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Handicaps associated with incontinence: implications for management

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Abstract

***Study objective*—The aim was to explore the relationship between dementia, impairment of mobility, and incontinence and the implications for management.**

***Design*—The study was a survey of a sample population drawn from a general practice register.**

***Setting*—A large general practice serving the entire population of Melton Mowbray, Leicestershire, UK.**

***Participants*—Of 1329 persons aged 75 or over, 1203 (90%) took part in the survey. Of non-responders, refusers accounted for 5%, deaths 4%, and failure to trace 1%.**

***Measurements and main results*—12% of the population complained of incontinence. No more than 24% of these cases were demented. Dementia and isolated locomotor problems were significantly associated with presence of incontinence, but 31% of cases were completely free of either problem. A minimum estimate of 56% of cases of incontinence were considered to be due to local physical disorders of the bladder.**

***Conclusions*—A search for local disorders causing incontinence is important, and more attention should be paid to the management of locomotor problems and possibly depression in the relief of incontinence.**

Agerholm has suggested that urinary incontinence has three main aetiological mechanisms: (1) *physical incontinence*, arising from disorders of the bladder and its local and spinal control network; (2) *cerebral incontinence*, arising from organic brain diseases and emotional disorder, and (3) *locomotor incontinence*, arising from impaired mobility in the environment, impaired postural mobility, and impaired manual dexterity.[1] The extent of the contribution of dementia and reduced mobility to the prevalence of incontinence is unclear. Two recent population surveys have shown that urinary incontinence occurs more commonly among the demented and housebound that among normal elderly people.[2 3] Clinical tradition favours a close association with dementia and a matching outlook of hopelessness. However, reports from urodynamic clinic series tend to emphasise that apparently healthy elderly people account for a large proportion of cases referred for investigation, but these are subject to selection bias.[4]

The present survey aims to explore the relationship between dementia, impairments of mobility, and incontinence to see whether the evidence is consistent with the proposed classification, to what extent a pessimistic outlook for incontinence is justified, and what the implications are for management.

Methods

A total sample of people age 75 and over (n = 1329) was drawn from the computerised age-sex register of a single large general practice serving the entire population of Melton Mowbray, including people in long stay geriatric provision. The study population comprised 90% (n = 1203) of the eligible total.[5] Non-responders were made up of 5% refusals, 4% mortality, and 1% no trace. In the course of a home visit, incontinence and locomotor problems were assessed by the following questions:

(1) Do you have any difficulty in controlling your water? (incontinence)
(2) Do you get around the house without any help or appliances? (mobility in the environment)
(3) Do you get yourself to and from the toilet at night without any help or appliances? (postural mobility)
(4) Do you dress yourself without any help or appliances? (dexterity)

A locomotor problem was defined as less than full independence in getting around the house or to and from the toilet at night or in dressing.

Twelve per cent of the population admitted to some degree of incontinence (11% lived at home and 1% were resident in institutions). Subsequent follow up of incontinent people living at home showed that 9% confirmed symptoms of disturbed micturition, mostly manifested as leakage of urine; less than 1% denied any current disorder; while less than 2% of the population were not reassessed, mainly due to serious ill health. These and other results have been discussed in detail elsewhere.[6–8]

Cognitive impairment was tested by the information orientation component of the Clifton assessment schedule, consisting of 12 questions, with severe cognitive impairment being defined as a score of 7 or less.[9] Severe cognitive impairment is referred to hereafter as dementia, although it is recognised that the group is likely to include a small proportion of other conditions associated with mental confusion. The prevalence of dementia was estimated to be 4·5%, and has been described in more detail elsewhere.[10] Assessment

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information was incomplete in a further 42 "unclassifiable" cases (3·5% prevalence). This group bears more resemblance to the demented than the non-demented group in that 50% of the unclassified group were rated "severely" disabled on activities of daily living, compared to 69% in the demented and 12% in the non-demented groups. Five years later, in a follow-up survey, 81% of the unclassifiables had died compared to 93% of the demented and 54% of the non-demented. On retesting for dementia, four of the unclassifiables were not demented after 5 years, leaving 38 people for whom dementia could not be excluded. In the results that follow the 38 have been alternatively treated as "not demented" and "demented" to provide a minimum and (*maximum*) estimate of the contribution of dementia to the problem of incontinence. Where minimum and (*maximum*) estimates are the same, only one figure is shown (see table IV).

