services is much higher for elderly adults compared with other age groups (Cockerham, 2001; Coulton & Frost, 1982; Galvin & Fan, 1975; Kronenfeld, 1978; Montiero, 1973; Wan & Soifer, 1974; Wolinsky et al., 1983; Wolinsky, Mosely, & Coe, 1986). Much of this increased utilization may be because older adults have poorer health and are more disabled, thus they have a greater need for formal services (Cockerham, 1997; Coulton & Frost, 1982; Wan, 1982; Wolinsky et al., 1983). Older adults are also more likely to have health insurance, compared with younger adults. Other literature, though, has found that older adults are less likely than younger adults to seek treatment for some clearly recognizable symptoms of potential medical problems (McKinley, Moser, & Dracup, 2000). The purpose of this study was to assess the effects of age and patients’ attribution of incontinence to aging on health-related behaviors associated with incontinence, specifically whether patients sought formal treatment, used self-management strategies, or attempted self-treatment.

**Methods**

**Sample**

This study reports on a convenience sample of 74 women who either sought treatment at a multidisciplinary continence program or volunteered for a randomized clinical trial of behavioral and drug therapy for incontinence. Participants ranged in age from 49 to 84 with a mean age of 65.9 (SD = 7.79). Participants were ambulatory and community-dwelling.
Procedures

As part of their routine clinical evaluation for urinary incontinence, participants were interviewed by a research nurse in the continence clinic to obtain a continence and medical history. The history included the onset and duration of their incontinence; the perceived cause of their incontinence; and their response to the problem, including self-management, self-treatment, and formal treatment-seeking behavior. Because this study analyzed data normally collected in the clinical setting from clients seeking care in the incontinence clinic, it was reviewed by the Institutional Review Board, and informed consent was not required.

Measures

Independent Variables. — Age was measured as a continuous variable. Attribution of incontinence to aging was measured as a dichotomous variable in response to the question, “Did age cause you to develop this problem (i.e., incontinence)?”

Based on Mechanic’s theoretical model, other variables thought to have an effect on health-related behaviors were included in multivariate analyses. These included measures of frequency of incontinent episodes (as an indicator of the frequency of symptoms), duration of incontinence (as an indicator of the persistence of symptoms), whether incontinence was perceived as restricting activities (as an indicator of the extent to which the symptoms disrupt family, work, and other social activities), and whether incontinence was perceived as disturbing (as an indicator of the amount of tolerance for the symptoms).

Frequency of incontinent episodes was recorded as a continuous variable in response to the question, “How many accidents would you say you have in a typical week?” Duration was reported as a continuous variable based on the question, “When did your leakage begin?” This was recorded as “onset date” and converted to months since onset. Restriction of activities was reported in response to the question, “How much does the leakage of urine restrict your activities?” Response categories included: not at all, some of the time, and all of the time. Whether incontinence was perceived as disturbing was reported in response to the question, “How disturbing is the problem to you?” Response categories included: not at all, somewhat disturbing, and extremely disturbing.

Self-report of health-related symptoms is frequently used in incontinence research, and has been found to be stable and reliable (see, e.g., Fantl et al., 1996; Locher et al., 2001).

Dependent Variables. — Health-related behaviors for incontinence were categorized as self-care behaviors and formal treatment behaviors. The definition of self-care was based on that used by Haug and colleagues (1991), “response behavior to a perceived symptom without the involvement of physicians.” Self-care behaviors were further divided into either self-management or self-treatment. Self-management behaviors included those used to cope with incontinence, rather than treat or cure incontinence. They included: (1) avoiding drinking too much water/other fluids, (2) not taking certain medications before going out, (3) locating or staying near a bathroom when out, (4) eating (or not eating) certain foods, (5) drinking (or not drinking) certain liquids, and (6) wearing pads. Self-management was measured as a continuous variable consisting of the number of strategies commonly used to cope with incontinence (0–6).

Self-treatment for incontinence was measured as a dichotomous variable (yes/no) and consisted of response to the question, “Other than what a doctor has recommended, have you tried Kegel exercises to control or improve this problem?” Performing Kegel exercises is not simply management of incontinence; it is a behavioral treatment that often reduces or cures incontinence. Formal treatment for incontinence was also measured as a dichotomous variable and consisted of responses to the question, “Have you had any previous evaluations or treatments for incontinence?”

Statistical Analyses

Descriptive statistics were performed to characterize the sample. Pearson’s r and t tests were used to test the association between age and health-related behaviors associated with incontinence. Chi-square analyses and t tests were used to test group differences between those who attributed their incontinence to age and those who did not.

Multiple linear regression was used to identify independent predictors of self-management strategies. Logistic regression was used to identify independent predictors of self-treatment and formal treatment. As the primary variables of interest, age and attribution to aging were included as the independent variables in all models. Other variables thought to have an effect on health-related behaviors were controlled for in the subsequent models. Assumptions of statistical tests were evaluated before analyses, and there were no violations.

Results

Characteristics of Participants

The mean age at which participants developed incontinence was 56.7 years (SD = 12.5, range = 23–83). Duration of incontinence ranged from 8 months to 37 years, with a mean of 9.3 years (SD = 9.6). Participants reported a mean of 25.9 incontinent episodes per week (SD = 24.8, range = 1–140). The volume of a typical incontinent episode was reported as “a drop or two” by 22.2% of participants, “pad or clothing damp” by 36.9%, and “pad or clothing soaked” by 20.8%. The majority of participants (63.9%) reported that urinary leakage did not restrict their activities, whereas 36.1% reported that urinary leakage restricted their activities some or all of the time. Over half (54.2%) of the participants reported being “not at all” or only “somewhat” disturbed by
Table 1. Self-Management Strategies for Incontinence

<table>
<thead>
<tr>
<th>Strategy</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wear pads</td>
<td>60.8</td>
</tr>
<tr>
<td>Stay near bathroom</td>
<td>54.1</td>
</tr>
<tr>
<td>Limit fluid intake</td>
<td>51.4</td>
</tr>
<tr>
<td>Drink certain liquids</td>
<td>39.2</td>
</tr>
<tr>
<td>Eat certain foods</td>
<td>5.4</td>
</tr>
<tr>
<td>Refrain from taking medication</td>
<td>1.4</td>
</tr>
</tbody>
</table>

their incontinence, whereas 45.8% reported being “extremely” disturbed. Over half (58.1%) of the participants attributed their incontinence to aging.

Health-Related Behaviors for Incontinence

Participants engaged in an average of 2.12 (SD = 1.26) self-management strategies for incontinence. Wearing pads, staying near a bathroom, and limiting fluid intake were the strategies most often utilized (Table 1). Few participants (16.2%) reported self-treatment with Kegel exercises, and 45.8% had sought formal treatment.

The Effects of Age

Characteristics of Incontinence.—Older age was not associated with the perception that incontinence was caused by aging. Age was not associated with the duration of incontinence, the severity of incontinence based on participants’ self-report of frequency and volume of accidents, or their perceptions that incontinence was disturbing or restricting their activities.

Health-Related Behaviors.—Age was negatively correlated with the number of self-management strategies adopted by participants, suggesting that older women used fewer strategies ($r = - .31, p = .008$). There were no significant differences for any of the specific strategies adopted, although locating or staying near a bathroom when out ($t = 1.954, df = 70, p = .055$), eating (or not eating) certain foods ($t = 1.777, df = 70, p = .080$), and drinking (or not drinking) certain liquids ($t = 1.780, df = 70, p = .079$) approached significance. Older participants were less likely to engage in any of these self-management behaviors. Self-treatment and formal treatment were not associated with age of participant.

The Effects of the Attribution to Aging

Characteristics of Incontinence.—Attribution of incontinence to aging was significantly related to older age of onset ($t = -2.916, df = 69, p = .003$) and shorter duration of incontinence ($t = 2.421, df = 69, p = .018$). Participants who attributed incontinence to aging reported developing incontinence at a mean age of 60.1 years and having incontinence for an average of 7.1 years. This compares with participants who did not attribute incontinence to aging and reported developing incontinence at a mean age of 51.7 and having incontinence for an average of 12.5 years. Attribution of incontinence to aging was not associated with frequency or volume of accidents or to perceptions of incontinence as disturbing or restricting one’s activities.