Deaths in Leicestershire people are notified routinely to general practitioners on a weekly basis by the district health authority. Information on date of death of members of the survey was captured in this way. Subsequently the whole sample was traced via the National Health Service Central Register for verifation purposes.

Table I Prevalence (%) of dementia, locomotor problems and incontinence (population = 1202)

Factor present	*Prevalence % (n)*	
	min	*max*
Dementia, locomotor problems, and incontinence	1·7 (20)	*2·8 (34)*
Dementia and incontinence	0·2 (2)	*0·2 (2)*
Locomotor problems and incontinence	6·7 (80)	*5·5 (66)*
Dementia and locomotor problems	1·7 (20)	*3·3 (40)*
Dementia alone	0·4 (5)	*1·2 (15)*
Lotomotor problems alone	30·8 (370)	*29·7 (357)*
Incontinence alone	3·7 (45)	3·7 (45)
Any of the above	45·1 (542)	*46·5 (559)*

Table II Association between dementia, locomotor problems, and incontinence

Problem	*Proportion (%) with the problem*				*Population risk of incontinence* (95% CI)*	
	Incontinent population		*Total population*			
	min	*max*	min	*max*	min	*max*
Dementia and any locomotor	14	*23*	4	*6*	10·7 (5·2, 21·8)	*13·3 (7·2, 24·7)*
Dementia alone	1	*1*	1	*1*	6·0 (1·1, 32·7)	*1·9 (0·4, 8·8)*
Locomotor alone	54	*45*	37	*35*	3·1 (2·1, 4·7)	*2·8 (1·8, 4·2)*
No problem	31	*31*	58	*57*	1·0	*1·0*

* Adjusted for age and sex
CI = confidence interval

Table III Association between locomotor problems and incontinence

Problem	*Proportion (%) with the problem*				*Population risk of incontinence* (95% CI)*	
	Incontinent population		*Total population*			
	min	*max*	min	*max*	min	*max*
			Demented			
Mobility in house	77·3	*69·4*	66·7	*58·7*	1·19 (0·23, 6·15)	*0·90 (0·27, 2·97)*
Toilet at night	90·9	*86·1*	81·5	*72·8*	2·83 (0·34, 23·4)	*2·31 (0·56, 9·53)*
Dressing	77·3	*80·6*	63·0	*57·6*	2·10 (0·53, 8·32)	*4·50 (1·43, 14·14)*
			Non-demented			
Mobility in house	38·4	*36·0*	20·4	*19·4*	1·37 (0·82, 2·29)	*1·53 (0·90, 2·62)*
Toilet at night	51·2	*47·7*	31·8	*30·8*	1·57 (0·99, 2·47)	*1·54 (0·96, 2·46)*
Dressing	26·4	*18·9*	7·1	*5·6*	4·81 (2·68, 8·63)	*3·33 (1·72, 6·48)*

* Adjusted for age, sex and other locomotor problems
CI = confidence interval

Results

The prevalences of dementia, locomotor problems, and incontinence are shown in table I. In all, 55% (*53%*) of the population were free of these problems.

The association between dementia, locomotor problems and incontinence is shown in table II. Among the incontinent population, 54% (*45%*) suffered from isolated locomotor problems, 14% (*23%*) from dementia associated with a locomotor problem, a further 1% from dementia alone and 31% had no problems. The combination of dementia and locomotor problems was almost 11 (*13*) times more common among the incontinent than among the continent population. Similarly, locomotor problems in the absence of dementia were nearly three times more common among the incontinent. There was no difference in the frequency of occurrence of isolated dementia between the two groups. However, dementia rarely occurred alone.

The association between individual locomotor problems and the presence of incontinence was explored separately for the demented and the non-demented populations since it probably has different implications in the two groups (table III).

Locomotor problems were generally very much more common among demented people than among non-demented people. Among the demented group as a whole, difficulty in dressing was the only locomotor problem to occur significantly more frequently in the incontinent compared to the continent group, and then only with the maximum dementia prevalence assumption.

Among the non-demented, problems with dressing were also significantly associated with incontinence, with both minimum and maximum dementia prevalence assumptions. People with incontinence were five (*three*) times more likely to suffer from a dressing problem.