Self-management Strategies for Incontinence.—Attribution of incontinence to aging was associated with adopting fewer self-management strategies ($t = 3.07, df = 72, p = .004$). Participants who attributed incontinence to aging practiced a mean 1.8 self-management strategies versus 2.6 for those who did not attribute incontinence to aging. Specifically, women who attributed incontinence to aging were less likely to limit fluids ($\chi^2 = 5.737, df = 1, p = .017$, Likelihood ratio = 5.838, $p = .016$, phi = .17) and less likely to locate or stay near a bathroom when out ($\chi^2 = 8.713, df = 1, p = .003$, Likelihood ratio = 8.982, $p = .003$, phi = .003). Attribution of incontinence to aging was not related to refraining from taking medication, eating certain foods, drinking certain liquids, and wearing pads.

Self-treatment for Incontinence.—Attribution of incontinence to aging was significantly associated with performing Kegel exercises ($\chi^2 = 3.744, df = 1, p = .053$, Likelihood ratio = 4.126, $p = .042$, phi = .053). Of those participants who attributed their incontinence to aging, 23.3% reported performing Kegel exercises, compared with only 6.5% of participants who did not attribute their incontinence to aging.

Formal Treatment for Incontinence.—Participants who attributed their incontinence to aging were less likely to have sought formal treatment (35.7% vs. 60.0%) ($\chi^2 = 4.157, df = 1, p = .041$, Likelihood ratio = 4.184, $p = .041$, phi = .041). In particular, women who attributed their incontinence to aging were significantly less likely to have had surgery for their incontinence (11.9% vs. 40.0%, $\chi^2 = 7.695, df = 1, p = .006$, Likelihood ratio = 7.661, $p = .006$, phi = .006). However, there were no significant differences for use of medications.

Multivariate Analyses

In addition to the bivariate analysis reported previously, multivariate predictive models were performed for each category of health-related behavior. The first model included only age and attribution to aging. The second model included age, attribution to aging, and four characteristics of incontinence—frequency, duration, the perception that incontinence restricted activities, and feeling disturbed by incontinence.

Self-management Strategies for Incontinence.—In the first model, both older age and attributing incontinence to aging were associated with performing fewer self-management strategies for incontinence ($p =
In the first model, there was a trend for a decrease in formal treatment with increasing age (\( p = .074 \)). No variables were significant in the full logistic regression model for formal treatment for incontinence (see Table 4).

### Discussion

In unique ways, both age and attribution of incontinence to aging were independently associated with health-related behaviors associated with incontinence. Age and attribution of incontinence to aging were not associated with one another.

In both the univariate and multivariate analyses, older age was associated with fewer self-management strategies adopted for incontinence. This is consistent with the findings of Segall and Goldstein (1989), who found that age was inversely related to the number of self-treated symptomatic conditions. However, age was not related to either self-treatment or formal treatment for incontinence. In both univariate and multivariate analyses, attribution of incontinence to aging was associated with decreased number of self-management strategies, increased self-treatment, and a trend to decreased formal treatment.

Frequency of incontinent episodes (as an indicator of the frequency of symptoms) and how disturbed participants were by their incontinence (as an indicator of symptom tolerance) were not associated with any health-related behaviors. Only duration of incontinence (as an indicator of persistence of symptoms) was associated with whether or not participants reported having a previous evaluation or treatment. Consistent with findings from other studies of health behavior, one of the strongest predictors to emerge in the multivariate models was whether incontinence was perceived as restricting one’s activities (Verbrugge & Ascione, 1987). Participants who perceived incontinence as restricting their activities practiced more self-management strategies and were more likely to perform Kegel exercises as a form of self-treatment. When restriction of activities was entered into the regression model, both age and attribution to aging were no longer significant predictors of self-management strategies. It may be that, regardless of age or
attribution of a symptom to aging, an individual is most likely to take action to deal with a symptom when it disrupts or interferes with daily activities. Declines in physical and instrumental activities of daily living are highly associated with aging. Restriction of activities may be viewed as a sign of aging. Thus, attribution of a symptom to aging may still be an important factor in predicting health-related behaviors, although it occurs through a different pathway.

Interestingly, perception that incontinence restricted one’s activities was not associated with seeking formal treatment. This is despite the fact that participants reported a mean duration of incontinence of 9.5 years. This anomalous finding may be related to the observation by Mechanic that help-seeking behavior for medical care is in part determined by the availability of information, knowledge, and cultural assumptions regarding the symptom, as well as the availability of treatment resources, physical proximity, and the psychological and financial costs of taking action.

Mitteness and Barker (1995) present the compelling argument that incontinence is “a cultural symbol for the increasing dependencies of old age” (p. 188). These authors maintain that the reality that incontinence is a highly treatable condition does not match the common belief of the larger community, including older adults and their health care providers, that incontinence is inevitable, irreversible, and a normal part of growing old. Women who attributed their incontinence to aging may have believed that their incontinence was not treatable. Additionally, they may have believed that surgery was the only option available for the treatment of their incontinence, and they may not seek treatment for incontinence because they do not wish to have surgery (Dowd, 1991). This is also consistent with our finding that women who attributed their incontinence to aging were significantly less likely to have had prior bladder surgery.

There are few practitioners who are specially trained in continence care in the United States. There are even fewer multidisciplinary specialty clinics for continence problems. Additionally, some insurance policies do not cover treatment for incontinence, particularly more conservative treatments, such as behavioral management, which might be more appealing and appropriate for older patients. Indeed, women who attributed their incontinence to aging were overwhelmingly more likely to perform Kegel exercises on their own without input from a health care provider. Practitioners may be unaware that several behavioral interventions—including Kegel exercises, bladder strategies, bladder training, and dietary changes—are not only effective, but especially appropriate for older women. In the few studies that have examined physicians’ responses to patients’ urinary incontinence, patients reported that physicians often did not respond, told patients there was no treatment available for incontinence, told patients it was normal for their age, recommended ineffective treatments, or referred patients to a specialist (Glew, 1986; Goldstein et al., 1992; Mitteness, 1987a; Simons, 1985).

This study may be limited in its generalizability because findings are based on a relatively small (n = 74) group of women who sought treatment for incontinence at a multi-disciplinary continence center or volunteered for a randomized clinical trial of behavioral and drug therapy for incontinence. Nonetheless, one might speculate that these findings extend to other groups.

There are many social structural barriers that may be associated with health-related behaviors associated with incontinence. These include the lack of readily available information regarding incontinence, the stigma associated with incontinence, and the lack of treatment availability and affordability. Participants in this study who attributed their incontinence to aging were much more likely to have experienced incontinence for a significantly longer duration (5.4 years) than those who did not attribute their incontinence to aging. This indicates that attribution to aging, rather than age itself, created another barrier to seeking help for incontinence. This may be an important distinction for other conditions associated with aging as well. Individuals’ beliefs about the causal nature of their illness may influence how they respond to symptoms, including whether they engage in self-management, attempt self-treatment, or seek professional assistance.

The way a patient responds to symptoms like incontinence may also be influenced by whether their health care provider attributes the problem to aging (Mitteness, 1992). The attribution to aging of symptoms like incontinence by health care providers may be an important factor in patients’ response to symptoms. Furthermore, beliefs about the causal nature of symptoms by both the patient and the health care provider may affect patient–provider relationships, effectiveness of symptom management (including adherence to treatment), and use of behavioral treatments (both self- and formal treatments). Behavioral treatments, which are more conservative and less invasive, are often the most appropriate interventions for older adults.

This study is limited by its small sample size and its use of a nonrandomly selected sample. Further studies using larger, randomly selected samples are warranted to study more directly the relationship between causal attribution to aging of symptoms and health behaviors.

References