The term "handicap" is used to describe the presence in an individual of dementia or a locomotor problem or both. The separate implications of handicap and incontinence were explored by means of their effect on five year survival. Sixty three percent of the continent population survived for five years compared with only 38% of the incontinent population. The incontinent and handicapped experienced the worst survival outcome of 28%. This group were five times more likely to die than the non-handicapped and continent group. However, incontinence alone was not significantly associated with increased risk of death over a five year period (table IV).

The possible contribution of handicap to the prevalence of incontinence was estimated on the basis of the observed prevalence of incontinence among non-handicapped individuals. Forty five cases of incontinence occurred in non-handicapped individuals. A similar prevalence of

Table IV Effect of handicap and incontinence on the risk of dying within five years

Status	*Odds in favour of dying (95% CI)** min/*max*
Not handicapped and continent	1·0
Not handicapped and incontinent	1·6 (0·8,3·1)
Handicapped and continent	2·0 (1·5,2·7)
Handicapped and incontinent	5·0 (3·1,8·2)

* Adjusted for age and sex
CI = confidence interval

incontinence among handicapped individuals would have resulted in an expected 32 (*34*) cases. In fact, 102 cases of incontinence were observed among the handicapped. Thereby, 70 (*68*) of the total 147 cases were presumed to have arisen from factors causing the handicap, or the handicap itself. After adjustment for age distribution, this represents a possible 44% (*43%*) of incontinence arising because of handicap in the elderly population.

Discussion

Twelve per cent of a total elderly population experienced incontinence. Within this group, 31% of cases suffered from incontinence which could not in any way be explained by cognitive or locomotor problems, between 15% and *24%* suffered from dementia and the remainder experienced one or more locomotor problems. This supports the impression from urodynamic clinics that the majority of patients with incontinence are not demented.

Dementia, with or without a locomotor problem, was strongly associated with incontinence. The association may come about for a variety of reasons. Firstly, the brain is involved in cognitive functioning *and* control of micturition, so any global degenerative process seems likely to affect both functions. Secondly, dementia is associated with a loss of self awareness and social functioning. Even in the absence of diminished central control over micturition, the lack of inhibition may lead to incontinence. Finally, dementia may arise because of incontinence. A possible explanation would be that the measure used is a crude instrument which distinguishes poorly between dementia and depression. The occurrence of incontinence could quite readily induce depression in an elderly person.

Locomotor problems occurring in isolation, specifically dressing problems, were also strongly associated with incontinence. Here again, it may be that both conditions occur together because of some degenerative condition, for example a deterioration of neuromuscular control. Alternatively the locomotor problem could give rise to incontinence directly because of the hindrance caused to the activities leading up to normal micturition. Alternatively incontinence may give rise to an expression of a locomotor problem in that, for example, the urgency often associated with incontinence may generate some of the perceived problem with dressing, or avoidance of stress incontinence may compromise mobility.

It would be useful to improve the process of assessment to distinguish between dementia and depression and to quantify locomotor problems explicitly independent of micturition. Thereafter it would be helpful to know the order in which the symptoms appear. Alternatively, it would be interesting to know whether measures which improve incontinence have any effect on the associated conditions of dementia, depression and locomotor problems.

Clinical and other impressions suggest that incontinence among the handicapped group is itself a reflection of the severity of the handicapping conditions and often increases as the general condition worsens.[11 12] This would be consistent with Agerholm's classification and is supported by the finding that only the presence of handicap (and to a greater extent handicap with incontinence) confers a significantly increased risk of dying. Incontinence alone has no implications for five year survival.

If one assumes that dementia and locomotor problems are acting directly or indirectly to cause incontinence, they could contribute, at maximum, 44% of cases of incontinence, leaving 56% arising for other reasons, possibly local bladder conditions.

In conclusion, it is worth remembering that 31% of elderly people with incontinence have no suggestion of dementia or locomotor problems and their life expectancy is normal for their age. They may well experience the greater frustration of their otherwise unrestricted lives and may respond best to treatment.[13] A further 25% of cases may be due to local bladder conditions. Among cases with locomotor problems interventions involving the design of clothing and other aspects of manual dexterity deserve consideration.

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